THE RUSSIAN ACADEMY OF SCIENCES
INSTITUTE OF SOCIO-ECONOMIC DEVELOPMENT OF TERRITORIES OF RAS

ECONOMIC AND SOCIAL CHANGES:

FACTS, TRENDS, FORECAST

4 (16) 2011

The journal is published according to the decision of RAS economic institutions' administration in the North-West federal district

Institute of Socio-Economic and Energy Problems of the North
Komi scientific centre of the Ural RAS department (Komi Republic)

Institute of Economics of Karelian scientific centre of RAS (Karelia Republic)

G.P. Luzin Institute of Economic Problems of Kola scientific centre of RAS (the Murmansk region)

Institute of Socio-Economic Development of Territories of RAS (the Vologda region)

and according to the decision of St. Petersburg State University of Engineering and Economics administration

and other RF regions

Institute of Social and Economic Research of Ufa Science Centre of RAS (Bashkortostan Republic)

The decision of Presidium of the Higher Attestation Commission of the Russian MES (№6/6, dated 19.02.2010) the journal is included in the list of leading scientific editions, recommended for publication of the main results of dissertations for the degree of Doctor and Candidate of Sciences.

ISSN 1998-0698

Internet address: **http://esc.vscc.ac.ru**

CONTENT

FROM THE CHIEF EDITOR

DEVELOPMENT STRATEGY

SOCIAL DEVELOPMENT

BRANCH-WISE AND REGIONAL ECONOMY

NATURE MANAGEMENT

MODELING AND INFORMATICS

CONTINUING THE THEME OF THE PREVIOUS ISSUE

FROM THE CHIEF EDITOR

Vladimir A. ILYIN
Doctor of Economics
Professor
Honored Scientist of the RF
Director of ISEDT RAS
ilin@vscc.ac.ru

From the Chief Editor

By August, 2011 three years had passed since the moment when the world financial and economic crisis had taken place in the Russian Federation and influenced its economy greater than in the leading advanced states. It was the result of frailty and inefficiency of the extremely liberal financial and economic policy of the country.

Also in August, 2011 the 20th anniversary of forming the State Committee on Emergency for the Soviet Union's Rescue was observed, to be more exact, its imitation which became the starting point of the final disintegration of the USSR.

The mechanisms for the Russian economy's liberalization started in the Russian Federation afterwards, were unprecedented in their rapidity and in the scale of the public property's privatization. The shock therapy and the default of the year of 1998 brought the country to the state when the imperious elite had to search the candidate for Yeltsin's replacement. Taking the post of the President of the Russian Federation by V. Putin in 2000 considerably stabilized the country's position in many vital spheres.

As S.G. Kara-Murza marks, within the recent decade "...the situation, as they say, was "frozen", turned into the mode of the slowed down degradation. It made people calm down a little". "Putin's stabilization program, maybe, became the best model in the history of the market reforms ... But step by step it turned to the stagnation model"[1]. Kara-Murza gives a number of diagrams which precisely show the dynamics of de-industrialization and easing of the national economy on a number of major indicators.

The fact that the model of the market reforms existing in the Russian Federation leads to stagnation, is also understood by the Prime-Minister V. Putin who started the updating of the Concept of the long-term socio-economic development of the country till 2020, approved by the Government in 2008, within the new political cycle of parliamentary and presidential elections. As V. Putin announced at his last report in the State Duma: "...with

[1] Kara-Murza S.G. It's a difficult task to elaborate the acceptable doctrine till 2020 within the existing political system // Russia's Strategy 2020. Particular point of view. "Round Table" Discussion's Materials. – M.: Scientific Expert, 2011. – Pp. 92-93.

Figure 1. Indexes of the gross national product, capital investments into the fixed capital, retail commodity circulation in Russia, 1990 = 100

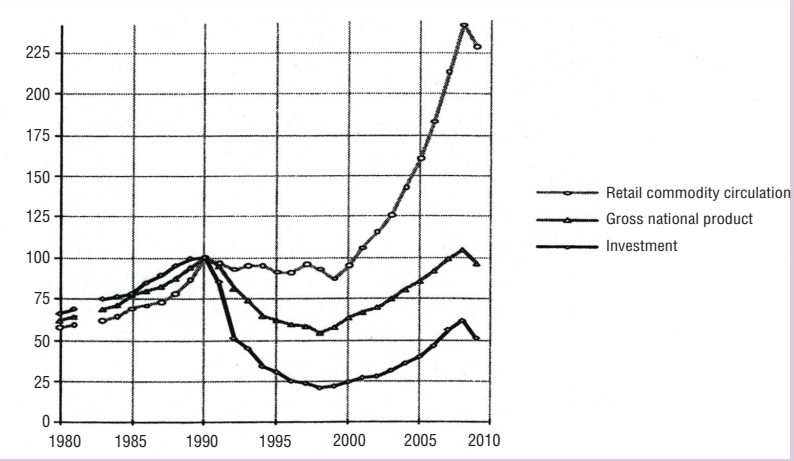


Figure 2. Production of bearings in Russia, million units

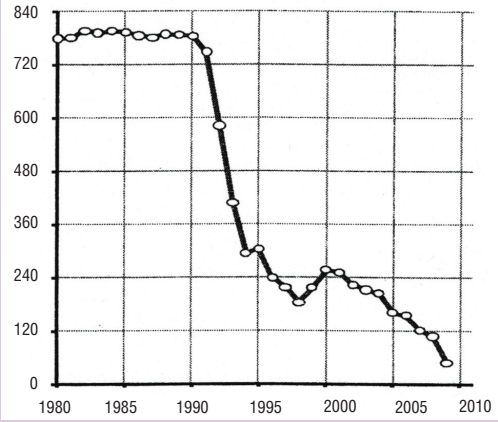
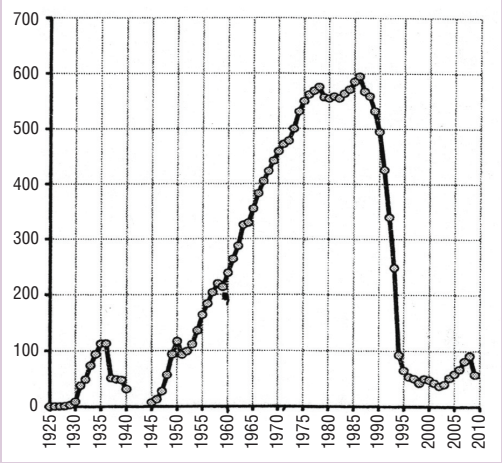


Figure 3. Tractors' production in the USSR and in the CIS, thousand units



the participation of experts we are completing "Strategy 2020", first of all the question is the search of the new growth reserves, the correct priorities' arrangement".

One of the experts, academician V.L. Makarov, notes: "The Prime-Minister spoke in details, that nowadays Russia needs stable development. It means that everything that was made was more or less correct, and it is just necessary to make various correct amendments. Once thousand experts are involved, it is clear that correct amendments will be made in any case. But the general line will apparently remain the same"[2].

Professor S.S. Sulakshin considers that "... for today the liberal and, we shall tell directly, the deadlock model represented in the concept of the year of 2008, is reproduced in the materials of the expert group under V.A. Mau's and E.G. Yasin's guidance, even with the elements of radicalization.

This model is semi-sovereign because the major economic regulator – the Central Bank of Russia – carries out the issue according to the uncontrollable Russian circumstances. It's asocial because it refuses redistribution and the progressive taxation.

[2] Russia's Strategy 2020. Particular point of view. "Round Table" Discussion's Materials. – M.: Scientific Expert, 2011. – P. 59.

It's liberal, monetary, raw export, excessively open, because the mechanisms of disproportions' alignment are not created. This model is unguided, because it is based on the principle of the least state's participation in the economy and in the social affairs. It is refractory to innovations, because the motivational mechanisms are not created by the state; business will be never motivated for venture charges. Such approach is incompatible with the success of the country's development"[3].

The success of the socio-economic development of the state is also incompatible with the presence in the country the system of the apparatus and state political corruption perfectly described by Yu. Boldyrev[4].

The first kind – apparatus corruption – is the kind which resists the bodies of the internal state control's system. This kind's suppression consists in application of the formalized mechanisms of government which are connected, on the one hand, with providing the prospects of the carrier growth and adequate level of the state employees' payment (including high-rank officials), and on the other hand, will consist in realization of the principle of the state employee's corruption presumption, demanding special scrupulousness of the official's activity within legislative specifications. The second kind – state political corruption – represents the state which is much heavier as it is the tool for various shadow and even legal forces which aspire to subordinate the actions of state institutes to the private interests, contrary to the interests of the society. Unfortunately, for today our society is separated into parts. It is destroyed by anomie, which is the refusal of the moral and social norms, obligations, conscience, and which is the common phenomenon.

Figure 4. Deep exploratory drilling on oil and gas in Russia, thousand m

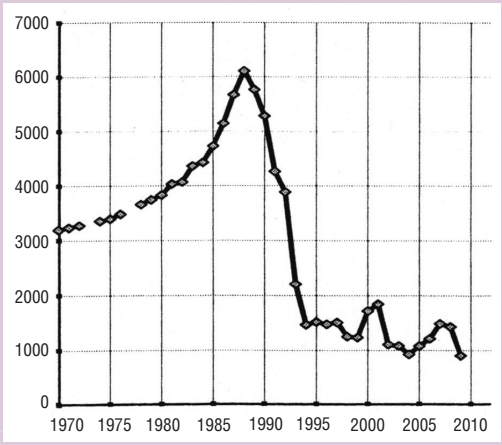


Figure 5. Cattle in Russia, million heads

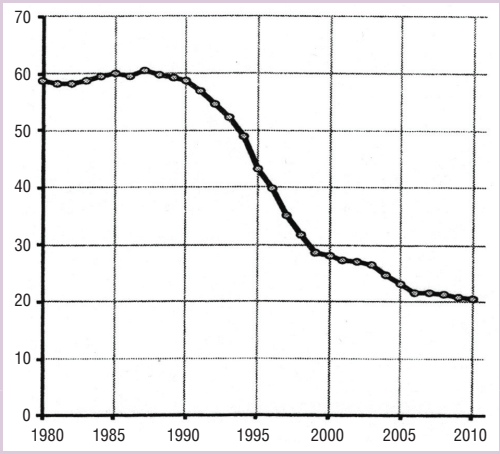
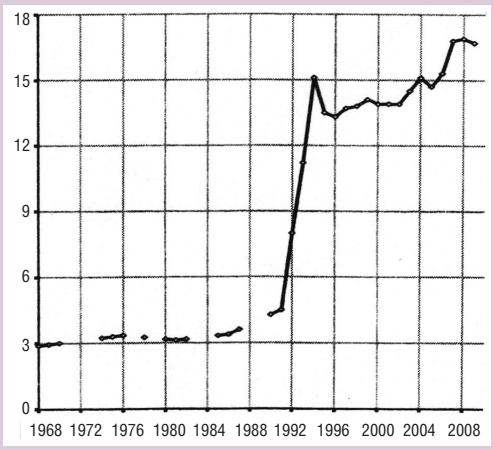


Figure 6. Stratification of the society under incomes in RSFSR and in the Russian Federation: share factor of differentiation



[3] Ibid. Pp. 42-43.

[4] Boldyrev Yu. Corruption as the system feature of the post-Soviet Russian capitalism // Russian Economic Journal. – 2011. – № 2. – Pp. 14-34.

Without the statement and the solution of the basic problems on values, validity, solidarity and unity of the society, and about its purposes and the advance ideology it is impossible to overcome the state political corruption.

To find the way out of this vicious circle, the public contract containing the results of active dialogue among the authority and the society, is required. Probably, in a year (in August, 2012) it will be possible to judge on the real facts how "The All-Russia Popular Front", organized by the leader of the party "United Russia" V.V. Putin, will solve this problem.

j

Not receding from the already developed tradition, we represent the results of the monitoring estimations of public opinion on the condition of the Russian society. *In tables 1, 2 and 3* the comparison of some parameters of the social health and political mood of the population of the Vologda Oblast is represented.

The accounting period of monitoring results of interrogation is August, 2011. The base for comparison is the average data received from four measurements, carried out by the ISEDT RAS for the period from January till August, 2008. Apparently from the given tables, it is not possible to achieve the parameters of the pre-crisis period yet.

j

As well as in the previous issue, in this one the rating of the previous publications in the journal is resulted.

The editorial board plans to devote the following issue to the results of the organized by the ISEDT RAS, by the Branch of the social studies and by the Government of the Vologda Oblast VI Scientific and Practical Conference "Strategy and tactics of economic reforms' realization", which will be held in Vologda in Octouber, 2011 in the status of the international event.

Table 1. Estimation of the social condition

In % to the total number of interrogated people		Dynamics indexes	
8 months 2008	August 2011		
Usual condition, good mood			
70.2	66.7	**0.95**	
Feeling stress, irritation, fear, depression			
22.1	24.1		**1.09**
Everything is not so bad, it's difficult to live, but it's possible to stand it			
81.0	73.2	**0.90**	
It's impossible to bear such plight			
10.9	11.3		**1.04**
Consumer sentiments' index			
107.5	92.9	**0.86**	
The share of people who consider themselves to be poor			
39.8	40.8		**1.03**
The share of people who consider themselves to have average incomes			
50.7	46.2	**0.91**	

Table 2. Estimation of the authorities' activity

Chain of command	Approval i n % to the total amount of the interrogated people		Dynamics' index	Disapproval in % to the total amount of the interrogated people		Dynamics' index
	8 months 2008	August 2011		8 months 2008	August 2011	
President of the RF	75.0	62.1	0.83	9.3	19.7	**2.12**
Prime-Minister of the RF	76.4	60.4	**0.79**	10.4	21.4	**2.06**
The Vologda Oblast Governor	57.8	49.5	**0.86**	19.9	24.4	**1.23**

Table 3. What party expresses your interests?

Parties	8 months 2008	August 2011	Dynamics' index	
United Russia	40.5	33.7	**0.83**	
CPRF	6.8	10.0		**1.47**
LDPR	7.7	7.5	**0.97**	
Fair Russia	5.0	2.7	**0.54**	
Other	1.4	2.4		**1.71**
No party	20.1	28.9		**1.44**
It's difficult to answer	13.7	14.8		**1.08**

The first 10 articles according to the frequancy of their viewing for the recent 12 months (September 2010 – August 2011)

Rating	Article	Total time of reading, minutes for the whole period *	Number of readers for the whole accounting period*	Number of views for the recent 12 months	Number of views for the recent 3 months	Average time of viewing (minutes) for the whole accounting period*	Issue	Release date	Authors
1	Development of the regional clusters' system	9742	360	141	11	27	№ 1	March 2008	Uskova Tamara Vitalyevna
2	Diversity strategy of the regional economy	5665	267	137	5	21	№ 1	March 2008	Iogman Leonid Genrikhovich
3	Problems of local budgets' and municipal property's formation	4083	229	197	4	18	№ 1	March 2008	Valentey Sergey Dmitriyevich Khabriyeva Taliya Yarullovna
4	Tendencies and perspectives of the socio-economic development of the Murmansk Oblast	3181	173	75	2	18	№1	March 2008	Didyk Vladimir Vsevolodovich
5	Intellectual resources as the factor of the innovational development	2390	112	112	7	21	№ 11	September 2010	Ilyin Vladimir Alexandrovich Gulin Konstantin Anatolyevich Uskova Tamara Vitalyevna
6	Dynamics of the socip-economic development of Komi Republic	1828	111	109	2	16	№ 1	March 2008	Lazhentsev Vitaly Nikolayevich
7	Methodology of the comparative estimation of the scientific and technical potential of the region	1788	78	78	4	23	№ 12	December 2010	Zadumkin Konstantin Alexeyevich Kondakov Igor Anatolyevich
8	Small-scale business as an important reserve of the mono-town development	1534	80	80	1	19	№ 11	September 2010	Tkachuk Stepan Nikolayevich
9	Strategic reserves of the increase in labor productivity in the regional economy	1074	53	37	1	20	№9	March 2010	Ilyin Vladimir Alexandrovich Gulin Konstantin Anatolyevich Uskova Tamara Vitalyevna
10	Agriculture of the European North: the results of the All-Russian agricultural census	863	43	43	1	20	№ 11	September 2010	Ivanov Valentin Alexandrovich Ivanova Elena Valentinovna

* Account of the site's viewing has been carried out since 2009, December, 12

The nature of large-scale financial and economic crises and latent world management

The material presents in abbreviated form the contents of the report, made on the basis of collective research at the Center for Problem Analysis and Public Management Projecting and submitted at the standing Research Seminar in the Center (head – Doctor of Physics and Mathematics, General Director of the Center S.S. Sulakshin).*

Yulia A.
SAFONOVA
Head information-analytical department of the Centre of problem analysis and state-management design, Moscow
frpc@cea.ru

In the most general sense crisis (ancient Greek krisic – a turning point) is a sharp change in the dynamics of a process.

In economics, crisis is considered to be such a change in the dynamics of economic indicators, which have resulted in serious damage to the public and the national economic life.

However, the broad definition in public discourse is the cause of some confusion, when researchers and analysts pose varied effects of crises (bankruptcy, unemployment, economic recession, etc.) as their cause, which was well evident in media coverage of the global financial crisis in 2007 – 2009.

It should be noted that so far there are three basic explanatory models of world crises.

They are:

1. The model of stochastic instability of the global market.
2. The model of a cyclic wave resonance.
3. The model of manageable crisis.

The findings of the research held in the Center indicate in favor of the validity of the third model.

There is no convincing bind of market conditions to the phases of cyclical crises. Neither in the phase of its heating or cooling phase nor in a transition phase. They are statistically evenly.

This suggests that the market probably does not contain an implicit cause of stability disruption. In the last resort, it can create the conditions for this breakdown, but something has to be a trigger for crises.

* The full report is published in the edition: World financial and economic crises and global latent world management [Text]: materials of the research seminar. – M.: Nauchny expert, 2011. – Issue 3. – 168 p. In the publication of the report the author's numbering of footnotes to references, and the numbering of figures is kept.

According to the recent report of the U.S. Financial Crisis Inquiry Commission, promulgated at the end of January 2011, in the case of the last crisis "the actions and inactions of people, but not Mother Nature or negligently made computer models" served as the "rigger"[5].

It should be noted that until recently the version of the handling of the crisis was the lot of conspirologists or of those who were heavily labeled as those. In public discourse, another explanatory model was widely replicated, namely the model of stochastic instability of the global market, according to which the global financial crisis of 2008 is explained by the following causal chain.

In the U.S. economy there was over loaning of consumer mortgage market which have exceeded the capacity of a recovery. There occurred an imbalance of the financial balance equilibrium. There was a chain of bankruptcies from Funny May and Freddie Mac. Large banks were drawn into the chain there, as a result the entire global financial system, and then economics.

But let us ask the question inconvenient for this explanatory version. Can a tiny in size fluctuation by itself lead to a global crisis? The total amount of write-downs of U.S. banks because of toxic mortgage assets according to the IMF is about 250 billion U.S. dollars[6]. When it is compared with the global GDP, which is estimated by the CIA about 62 trillion U.S. dollars[7], or the assessment of the global financial working capital (600 trillion U.S. dollars) we can conclude that even if the entire U.S. mortgage "imploded", then for the world's financial system it would be similar to that a butterfly fluttered and flew of an elephant. The volume of fluctuations amounts to a figure substantially (several times) less than 0.4%.

In fact, the financial crisis was the result of a significant imbalance between the real (physical) and virtual or financial economies. However, while many experts, including members of the above-mentioned U.S. financial crisis Inquiry Commission, reduce the imbalance to the financial performance of individual companies ("since 1978 to 2007 the amount of the financial sector debt increased from 3 to 36 trillion dollars, an increase of more than 2 times, if we estimate it in relation to GDP")[8], then from our point of view, the essence of this imbalance lies in the basic discrepancy between the proportions of GDP in the U.S., the world's gross national product and relevant financial capital.

While senior government correlate emissions of the national currency with the real GDP.

Discrepancy of one to another on a global scale causes a crisis. The responsibility in this case lies with the global issuer of currency, the U.S., in the person of the independent Federal Reserve System (Fed).

This is the Fed that regulates the amount of dollar emissions, making decisions on the issue of cash for the purchase of government securities, thus lending to the U.S. government with the money printed by it *(fig. 7)*. Interest payments on the bonds received by the Fed make hundreds of billions of dollars and do not appear in any reports. To be able to pay interest, the U.S. government issues additional bonds and sells them to the Fed. Thus, *there is a typical financial pyramid scheme, and the United States themselves* who are the debtors of its own Central bank are under an immediate threat of collapse.

It should be emphasized that the main beneficiaries of the system established by the Federal Reserve is not the state. In essence, the

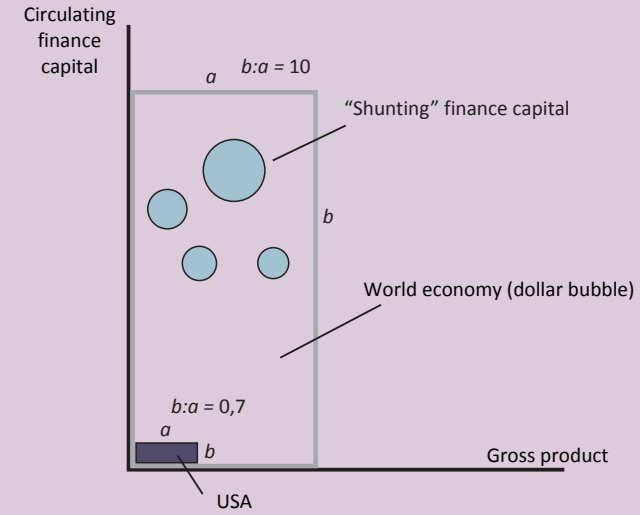
[5] The Financial Crisis Inquiry Report / The Financial Crisis Inquiry Commission: Official Government Edition. January 2011. URL: http://www. gpo.gov/ fdsys/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf

[6] Financial Market Turbulence: Causes, Consequences, and Policies/ Global Financial Stability Report // International Monetary Fund. World Economic and Financial Surveys. October, 2007.

[7] The World Factbook / Central Intelligence Agency. URT: https://www. cia. gov/library/publications/the-world-factbook/geos/xx. html

[8] The Financial Crisis Inquiry Report / The Financial Crisis Inquiry Commission: Official Government Edition. January, 2011. URL: http://www. gpo.gov/fdsys/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf

Figure 6. The proportion of the U.S. GDP, world gross product and the related financial capital

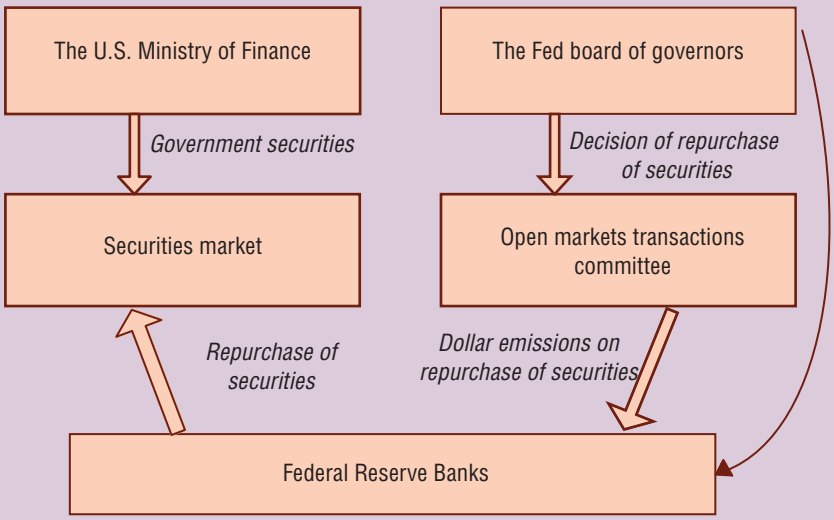


Source: Carios Lessa. The crisis in the USA and its repercussions in Brazil and the World. Oct. 20, 2008.

Fed is a unique institution in the world practice combining the elements of private corporations and government structure.

Thus, the state has a definite influence on the activities of the American Central bank. The Board of Governors of the Federal Reserve is an independent government agency (its status is similar to the status of the CIA and NASA)[9]. All seven of its members are appointed by the President and confirmed by the Senate. Moreover, the law fixed the possibility of dismissal of the President of the Federal Reserve by the President[10]. The Fed Board of Governors annually report to the House of Representatives[11]. Public Administration of the U.S. General Accounting has the right to

Figure 7. The mechanism of the Fed dollar emissions



[9] A-Z Index of U.S. Government Departments and Agencies// USA. gov. URL: http://www. usa.gov/Agencies/Federal/All_Agencies/E shtml

[10] U.S. Code. Title 12. § 242.

[11] Federal Reserve Act, Sec. 10.

audit the activities of the Federal Reserve[12]. Profits earned by the Fed as a financial and issuing center of the U.S. is fully transferred to the Ministry of Finance, with the exception of the amount going to pay dividends to member banks of the System[13]. However, *these levers of the state's influence on U.S. Central bank are exhausted.*

To begin with, the "body" of the Fed, 12 Reserve Banks, through which the goes the infusion of issued dollars in the global economy, as well as buying and selling securities, are *private organizations* that is officially recorded by court decision[14]. Only one third of the members of their board of directors are appointed by the indirect participation of the State Board of Governors of the Federal Reserve[15]. 2/3 are elected by the shareholders. This means that the Fed is in fact a corporation.

Key decisions concerning the issue of dollars, buying or selling securities are made *not by public agency – the Board of Governors but by the open markets transactions Committee,* which, along with the members of the Governing Board includes the five Directors of the Federal Reserve Banks. Once a year, the Fed Chairman delivers a report to Congress, but this procedure is largely formal. The activity of the Fed is largely opaque. The formal right of its audit belongs to the U.S. State General Accounting Administration[16], but in making key decisions (Fed international activities and its financial policies) the Board of Governors and the open market transactions Committee virtually are not accountable to anyone. *Nobody, not even the President has the right of veto on the Fed decision.*

So we can conclude that the institution of financial system management, the Fed, formed in the United States since 1913 is actually a private entity. It includes the individual elements of state regulation, such as the appointment of the Board of Governors by the President, but the almost complete lack of accountability of the legislative and executive power, the extreme degree of opacity, and the fact that the banks constituting the Federal Reserve are joint stock commercial structures, clearly indicate the private nature of the Fed.

As a result, we can say that managing the current global financial system now (at least in terms of regulating the money supply) is made from a single center, which represents the interests of individuals. And over time, not taking into account the issues of global economic stability (an example of which were multiple crises), this group of individuals increases the rates of dollar emission.

However, the question arises: what is the interest of the Fed (and those "beneficiaries" who stand behind it) in creating crises?

To answer this question, we must recall that the Fed has its unprecedented liquidity commodities – the dollar. Accordingly, as with any seller, the Fed's chief interest lies in profitability of business.

Historically, this rate of return depended on the psychological type of business *(fig. 10)*. Marx said, "provide 10% of profits and capital agrees to any application, 20% – it becomes lively, 50% – it is ready to break its head, 100% – override all the laws, 300% – there is no crime for which it would not risk even under threat of gallows"[20].

Looking at the dynamics of dollars emission (see above), and taking into account the profit rate (PR) of the Fed business that is easy to estimate, based on the fact that the issuer is spending 4 cents on printing of one hundred dollar note, and gets the real goods for 100 dollars, it is easy to define what type of business the members of the Federal Reserve and its "beneficiaries" have chosen for themselves:

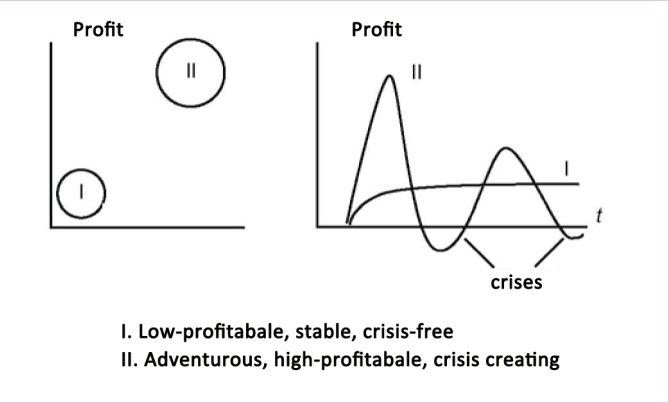
$$PR = (100\text{-}0.04) / 0.04 \times 100\%.$$

Excluding the details (value of interest rate, regional dollar exchange rate, real-activated volume of the money supply) it is obtained by 250 000%!

[12] Section 31 USC 714 of U.S.
[13] Federal Reserve Act, Sec. 7.
[14] Kennedy C Scott V. Federal Reserve Bank of Kansas City, et al, 406 E 3d 532.
[15] Federal Reserve Act, Sec. 4.
[16] Section 31 USC 714 of U.S.

[20] Marx K. Capital // K. Marx, F. Engels. PSS. Vol. 23, P. 770.

Figure 10. Two psychological types of business



As a result, the uncontrolled emission of dollars, carried out in pursuit of profit inevitably leads to the fact that there is too much of this "commodity" in the world market. This unbalances the supply and demand, leads to a drop in the value of "dollar" and therefore forces a "seller" to any actions by virtue of his genuine interest.

For example, to create artificial scarcity of dollars that otherwise might be called a lack of liquidity, i.e., the financial crisis.

* * *

Thus, our hypothesis is based on the assumption of stable behavior archetype of the global issuer. It consists in an effort to maximize profitability. In this case the dominant model of the yield is as follows:

Yield ~ (nominal) × (physical) × (financial activities).

Nominal yield (Y) is determined by the refinancing rate (R) and the amount of money (M + ΔM). Here M is accumulated money. ΔM is current emission growth.

Physical yield is determined by the possibility of exchanging of unsecured "notes" for the real benefits. It characterizes the regional currency dollar exchange rate in countries and regions of exchange (E).

Financial activity takes into account that not all the issued and implemented in the global exchange money is "working".

However, for creating a financial crisis as a shortage of working capital it is needed to manage the global money supply. For this purpose, the issuer has an instrument in the form of emission. But it is limited because it "works" only on a positive growth in money supply and can only reduce them to zero. Therefore, for the organization of crisis it is necessary to use the mechanism "freezing" the turnover of the money issued at the command of the latent center. Obviously, in the world there should exist major financial operators relating to the decision-making center, which withdrawing capital from the market or re-activate them at its command. The coefficient which describes these states can be called "financial activity" and its dynamics can be fixed by the world's investment activity, the statistics of which are available (F).

We emphasize that the assumption of coherence of major financial operators does not seem too weird, because today there are many companies in the world, financial power of which is comparable to the state's one. Thus, according to estimates by David Rothkopf, in 2008 in the list which included all the countries with GDP exceeding 50 billion dollars, and companies with similar annual revenues, only 60 positions were occupied by the states, and 106 by the large companies[21].

[21] David Rothkoph. Superclass: The Global Power Elite and the World They Are Making. N-Y, 2008. P. 34.G.

However, according to Forbes, in 2007 there were only two dozens of financial institutions in the world whose assets exceed 1 trillion dollars. And the assets of the largest 50 institutions accounted for 48.5 trillion dollars, i.e. more than one third of all global assets. In other words, the possibility of "collusion" between the leaders of all 50 financial institutions (or parts of them) exists.

It should be borne in mind that all major financial corporations are the flagships of their industry, and their time-dependent behavior (for example, the sharp decline of financial activity) can easily provoke panic among the smaller players of the stock market, which further enhances the effect of a liquidity shortage.

As a result, the assessment of profitability of the issuer is as follows:

$$Y \sim R \times (M + \Delta M) \times F \times E.$$

It should be emphasized that the global issuer itself directly controls the rate of refinancing and emissions. Financial activity can be managed by the one who created the appropriate shunting financial institutions and capital in the world, bringing the network, for instance, by the clan principle. Dollar exchange rate in the regions can only be handled politically. Or as the market demand is controlled. The more the goods – the demand is saturated. The more expensive the goods –the demand is falling. The less the goods (a deficit is created) – the demand is growing. The price of the dollar-product is refinancing rate. The volume of the dollar-product is the issue and the financial activities at the command.

In other words, the issuer, as well as the latent club of beneficiaries, which, as will be shown later, is behind it, can manage all these parameters somehow.

Those parameters which are controlled directly respond to the "commands" right away. Those that are managed indirectly must respond with a delay.

* * *

So, if we consider the dollar as a commodity, the supplier of this commodity is the U.S. Federal Reserve System, like any salesman, has three goals.

1. Sell as much goods as possible.
2. Sell goods as expensive as possible.
3. However, considering the special feature of this goods (it can be exchanged for real goods), there is another problem – how to make a dollar more expensive in terms of commercial content, i.e., that for a dollar one could buy as much real wealth as possible.

To achieve these objectives, the issuer and its beneficiary club have the management tools discussed above. It is necessary to raise the rates, the volume of emissions, the amount of active money in the world, to achieve growth of the dollar in regional currencies. And in the event of an uncontrolled fall of profitability (due to market saturation and falling demand for goods) it is necessary to arrange deficit, i.e., the global financial crisis.

Figure 12 presents a logical model of how the events should develop.

The behavior of the Fed and its beneficiaries is modeled in a specially formed timeline of three phases. The first phase is pre-crisis. The second is the crisis itself, and the third phase is the post-crisis.

In the first phase of the issuer seeks to maximize its profitability. It increases the rate of refinancing, the volume of emissions and, in general, tends to increase the available factors increasing its profitability. As a result, this leads to the fact that the demand for the expensive and excessive commodity begins to fall. Dollar rate and financial activity with its use are falling. Accordingly, the yield begins to fall. The process has overheated. The issuer and its beneficiaries have a problem – to increase the demand, exchange rate and activity. For this purpose the crisis is organized. That is in the second marked phase:

1. The issue is abruptly reset (deficit is created, ΔM decreases).
2. A command to the shunting financial

institutions to reduce financial activity is given (cash flow shortage is increased, i.e., the effective M is decreasing and F respectively). In fact the global crisis has begun.

3. The refinancing rate for the recovery of demand for dollar-product is reduced.

In the second phase the measures taken have the result. The growth of rate and financial activity starts. Decrease in profitability is stopped. Its recovery begins.

In the third, post-crisis phase profitability is restored. And the standard cycle of crisis is ready to start warming up next return along the same lines. Moreover, statistics show that by the end of the third phase the issuer's rate of return exceeds the pre-crisis phase.

* * *

It remains only to find out who the owners of the Fed are? Who are the real "owners" of the United States and the world? What is the beneficiaries club? And is there a way to prove his existence?

In this case, we have tried to reconstruct this club on circumstantial evidence, based on an analysis of biographies of chairmen, members of the Board of Governors and the heads of Reserve Banks of the Fed for the maximum available period of time.

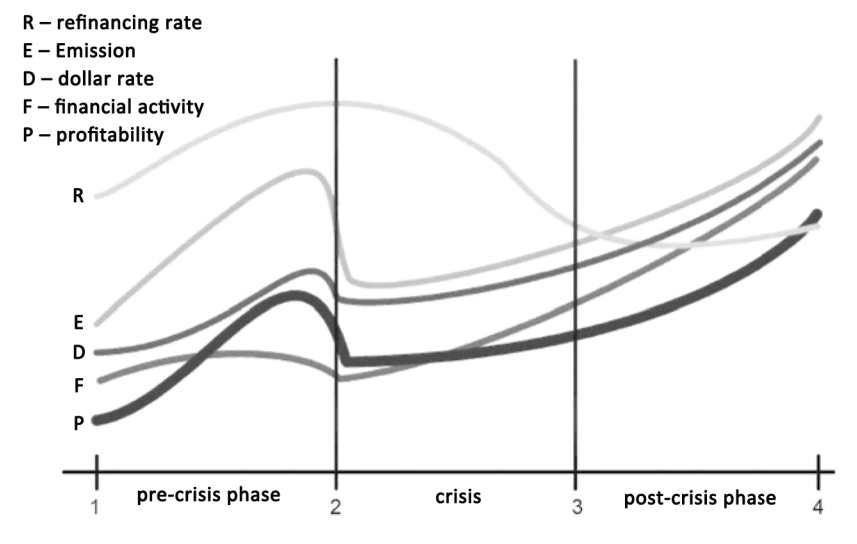
We have already said that the U.S. Federal Reserve System is a non-state organization. It is not only independent from any of the powers of the country, but in its political weight in some ways excels even the U.S. President and other executive bodies.

In particular, it follows from the analysis of the actual timing of the duration of the tenure of U.S. presidents and chairmen of the Fed. De jure, in both cases the period is 4 years (with the right to re-election). However, in practice, since 1933, almost all (except one) chairmen of the Fed "outstay" the presidents of the United States, keeping their position even when changing the Democratic and Republican administrations.

High political significance of the Fed in comparison with other authorities in the U.S. is even more clearly demonstrated by the principle of the political appointment of members of the Board of Governors of the Federal Reserve. The term for which they are appointed is 14 years, which, in essence, makes the policy of the Board independent of the changes that occur as a result of a change of Presidents and the majority party in Congress.

Based on analysis of the career graphs of the Fed's Board of Governors members, not the most highly qualified and experienced

Figure 12. The model of a standard three-phase cyclical crisis



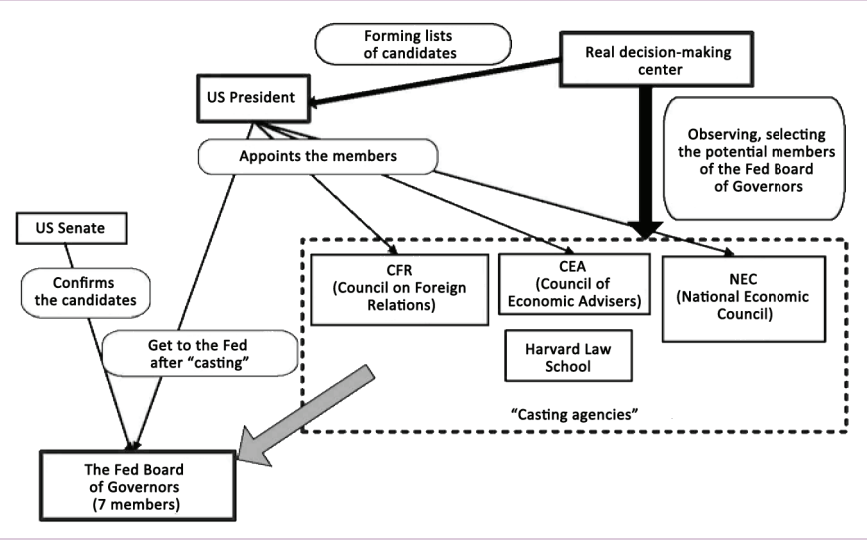
specialists in the field of finance achieve such a high position. Unlike the presidents of 12 Federal Reserve banks, the career ladder of which is basically fairly long, and its stages are successive (e.g., from a mid-level employee at a bank in the district through a series of extended rises to the top managers of a major bank, and then the President of the Federal Reserve Bank), many members of the Fed Board of Governors cannot boast of solid experience. Their careers are often characterized by sharp jumps, as a result of which they suddenly find themselves on the top of financial Olympus.

The presence of two different principles of human resource recruitment within a single organization, as a result of which more experienced personnel are in the executive branch, and strategic planning (in the Board of Governors and the Federal Open Market Committee) is in the power of people giving rise to doubt about their age and professionalism (even in the expert community in the U.S.), indicates that may be having considerable powers de jure, de facto in decision-making the Board of Governors follows the directions coming to it from outside, say, from a certain latent decision-making center.

Logically reconstructing the position of this "real decision-making center", in the coordinate system of the U.S. Government authorities – the Fed, we can assume that it has considerable political weight, which allows it to exert a decisive influence on the U.S. President in the selection of candidates for the Board of Governors of the Fed (the principles of this selection are nowhere clearly spelled out), and their appointments.

In this case, analyzing the biographies of the Board of Governors members having in common in their careers the fact of membership in a number of expert bodies of the President of USA (which immediately is followed by the appointment of the Fed Board of Governors), one can assume that these structures (CFR, CEA, NEC) are a kind of "casting agencies" *(fig. 17)*. And the selection is carried out by representatives of the "real decision-making center". For a year or two they have time to look at potential candidates, test them, and, if the subjects will be tested, "advise" the President to appoint them to the Fed Board of Governors. The members of the Board of Governors owing their career to the representatives of the "real decision-making center", remain loyal to their benefactors, and probably are willing to listen to their "advice" under the leadership of the Fed.

Figure 17. Position of the real decision-making center in the coordinate system: the U.S. Government authorities – the Fed



Staying in the shade, the latent "real decision-making center" controls the emission Fed policy, the activity of the shunting world financial operators and in the case of depreciation of the dollar and reducing the profitability of the entire system initiates financial crises. At the same time, the anger of the American and world public whose welfare suffers from these crises goes to a public figure of the Chairman of the Federal Reserve. And it is also an element of the structure.

The study of biographies of Federal Reserve chairmen since 1913 to date shows that in some cases due to financial crisis the Fed chairmen leave their posts, being blamed for the crisis in the eyes of the public. New chairmen came to their places, which lead the country out of the serious condition, but actually started exactly the same crisis cycles.

As a result, public figures at the helm of the Fed succeeded each other, but in practice they ensured continuity of the course chosen by the real decision-making center, which remained in the shadows, beyond the criticism and suspicion.

Therefore it is not surprising that in the future the public condemnation of those Federal Reserve chairmen "who failed to avert a crisis" practically had no effect. Despite their "shortsighted policies" at the Federal Reserve, retired chairmen of the Board of Governors and its members continued their successful financial career in the walls or the U.S. Treasury, or even "with a promotion" going into formal and informal international institutions such as the "Group-30", World Bank, Bilderberg group, the Trilateral Commission.

The described system is closed and, with experience in managing the U.S. finances and then global processes in the world, former members of the Board of Governors of the Fed join the ranks of the real decision-making center.

In any case, the system adjusted in such a way appeared to be very stable and incredibly efficient (in terms of the objectives of those who control it).

Despite the very extensive and harsh criticism, regularly sounding to the Federal Reserve, both within the U.S. and in the world, the position of this non-state organization is still quite strong.

* * *

What else can prove the liability of the Fed and the latent beneficiaries club for the organization of the of world crisis? This is a well-known principle of "qui prodest". The logic of the proof is obvious. If the author of crises is the U.S., then the least damage from the crisis should arise for them. The damage can be estimated from the known statistical series. One method included the assessment of decline in GDP of one or another country. *Figure 20* shows that the U.S. had damage only in 9% of the crisis over the period 1960-2010. Russia, for example, experienced damage in 67% of cases during the years of its new economic model of the country.

The second method included an assessment of the damage not only in GDP, but the total damage in GDP, inflation, unemployment and investment. Weight of the importance of these indicators assumed to be equal by experts. Result of the calculations is shown *in figure 21.*

As we see, in this case, the U.S. in no way can be referred to the countries suffering the most from the crisis.

And finally, the most interesting evidence is given by the statistic of global crises and the separate American crises.

The crises in America are becoming increasingly rare, but the crises in the world are more often.

So let us once again ask the question: "qui prodest"? We believe that the answer is obvious, as well as the understanding of who is the source and the controlling power of the global financial crises.

* * *

In conclusion, let us focus on the issue of predicting the next large-scale crisis. It should be noted that the difficulty of predicting large-scale social systems is due to two factors.

Figure 20. Comparison of damage from global financial crises for different countries of the world in GDP

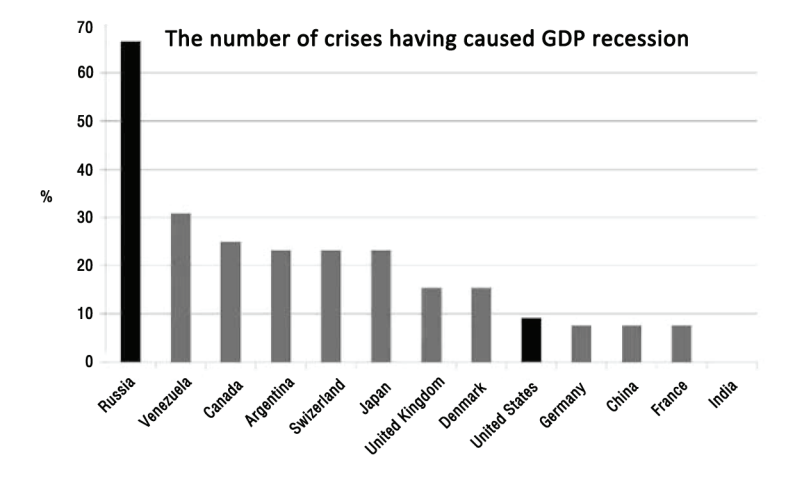
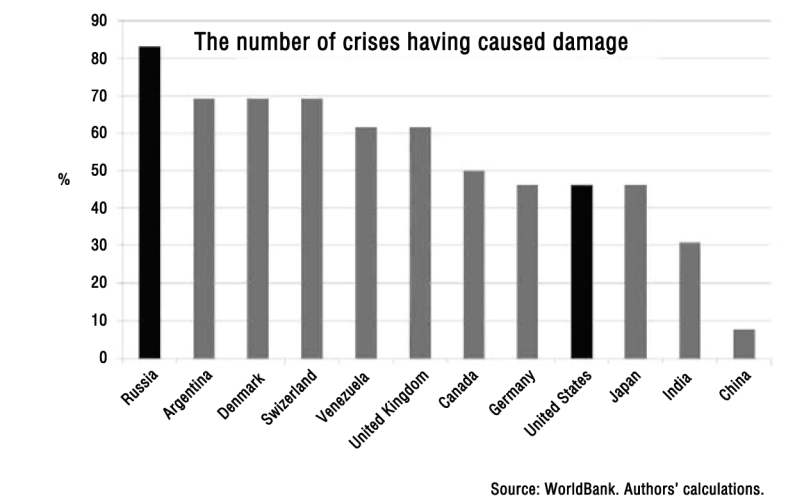


Figure 21. Comparison of total damage from global financial crises for different countries of the world in GDP, inflation, unemployment and investment

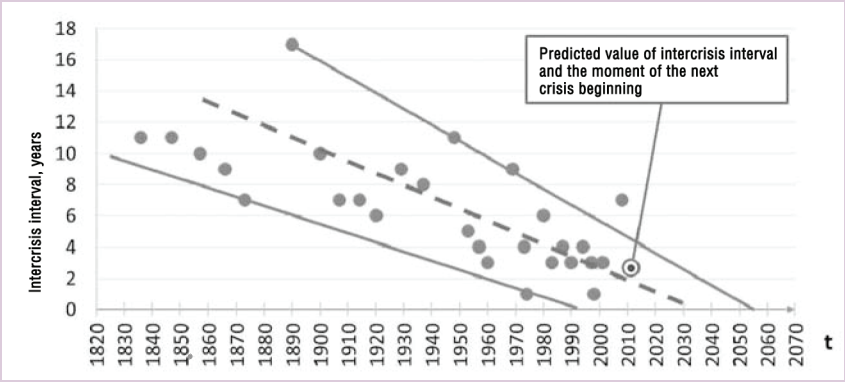


First of all, an incredibly large is the number of simultaneous ongoing processes that mask and noise the monitored result, making it almost a "random" process, which seems to be no pattern. This complexity is partly overcome by the methods of statistical smoothing, filtering, selection of dominants out of noise. Statistical mathematical methods are well known.

Second, in human relations there is always a "will" of people. It is fundamentally subjective. Regularity in space of will occurs when there are statistically many interacting people. However, if it is about one "super governor" that may affect the macroeconomic and global dimensions of development, the subjectivity is of principle. There may be a group of "super governors". And their decisions may be subject to whatever the logic of behavior that would seem impossible to predict.

Figure 23 demonstrates the historical relationship of time intervals between crises. It's just a statement of the known facts. But one important thing results from this showing a pattern that can be used to predict the next crisis.

Figure 23. Historical change of the time interval between crises



It is a probabilistic timing of the next crisis. Figure 23 shows that in recent years the interval between the beginning of a crisis and the beginning of the previous one was on average 3 – 4 years. Therefore, if the latest crisis began in 2008, the following should be expected at the turn of 2011 – 2012. This prediction follows from the history of world crises.

However, above it was mentioned, that the human will acts in world history, which can be not only malicious, but aimed to achieve benefits for people. In the context of prevention of new financial crises, it appears that this will should be aimed at creating a global mechanism responsible for the global issue of money, financial derivatives, their security, their taxes, etc.

Mandatory conditions for peace "discharge" of crises should be the following innovations:

- International monitoring and management of the global emission of the world's reserve currency. Ensuring of this currency.
- Limiting the generation of quasi-money in the form of receipts or derivatives. For example, the requirement of their balance sheet accounting and taxation affecting enough.
- Reconstruction of the World Bank and the International Monetary Fund.

As for Russia, then in case of realization of the above conditions, it could also play a role in the new processes. However, in the current uncertainty on the further restructuring of the global financial architecture the country's leadership should ensure its maximum preparedness to the probability of a crisis. To do this it must develop a plan of preparedness of businesses to the global financial crisis. For its part, the Problem Analysis Center is ready to make the following suggestions to create the plan.

Proposals to create preparedness plan of economic entities

1. Study in detail how the crisis of 2008 developed in Russian economy over time. What has changed for the entity in the demand side, government subsidies and investment plans. How changed the delivery, financial arrangements and conditions for the company as an employer. What other difficulties we had to encounter.

2. Restore the details of the company's anti-crisis measures, its good and bad responses, study the experience of other companies.

3. On the basis of the audit there may be developed a preparedness plan of the company in a list and sequence of its anti-crisis measures in the event of a crisis.

4. In view of the obtained scenarios and the made preparedness plan it is necessary to create a "cushion" in the form of adequate resources (financial, material and otherwise) the list and volumes of which would result from the audit of the 2008 crisis.

5. On the basis of the established preparedness plan there may be hold "staff" studies for top management for its training and psychological stability in case of real crisis.

UDC 338.45:622.276(470.21)

Industrial potential of the Murmansk oblast in the hydrocarbon resources development of the Arctic shelf

The article deals with the spectrum of the economic questions which concern the effective utilization of the Murmansk Oblast's industrial potential in the development of the shelf deposits. The article shows a comprehensive analysis of the industrial complex and an objective appraisal of the conditions for the oil and gas industry development in the Murmansk Oblast. The authors have pointed out the formation of organizational and economic mechanisms for utilization of the regional enterprises' industrial potential in the development of the oil and gas projects as well as other large industrial projects in the Murmansk Oblast.

Oil and gas industry, industrial potential, the Arctic shelf, hydrocarbon resources, oil and gas cluster.

Aleksey M.
FADEEV
Ph.D. in Economics, Senior Scientific Associate of the G.P. Luzin Institute of Economic Problems of Kola SC RAS
a.fadeev@shtokman.ru

Aleksey E.
CHEREPOVITSYN
Doctor of Economics, Chief Scientific Associate of the G.P. Luzin Institute of Economic Problems of Kola SC RAS
alekseicherepov@inbox.ru

Fyodor D.
LARICHKIN
Doctor of Economics, Professor, Director of the G.P. Luzin Institute of Economic Problems of Kola SC RAS
fd@iep.kolasc.net.ru

Relevance of research

Under present-day conditions the development of the global economic system is largely determined by the use of hydrocarbon resources as the efficient energy carriers and chemical raw materials.

Worldwide hydrocarbon resources are consumed in volume terms and firm oil and gas demand determines priorities in the expanding of production and placing in operation of new fields.

The oil and gas industry occupies a special place in the Russian economy. This sector provides the functioning of national economy in our country. In modern conditions hydrocarbon export revenues form a significant share of currency earnings and the consolidated state budget.

One of the modern trends of the global oil and gas production is the increasing of oil and gas share from the offshore fields. Russia begins to form a new phase in the development of the oil and gas industry and implements large-scale shelf projects for oil and gas production.

This trend leads to the formation of oil and gas provinces. They are new producing regions involved in the development of deposits.

Producing regions is a complex subject of prediction and control. An effective industrial policy in the producing region largely determines the social and economic development and influences over the dynamics of budget revenues, the development of the territorial infrastructure, the rate of employment and population's incomes.

Today the important and urgent task is to form the scientific approaches and tools for effective industrial policy in the new producing region, which is aimed at full and effective implementation of the producing region's industrial potential.

Resource potential of the Arctic shelf in Russia and prospective oil and gas projects

Currently the Murmansk Oblast has achieved a status of the capital of the new oil and gas province in the north of Russia. It is one of the most industrialized and attractive regions for the investors.

The Murmansk Oblast had organized the effective geological operations before it became a new center of oil and gas production. The largest fields in the Barents sea, the Pechora sea and the Kara sea *(fig. 1)*, some of which were unique in their reserves, had been prospected over the past 25 – 30 years. Thus, according to experts, the Western Arctic shelf contains nearly 75% of Russia's shelf hydrocarbon reserves. It is a strategic region for the development of the oil and gas industry.

Figure 1. Scheme of prospective structures and works based on the use of hydrocarbon raw materials (according to Federal State Unitary Enterprise "AMNGR")

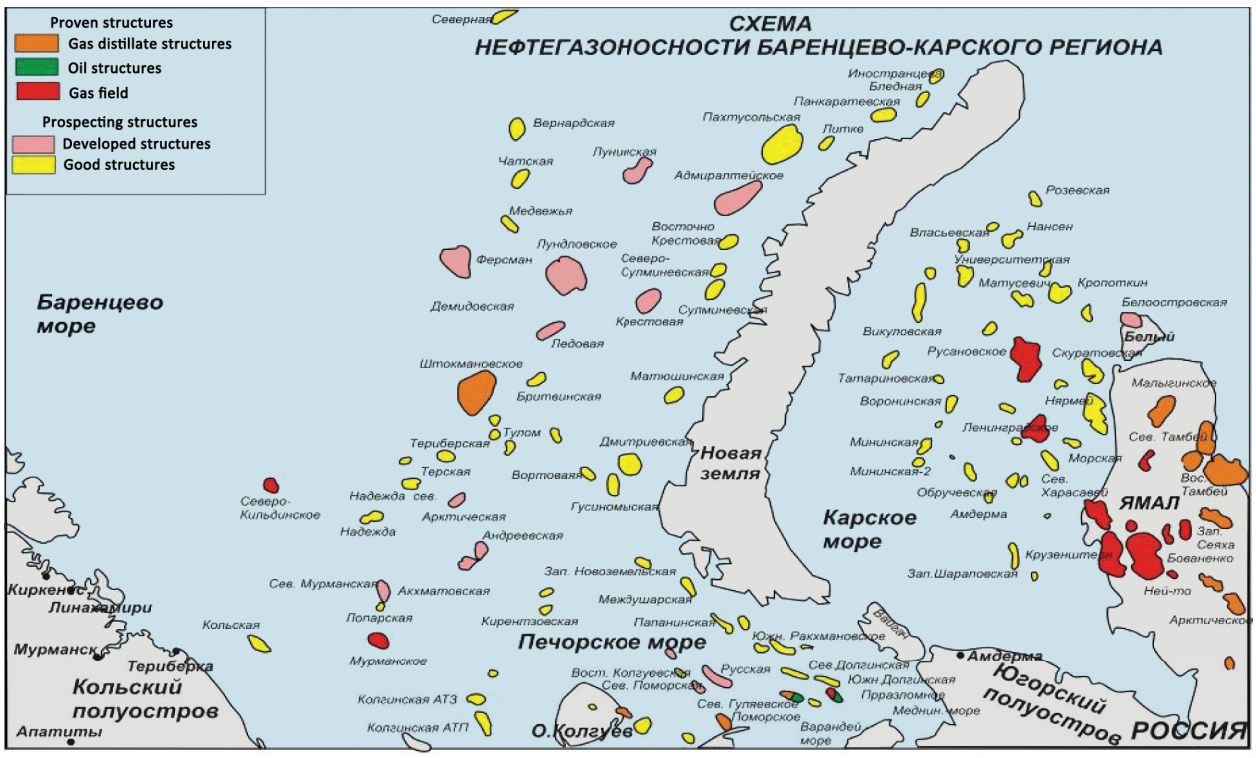


Table 1. Characteristics of the resource base of the Arctic water areas in Russia [1]

Indicator	Value
Initial total producing resources (ITR) of hydrocarbons	Near 80 billion TOE
In addition, in the contestable jurisdiction area of Russia and Norway	6,5 billion TOE
Producing reserves of oil	More than 400 million tons
Reserves of gas	More than 8 trillion cubic meters
Extent of of ITR of hydrocarbons	6.3%
Hydrocarbon deposits	25
Local objects (revealed and prepared)	524
Efficiency of deep drilling	27 thousand TOE / running meter

Table 2. Characteristics of the exploration work in the Arctic water areas [1]

Sea	Deep drilling		Prospecting seismology 2D		Prospecting seismology 3D
	Volume, running km	Number of wells	Volume, thousand running km	Density, running km/km^2	Volume, km^2
The Pechora Sea	70.83	21	83.7	0.8	2191.5
The Barents Sea	93.63	34	275	0.27	2404
The Kara Sea (including inlets and bays)	52.29	28	126.5	0.13	3159.5
The Laptev Sea	-	-	30.2	0.04	-
The East Siberian Sea	-	-	8.8	0.01	-
The Chukchi Sea	-	-	13.3	0.03	-
TOTAL:	216.75	83	537.5	0.13	7755

The revealed unique resources of hydrocarbon raw materials on the Arctic shelf *(tables 1, 2)* have fundamentally changed the prospects and development of the fuel and energy complex and incident industries not only in the Murmansk Oblast but in Russia in whole.

One of the most promising and top priority developing object is the Shtokman gas-condensate field. It was discovered in 1988. The field is located in the central part of the Barents Sea, 600 kilometers north-east of Murmansk. The deep of the sea ranges from 320 to 340 m in this area. The explored reserves of the Shtokman gas-condensate field are estimated at 3.7 trillion cubic meters of natural gas and more than 31million tons of gas condensate [6].

The developing project of the Shtokman gas-condensate field has the strategic importance. It is planned that the field will become a resource base for the shipping of Russian natural gas both pipeline and liquefied gas (LNG) to the Atlantic basin markets. According to the developing project of the Shtokman gas-condensate field, the annual production volume is planned to be 70 billion m^3 of natural gas. It is compared to an annual gas production of Norway which is one of the largest suppliers in Europe.

Produced raw materials will be transported by the sea pipelines to the shore of Teriberskaya bay. A LNG plant, a port transport and technology complex, a gas complex preparing plant and other industrial facilities will be situated here. It is planned to build a gas pipeline "Murmansk – Volkhov" to transport gas to the Unified Gas Supply System of Russia [6].

Another field which is planned to be developed soon is the Prirazlomnoe oil field. The field was discovered in 1989. It is located on the Pechora Sea shelf, 60 km out from shore (township of Varandei). The deep of the sea in the field area is 19 – 20 m. The recoverable oil reserves of the Prirazlomnoe field account for 46.4 million tons. It allows to achieve an annual production level of about 6 million tons [9].

Gazprom is considering the opportunity of refinery building in the Murmansk Oblast to process oil from the Prirazlomnoye field and then from the Dolginskoye field. The refinery's capacity in the township of Teriberka in the Murmansk Oblast in the event of its building could reach about 5 million tons per year. It is expected that oil production in the Prirazlomnoye field will begin in 2011.The peak production in the amount of 6.6 million tons per year will be reached in 6 or 7 years [7]. It is planned that oil production in the Dolginskoye field will begin in 2016. The oil production will be brought up to 6 – 7 million tons per year. Initially the oil from the Prirazlomnoye field will be exported. But the largest part of oil will be processed after the construction of the refinery and the possibility of exports will be reserved.

The main port in the region is the Murmansk Commercial Seaport (MCS). It is a kind of the Arctic gateway of Russia. The port specializes in the transshipment of ore and chemical products. The advantage of the port is its convenient location to the major importing countries. Recently its main objective is to increase bandwidth because of the growth of freight turnover and hydrocarbon exports.

The important events to improve the efficiency and competitiveness of the Murmansk traffic center were being carried in 2001 – 2005. Reconstruction of the Murmansk commercial seaport and dredging in the Kola Bay allowed to take the ships with a displacement of 350 tons and more. It is important to note that any port in the European part of Russia doesn't have the similar opportunities. The new transshipment complexes and oil terminals were put into service. It allowed to increase the volume of freight turnover in the regional ports and the volume of oil transshipment and exporting oil.

The reconstruction of the port's terminals and construction of offshore oil- loading complexes create prerequisites for development of the Murmansk traffic center. Murmansk is becoming a major oil transshipment port of Russia and northern Europe including transshipment of the oil produced in the Arctic offshore fields.

In autumn 2005 the close corporation Arcticshelfneftgas began to build a oil-loading complex "Lavna" on the western shore of Kola Bay which will be joined the system of the Murmansk traffic center. The Ministry of Transport of Russia has approved the general scheme of its development. It is expected that the capital investment in the development of Murmansk port will have amounted to about $ 2.5 billion by 2015. According to forecasts, freight turnover of the port will have amounted to 78 million tons by 2015 (38 million tons of dry cargo and 40 million tons of bulked cargo).

One of the problems of hydrocarbon exports from the port of Murmansk is the fact that any pipeline isn't laid to Murmansk nowadays. Export commodities are delivered by freight trains but railway traffic capacity is limited. It should be noted that the idea to build an oil pipeline that would link the Kola Peninsula and Western Siberia is promising.

It will be recalled that the oil companies Yukos, Lukoil, Sibneft, TNK and Surgutneftegaz signed a Memorandum of Mutual Understanding to create a pipeline system for transport of oil through a bulk oil terminal in the Murmansk region in 2002. In accordance with the memorandum, the Interdepartmental Commission on the placement of production forces of the Murmansk Oblast considered and supported in 2003 the Declaration of intent to invest into construction of a pipeline system in Murmansk which had been furnished by oil-producers.

According to preliminary estimates, the creation of the Murmansk pipeline system would bring $ 1.4 billion to the federal budget, $ 2.6 billion to the regional budgets including about $ 700 million to the budget of the Murmansk Oblast. It would also create from 2 to 6 thousand vacancies. However, the investigation of the case of Mikhail Khodorkovsky has put the project into cold storage.

Transport capacity and promising projects of transport development in the Murmansk Oblast are shown *in table 3.*

Table 3. Development prospect of the transport capacity in the Murmansk Oblast

Project's Name	Planned Activities
Development of marine transport	Reconstruction of the coal terminal MMTP of 9.6 million tons; Building of a coal terminal of 20 million tons on the western shore of Kola Bay; Building of a container terminal of 1 million TEU in the East coast of Kola Bay; Building of an oil terminal of 35 million tons on the western shore of Kola Bay; Development of water area for ships DW = 350 thousand tons; Development of the port fleet; Building of an environmental bin complex
Development of logistic and warehouse infrastructure	Building of a distributional and logistic complex Building of a logistic center
Development of railway transport	Building of a new branch railway "Byhodnoy – Lavna" (28 km); Building of 10 new railway stations and parks; Reconstruction of the gridirons of 4 stations; Reconstruction of the approaches (from the station. Volkhovstroy)
Development of motor transport	Development of the network of streets in Murmansk; Reconstruction of the road "Kola"
Development of air transport	Reconstruction of the airport "Murmansk"

The development of hydrocarbon deposits on the Arctic shelf of Russia is hampered by harsh climatic conditions. The extraction will be produced in the areas characterized by low temperatures, hurricane winds and quick icing. Ice drifts more than 200 days per year in some areas of the shelf, where they will plan to produce gas. These circumstances raise the price of the hydrocarbon deposits projects on the Arctic shelf.

The development of the natural gas fields on the northern seas shelf which are situated far from the shore and in the unique conditions would requires enormous resources and new technological solutions: building of extractive complexes, laying of natural gas pipelines along the seabed, establishment of coastal infrastructure, construction of the liquefaction facilities. It is very important to fulfil the strict environmental requirements during the development of the shelf fields. In this context, the industrial potential of Murmansk has a particular importance.

The industrial potential of the Murmansk Oblast

The importance of the industrial potential of the Murmansk Oblast in the development of oil and gas projects on the Arctic shelf can scarcely be overestimated. The advantage of the Murmansk region is its geographical proximity to the proven hydrocarbons fields.

There are the biggest industrial companies, ship-repairing enterprises, research and educational organizations here.

In addition the Murmansk traffic center has the obvious competitive advantages. They allow the Murmansk Oblast to be not only a promising base of the Arctic shelf development but also an important traffic center in the Russian Federation.

The above facts turn the port of Murmansk into a promising traffic center for the delivery of hydrocarbonic raw materials to the world marketing outlets *(fig. 2)*.

Kola Bay and adjacent bays are the deployment place of mercantile, fishing icebreaker and navy fleets. Murmansk is an initial point of the Northern Sea Route and the base of the Russian nuclear icebreaker fleet.

Murmansk will become an industrial base for future oil and gas extraction projects in the region owing to the development of the Arctic shelf and increasing of the oil shipping volume. It will jump-start the development of the industrial enterprises in the North-West District. Nowadays Murmansk has such strategic importance for the Russian economy in the development of hydrocarbon resources of the Arctic shelf as the Norwegian port of Stavanger and the Scottish port of Aberdeen had in the early oil production from the North Sea shelf more than 30 years ago.

Figure 2. The port of Murmansk as a traffic center for the delivery of hydrocarbons to the marketing outlets

Currently, the Murmansk Oblast has a significant amount of production assets which are under the authority of the military-industrial complex (MIC). By virtue of objective reasons emerged during the period of reforms, a lot of MIC-enterprises are on the verge of bankruptcy or they are unprofitable.

So, the enterprises for repairing and modernization of combat ships and submarines of the Northern Fleet were established on the Kola Peninsula in the Soviet period. They had the unique fixed assets. Today they stand idle without the government order. Part of the production capacities of these organizations can be refocused on the issue of oil and gas equipment. The military-industrial complex has highly qualified stuff and it is especially important to involve the military-industrial complex in welding and metal processing.

Currently the Government of the Russian Federation has signed a decree establishing a special economic port zone in the Murmansk Oblast. Moreover, the Murmansk Oblast takes part in the tenders for the creation of special economic zones of industrial production and technical innovation types which are announced by the Ministry of Economic Development. It is a proposal to establish the industrial and production zone on the western shore of Kola Bay which will focus on manufacturing, repairing and maintenance of the boring machinery and other technologies and platforms for offshore operations. According to preliminary estimates, the volume of attracted investments will exceed 138 billion rubles and 1500 new jobs will be created. Also they are considering a proposal to confer the status of special economic zones to the sea ports.

Along with this the Government of the Murmansk Oblast is developing a mechanism of the regional guarantees to attract investment to the regional economy. The priority spheres for investment are still the objects which are associated with the development prospects of hydrocarbon reserves of the Arctic shelf. Currently there is a long-term targeted program "The development of the investment activity in the Murmansk Oblast in 2007 – 2010" (Decree of the Government of the Murmansk Oblast from 28.09.2006, № 375-PP/9). There is also a targeted investment program for 2010 – 2012 (Decree of the Government of the Murmansk Oblast from 09.10.2009, № 474-PP/18). In addition a draft regional law "About tax concessions in the exercise of investment activities in the territory of the Murmansk Oblast" is developing now.

The international rating agency "Fitch Ratings Ltd" assigned National Long-term rating of "A+(rus)" to the Murmansk Oblast in 2009. The agency also assigned long-term foreign and local currency ratings of "BB-" (BB minus) a short-term foreign currency rating 'B' [8].

The Murmansk Oblast has an advantageous geographical position, natural resources, developed infrastructure and powerful energy system; that's why it is a region which is the center of business interests of Russia and the foreign oil companies realizing the large international projects.

Now the region has two major airports: Murmansk Airport (village Murmashi) and Hibiny Airport (Apatity). Murmansk Airport has two international airlines: Murmansk – Kirkenes and Murmansk – Tromso (Norway), Murmansk – Rovaniemi (Finland) – Lulea (Sweden). It is planned to create the international air junction on the base of Murmansk airline.

The regional institutions of basic and applied science create the necessary prerequisites for the exaggerated economic growth of the real sector of the economy and for the transition to technological development and manufacturing of innovative products.

Development prospects of the proven hydrocarbon fields of the Arctic shelf and creation of oil and gas infrastructure in the Murmansk Oblast open the additional possibilities of attracting such businesses as products, goods and services providers for service companies.

Table 4 shows the SWOT-analysis of the industrial complex allowing to estimate the development conditions for oil and gas industry in the Murmansk Oblast.

Despite the existing weaknesses and threats, almost all variants of hydrocarbon deposits of the Arctic shelf of Kola Peninsula is the base region to accommodate logistics bases and to perform a wide range of works.

Table 4. SWOT-analysis of the industrial complex in the Murmansk Oblast

External environment	Internal environment
Opportunities 1. The Federal subject has an advantageous transport and geographical location 2. There is a variety of unique natural resources 3. There are new promising deposits (including oil and gas fields) 4. Labour force is highly educated 5. The territory has a substantial scientific potential; there are innovative proposals for some industries 6. There is a border with the countries of the European Union 7. The Federal subject takes part in various international programs and projects (including the projects under the BEAR) 8. The special economic areas can appear in the region	**Strengths** 1. The industrial complex is multifunctional 2. Competitive position in the domestic and foreign markets for some types of products is strong 3. Export potential is significant 4. Geography of marketing outlets is wide
Threats 1. The Federal subject is remote from the center of Russia 2. Climatic conditions are difficult 3. Ecological situation has become worse 4. Outflow of population is progressive (including its working-age) 5. There are swings in world prices for raw materials 6. Energy and transport tariffs as well as fuel raises are raised 7. Infrastructure and stock markets aren't developed enough 8. The Federal subject has a capital flight 9. The real exchange rate is growing	**Weaknesses** 1. Costs of production are heightened 2. Fixed assets are outdated and obsolescent 3. Cost price of natural raw materials is increasing 4. Diversification of production is low 5. There is a lack of strategic approaches to management 6. Long-term orientation to raw materials has no alternative 7. The percentage of the final output in the export structure is extremely low 8. High-tech industries are developed poorly 9. There are various kinds of production and technological base; competitive ratio of separate proceedings is essentially different 10. Self-financing potential is limited; there is a lack of investments 11. Social responsibility of some enterprises (especially enterprise forming a company town) is high 12. Personnel's level of proficiency is insufficient

Advantageous geographical location and developed infrastructure have returned the Kola Peninsula into an attractive place for logistics enterprises of drilling. It is a suitable place to work the deposits, transport oil, gas and gas condensate, assemble and repair platforms and equipment, service the fleet and develop the welfare using the existing production capacities and labor resources.

At the initial stage of oil and gas projects the regional companies are ready to carry out blast-hole drilling, crushing, rock movement, sand alluvium, building of access and inside motor roads, construction of berths, electric installation work for temporary power service during the construction period, networks and communications arrangement for the temporary and permanent buildings. Ship-repairing enterprises in the region are able to assemble fabricated metals, build the berths, repair the ships engaged in the fields' development.

In addition, during the first phase of the Shtokman gas condensate field the most parts of project such as gas-turbine installations, the producing of pipes, steel, nails, etc. may be submitted by Russian companies including the regional enterprises. The regional companies may be involved in explorations and borings conducting, providing of transport services including services for shipping companies. The use of icebreaker fleet is very promising for the project.

Promising work front emerges also for the service regional companies. It will be necessary to provide about 16,000 people with food, personal services, etc. during the first phase of the Shtokman gas condensate field project. In addition, the territories of some regional companies are promising to place the complex base of the Shtokman gas condensate field project.

At the same time, the beginning of the development of deposits in the Barents Sea and the laying of the pipeline to the coast of the Murmansk Oblast will significantly contribute to the social and economic development of the neighboring regions, including the Arkhangelsk Oblast which is one of the shipbuilding centers in Russia. Despite the product line diversification had occurred at the largest enterprises of the Arkhangelsk Oblast and they had reorientated to civilian purposes, organization managed to maintain highly skilled technical personnel and ability to work with high technologies. As the largest shipbuilding center in Russia transport enterprises of the Arkhangelsk Oblast will be able to supply the Murmansk Oblast with cargo which is necessary for the oil and gas projects.

Economic prospects of the regional industry's drawing into the oil and gas projects

When oil and gas are referred most people imagine large corporations. But few people know that small companies also work in the shelf's area. Many small businesses involved in the service and supply spheres play an important role on the shelf. Less than 10 employees work in seven out of ten companies [4].

Experience of the leading oil and gas powers, particularly practice the of Norway, shows that during the development of the coastal shelf oil and gas sector offers great opportunities for the development of regional industries, creating of new jobs and raising of living standards. Thus, one of the world leaders in the development of offshore fields is a Norwegian company "Statoil". It has been involving the local businesses in the implementing process of the large-scale projects aimed at development of oil and gas fields near the coast of Norway since its inception. It contributed to social and economic development of the areas where the company "Statoil" acted [3].

The world practice shows that about 80% of the works fall to the share of oil and gas industry suppliers during the implementation of major oil and gas projects. These suppliers are service companies, large metalworking, construction, transport and other suppliers of equipment and materials, as well as scientific and educational institutions which are representatives of various industries.

It is important that the bulk of gross domestic product is created by the industry which determines the technical level of the other branches of national economy and social sphere. Therefore, the positive dynamics of industry determines the entire state of social development in the region.

The struggle for the receipt of orders in the oil industry will accelerate the pace of development and modernization of the enterprises' technological base and increase quality and competitive ability of products. It will meet the requirement in resource opportunities for further technological development and economic growth of the regional businesses.

The oil and gas projects implemented in the Murmansk Oblast can revive general economic conjuncture of most sectors in the Murmansk Oblast and first of all industrial, construction and transport sector. The oil and gas projects can involve the key industries in work which are related in intersectorial production strings. The development of these strings is a driving force for allied industries and it will stimulate the development of their suppliers, etc. This circumstance will lead to the fact that multiplier effects will operate during the certain time period. It is a kind of self-excitation of economic growth. In effect, it is stimulating of the rising spiral of production, investment and consumer demand. According to the scientific studies' results, just domestic demand is the main and the most reliable domestic demand of economic and social progress.

The oil and gas industry can provide hundreds of businesses related branches with the loading. Now this industry has an exclusive economic and social importance; it predetermines employment and efficiency of economic relations, as well as it strengthens inter-regional relations and increases the tax base. Production build-up in the related branches will boost demand for the products of these industries through the strings of engineering communications and generate the additional resources.

Degree of related branches development is characterized by the so-called multiplication index. In the developed countries the multiplier is the following: Norway – 1.6 – 1.7; Australia – 1.8 – 2.4; USA – 2.1. Calculations show that "oil and gas" multiplier is 1.9 in Russia; it corresponds to the multipliers in the oil-producing developed countries [5].

According to some reports, Russian revenues from the machine-building line in the Shtokman gas field (by placement of orders with Russian contractors, transporters, etc.) can double its revenues from the "gas" line. Maximum capacities and augmented of volume of output will allow the bulk of the regional enterprises to fully restore the economic situation, regulate financial management, settle accounts with creditors and increase their own investment opportunities.

In general, the social and economic effects for the Murmansk Oblast of the development of hydrocarbon deposits are the following *(fig. 3)*:

There is a growing demand for science intensive and high technology products of process industry because of the movement of oil and gas resource base to the Arctic seas' shelf.

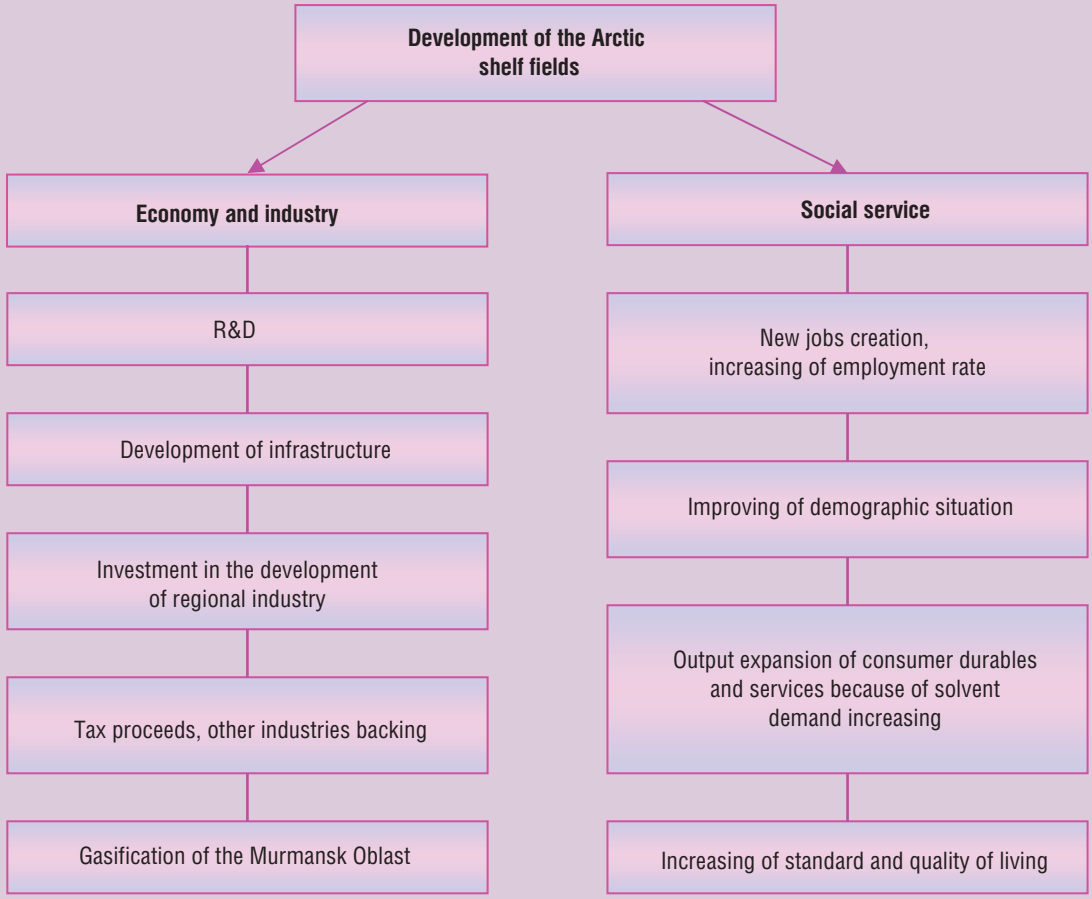
Development of the Arctic seas' deposits creates favorable conditions for the formation of oil and gas cluster in the Murmansk Oblast.

Organizational and economic mechanisms of the industrial potential of the Murmansk Oblast in matters of oil and gas projects

The local companies must meet a number of serious claims to use successfully the regional industrial capacity in the field of oil and gas projects in their territory.

In holding the tenders they will take into account technical resources, reputation, business process perspective, experience, performing of similar types of work earlier, the availability of resources for execution of works, technologies, financial standing, the possibility of receiving a policy in the insurance company, quality of work, environment, structure and organization, necessary equipment, costs and timing of orders, the creditworthiness of the company.

Figure 3. Possible effects of oil and gas projects for the region



It is important to note that work in the oil and gas sector is a new type of activity for the regional enterprises. Despite the high intellectual and industrial potential, local companies need to increase significantly their level of competence in the field of international demands for quality of products and services, system of labour protection, environmental protection and participation in the oil and gas projects as the suppliers, etc.

Today the suppliers of the oil and gas projects are determined by the results of tenders which involve the foreign companies that have already considerable experience in carrying out of similar types of work. This circumstance complicates the competitive activity of Russian suppliers and foreign firms without outside aid. At this moment it is important to overcome the informational closure of the foreign operators' projects, coordinate the development and production of import of industrial products.

There must be a protectionist governmental policy in point of all oil and gas companies to develop the fields efficiently and safety. It is also necessary the mutual integration of these companies to increase their own profits and ensure the state's energy security.

One of the most effective mechanisms for interaction between government and oil and gas companies can serve the creation of industrial clusters, industrial associations or other types of associations and alliances based on mutual economic integration of interests. In modern economic literature the cluster means a network of independent production and / or service firms (including suppliers), the authors of technologies and know-how (universities, research institutes, engineering companies), market-based institutions (brokers, consultants) and customers interacting with each other within a unified value chain [2].

The creation of such structures is one of the most effective tools to harmonize the relations between the government and private business. Such organizations are the forms of support to the companies of all levels. They help to improve work efficiency, living standards, production competitiveness, financial stability and they also promote domestic companies in the international markets and ensure that quality of products meet the world standards.

It is significant to note that it is much easier for the large integrated structures to defend their interests in the interaction with the government agencies. A separate small or medium entrepreneur cannot be a subject to lobbying at the federal level. First of all lobbying is a scope of unions and business associations, industrial enterprises, as well as large commercial structures. The world experience shows that most advanced industrial companies in the developed countries tend to consolidate the economic activity.

The creation of the special Association of suppliers of oil and gas industry "Petro Arctic" to realize the Norwegian project "Snowit" can be an example. Now the association of "Petro Arctic" includes more than 400 vendors covering a wide range of goods and services.

Association offers its services not only during the design and construction, but also during subsequent operation. A similar network of suppliers has been formed for the project "Ormen Lange".

Integration processes which occur during creation of a production cluster, enhance the competence of the enterprises participating in projects and diversification of production at the largest enterprises in the region.

The Association of suppliers of oil and gas industry "Murmanshelf" is one of the earliest examples of such structures in the Murmansk Oblast. It was registered in 2006. Today it unites more than 230 companies and organizations which are going to take part in the oil and gas projects on the Arctic shelf. It is noteworthy that one of the founders of the Association is the Government of the Murmansk Oblast, which actively promoted the creation of this organization.

Now the Association unites project operators, general contractors, oilfield services, construction, transportation, ship-repair, logistics, engineering companies, as well as educational, academic and research institutions of Russia.

At present the structure of the Association "Murmanshelf" by activities is the following *(fig. 4)*:

The main objective of the Association is training for the local industry, combinations of companies which are interested in the projects of integrated development of the Shtokman gas field and other fields on the shelf in the Arctic. The Association promotes the competence of member companies. It uses their productive capacity in the hydrocarbon deposits projects on the Arctic shelf as well as the construction of appropriate coastal infrastructure in the territory of the Murmansk Oblast. Particular attention is paid to training the personnel for the oil and gas industry.

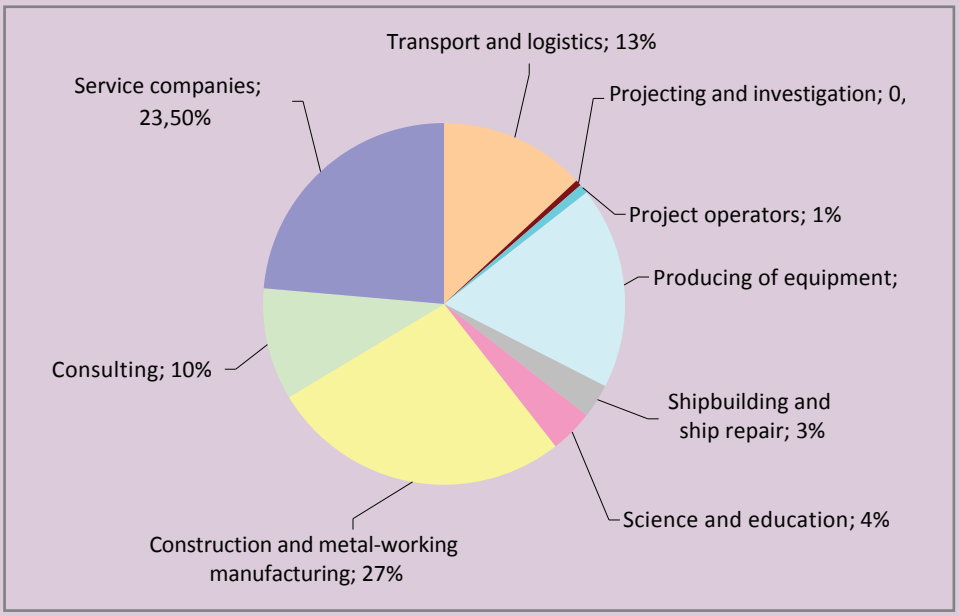
During the work the Association of suppliers "Murmanshelf" create a platform to transfer the advanced industrial technologies: monthly training seminars, experts from the leading Russian and foreign oil companies, a detailed database of the regional industry, and much more.

It has allowed many regional enterprises, especially small and medium businesses, to change their development strategy and head for modernization and training.

The vast majority of the members of the Association "Murmanshelf" representing other states as well as other regions of Russia, are registered in the Murmansk Oblast. They are the taxpayers of the regional budget. That's why we can rank them to the industrial potential of the region.

The Association "Murmanshelf" is an emerging oil and gas cluster, which includes the interaction between government, business and science. The Association provides its members with a variety of consulting services, providing them with the necessary scientific, technical, economic and legal information; it organizes the exchange of experience.

Figure 4. Structure of the Association "Murmanshelf" by activities



The consortium "Murmanshelf Construction" was established in 2008 to use efficiency the industrial and financial capacity of construction companies. The Consortium "Murmanshelf Construction" was created to bring together industrial, financial and intellectual resources. It should also coordinate actions of construction enterprises for joint participation in major projects implemented in the Murmansk Oblast.

The main objective of the Consortium is to involve in the construction of port and onshore complexes for production and shipping of liquefied natural gas and overland pipeline "Teriberka – Volkhov" with the appropriate infrastructure. Currently, the Consortium "Murmanshelf Construction" is concluding agreements to participate in the activities with the regional construction enterprises.

The Consortium "Murmanshelf Logistics" was established in the Murmansk Oblast in 2009. The Consortium's companies are ready to participate in solving of the problems of preparation, organization and implementation of transportation, customs clearance and storage of construction equipment and supplies for building of coastal and seaside infrastructure of the oil and gas projects.

Such integrated economic structures provide a unique opportunity to combine a wide range of partners, including customers, suppliers, competitors, government representatives. They allow to overcome the barriers between firms with different styles of doing business.

Creation of the economically integrated structures simplifies the access to other markets. It reduces the barriers in this way, increases a competition level and brings benefits to all partners of the economic union.

Conclusion

It is obvious that the Kola Peninsula is a promising basic region for location of logistics drilling enterprises, field development, transportation of oil, gas and gas condensate production, installation and maintenance of platforms and equipment, fleet and social security with the existing regional production facilities and manpower.

Economic integration of the companies and their further transformations into the Murmansk marine oil and gas cluster are necessary for full utilization of industrial capacity of the regional businesses.

The establishment of such structures (clusters) is also one of the most effective tools to harmonize the relationship between the government and business. Such organizations are a form of support to companies of all levels, greatly helping to improve work efficiency, living standards, competitiveness, achieve financial stability, promoting the international markets of domestic companies, as well as the relevance of quality products to world class standards. Such organizations are the forms of support to the companies of all levels. They help to improve work efficiency, living standards, production competitiveness, financial stability and they also promote domestic companies in the international markets and ensure that quality of products meet the world standards.

The Murmansk Oblast has a sufficiently high industrial, economic and scientific potential. It can provide an effective and safe development of the Arctic fields. It is obvious that we need active state participation to turn the Murmansk Oblast into a new world energy and transportation center.

References

1. Ananyev, V. Russian "hands don't reach the Arctic shelf" / V. Ananyev // Oil & Gas Journal. – 2010. – May. – P. 38.

2. Ilyinskiy, A.A. Oil & Gas Complex of the Russian North-West. Strategic analyzes and development concepts / A.A. Ilyinskiy, O.S. Mnatsakanyan, A.E. Cherepovitsyn. – SPb.: Science, 2006. – 475 p.

3. Kutuzova, M. In its development the shelf Statoil is supported by local business / M. Kutuzova // Shelf's Projects. Special edition of magazine "Oil of Russia". – 2006. – P. 30.

4. Marshall, D. Chance to change the power policy on an external continental shelf / D. Marshall // Oil & Gas Technologies. – 2006. – № 4. – April. – P. 21.

5. Nikitin, P.B. About the methodology of Russian continental shelf / P.B. Nikitin, Y.A. Kibitkin // Vestnik MSTU. – 1999. – Vol. 2. – № 2. – P. 41-46.

6. [Electronic resource]. – Available at: www.gazprom.ru

7. [Electronic resource]. – Available at: http://intratool.ru/online/market/2009/na_stroitelstvo_npz_v_murmanskoj_oblasti_potrebuetsya_4_5_let/

8. [Electronic resource]. – Available at: http://taxhelp.ru/new/view_article.php?article_id=12995

9. [Electronic resource]. – Available at: http://www.sevmorneftegaz.ru/projects/pnm/index.html

UDC 330.342.2+338.244

Modernization of the russian economy as the imperative of the country's prospective innovative development*

This paper summarizes the approaches to the definition of the category "economic modernization" and identifies its common and specific characteristics. The basic strategies of modernization and development of innovative processes are considered, the classification of economic modernization depending on a way of its realization and character of plant renewal is presented in this paper. The necessity of the Russian economy modernization is also proved, the purpose, problems and priority ways of its carrying out are formulated. It is argued that Russia needs new industrialization (with the active and coordinated participation of government, business, science and society) with creating competitive industry producing the required products for the country.

Russian economy, modernization, innovative development, strategic priority and guidelines, innovative-technological breakthrough.

Igor A.
KONDAKOV
Ph.D. in Economics, Research Associate of the Institute of Socio-Economic Development of Territories of RAS
kia-24@mail.ru

"Speed of movement is not an end in itself. Especially, if we do not control its trajectory"[1].

After the long period of stable growth the economy of the Russian Federation and its regions have faced serious challenges of the global financial and economic crisis which has begun in the autumn, 2008. Conjuncture deterioration on the world and home markets caused a number of negative consequences which have negatively affected an economic situation in the country: growth rates of most socio-economic indicators have decreased in 2008 – 2009.

Volumes of output and the foreign trade turnover, productivity and investment activity of the enterprises decreased, unemployment grew, incomes of the population decreased and receipts to the budget reduced *(tab. 1)*.

Once again financial and economic crisis has shown the hopelessness of Russian export of raw materials model of development[2], it also

* This work was supported by the Russian Humanitarian Research Foundation (grant № 11-32-03001 "Socio-humanitarian potential of Russia's modernization").

[1] Modernization of Russia as the construction of a new state: An independent expert report / I. Ponomarev, M. Remizov, R. Karev, K. Bakulev. - M., 2009.

[2] Export of raw materials sector includes oil and gas industry, metallurgy, fertilizers and large-capacity chemistry, timber and paper industry. In Russia during the last years this sector had about a quarter of value added and more than two thirds of goods traded in the world market (source: Federal State Statistics Service [Electronic resource]. – Access mode: http://www.gks.ru).

Table 1. Indexes of the basic social and economic indicators in the Russian Federation, % to the previous year (cost indicators in comparable prices)

Indicator	2005	2006	2007	2008	2009
Gross domestic product (GDP)	106.4	108.2	108.5	105.2	92.1
Industrial output volume	105.1	106.3	106.8	100.6	90.7
Agricultural output volume	101.6	103.0	103.3	110.8	101.4
Fixed investment	110.9	116.7	122.7	109.9	83.8
Foreign-trade turnover	131.6	126.7	123.5	132.1	64.9
Federal budget incomes	149.5	122.5	123.9	119.2	79.1
Balanced financial result of enterprises	151.3	175.7	111.8	69.1	124.1
Average population income	111.7	114.1	113.1	103.8	101.2
People living on substandard income	87.7	85.3	87.0	101.1	97.9
General unemployed population	90.2	96.0	84.9	124.6	116.5

definitely helped to eliminate the illusion of the ruling elite that market relations themselves will handle the economy and make it effective and competitive[3]. In these circumstances the economy needs the active state participation which manifests itself in the application of various instruments of direct and indirect influence on the socio-economic processes (first of all in the case of business activity and investment attractiveness of the area, the development of a fair competition and etc.).

The importance of changes in the economy and social sphere is realized by the government (as President of Russia in the message to Federal Assembly in November 2009 proclaimed, the strategic target of Russian society development should be to create "smart" (i.e. innovative) economy, satisfying the needs and interests of the general population) and is reflected in government policy defined by the Concept of long-term social and economic development of the Russian Federation for the period till 2020 (approved by the Government of the Russian Federation from 17.11.2008 №1662-r). The concept points as expected to be realized by means of all-round modernization of economy.

[3] The freedom of entrepreneurship is necessary, but it is not a sufficient condition of country's economic development. In the state arsenal there should be a complex system of economic and administrative tools to ensure a reasonable economic policy. And these tools should be reasonably used in coordination on federal and regional level. Only this approach ensures the success (source: Gavrishenko M. About regional industrial policy // Smart production: journal for industrial leaders. – 2010. – № 12).

Nowadays the category "modernization" is widely used in political speeches, periodicals, scientific researches and can be differently interpreted: as update, reform, development, positive changes, etc. According to the classical definition, that also corresponds to the author's position, under **the modernization** (from the Greek "modern" – the newest, the latest) we mean an improvement, development, updating object and its bringing in line with the new requirements and standards, technical specifications, quality indicators [20].

Today in the scientific literature there are many different interpretations of modernization in relation to the economy, which require extending theoretical analysis. It seems reasonable to consider some of the most typical definitions of an analyzing category *(tab. 2)*.

The analysis of interpretations presented by the author allowed identifying the following common features of the modernization processes in the economy [14]: necessity, revolutionism, globalism, continuity, priority, system, complexity and standard approach *(fig. 1)*.

At the same time, there are specific characteristics depending on *the object of modernization*, namely, on the characteristics of the economy at the macro-, meso- and micro levels. And the success of modernization in many respects depends on activity and coordination in actions of the state, private business, science and society *(the subjects of modernization)*.

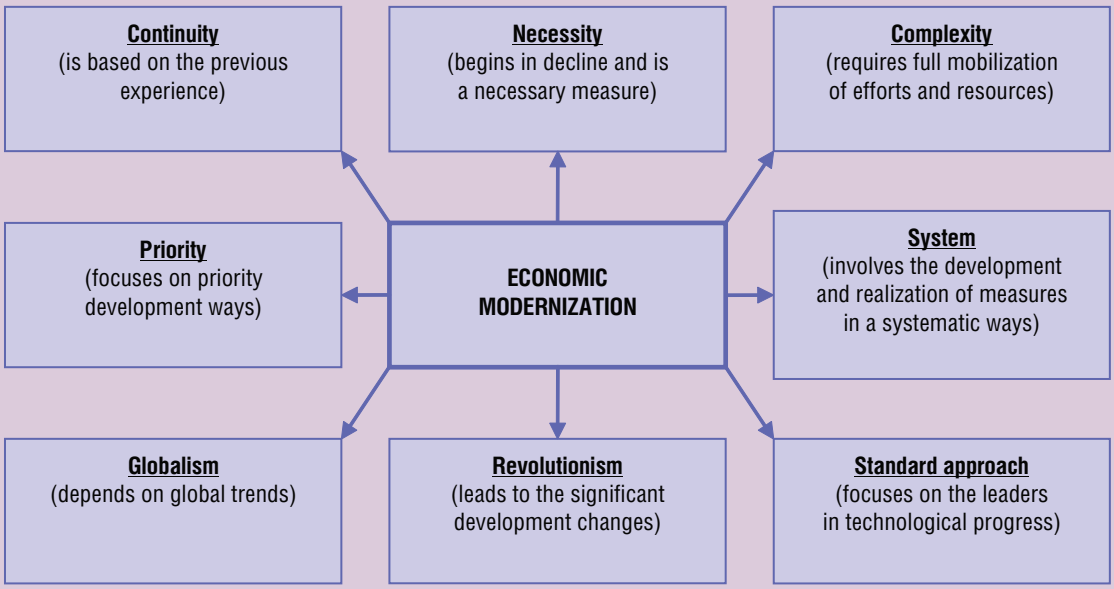
Table 2. Existing interpretations of the category "economic modernization"

Author	Interpretation	Reference
A.G. Aganbekyan	Economic modernization is a structural reorganization of the national economy, first of all, for the purpose to create an innovative economy and to launch "the innovative mechanism".	Shcherbakova L.A. Modernization of the Russian economy: a multifactorial problem with many indeterminates / L.A. Shcherbakova// Econometric society. – 2010. –№ 9. – Pp. 73-94.
V. Gelman	Economic modernization is a number of measures in socio-economic policy aimed at economic growth, prosperity and promoting human capital development.	Gelman V. Authoritarian modernization: what are its prospects in Russia [Electronic resource] / V. Gelman. – 2008. – Access mode: http://www.eu.spb.ru/.
V.A. Ilyin	Economic modernization is a broad socio-economic concept including the restructuring of the organizational and economic relations, property relations and control relations between the center and the regions, and it is the process leading to the creation of an effective economic growth model.	Ilyin V.A. Modernization of the regional economy (according to the Vologda oblast): synopsis of a Ph.D. thesis in Economics: 08.00.05. – St. Petersburg., 1999. – 39 p.
V.L. Inozemtsev	Economic modernization is a process when the territory overcomes its socio-economic underdevelopment which can cause the loss of competitiveness and economic and political position on the world scene.	Modernization of the Russian Federation: conditions, preconditions, chances: The collection of articles and materials / ed. by V.L. Inozemtsev. – Vol.1. – M: The center of researches of the postindustrial society, 2009 – 240 p.
A.I. Kolganov	Economic modernization is the process of learning the most advanced industrial technologies, economic forms, social and political institutions etc. (according to this historical period).	Kolganov A.I. The experience of the four modernizations in the Russian economy and the problem of catching-up modernization in the post-industrial era / A.I. Kolganov // Philosophy of Economy. Almanac of the Center for Social Sciences and the Faculty of Economics of Moscow State University. – 2002. – № 1.
V.A. Krasilshchikov	Economic modernization is a set of economic and technological changes, leading the society to that position and level of development, which were reached by the leading countries.	Modernization of the Russian Federation: conditions, preconditions, chances: The collection of articles and materials /ed. by V.L.Inozemtsev. – Vol.1. – M: The center of researches of the postindustrial society, 2009. – 240 p.
V.A. Tsvetkov	Economic modernization is a number of structural, technological and institutional changes in the economy to increase its competitiveness in the world, not only in information technology and innovation.	Tsvetkov V. About the starting point of neo-industrial modernization / V. Tsvetkov / Economist. – 2010. – №11. – Pp. 16-26.
E.G. Yasin	Economic modernization means by itself 1)developing production in the modern technological level 2) modernizing production, replacing obsolete equipment and technology to modern, more productive one 3) an organic incusing in the world innovation, fully integrating into the global economy, using all important innovations 4) training, retraining or replacing personnel, retraining and rehabilitating people, learning different way of thinking corresponding to time requirements 5) implementing of structural changes in the economy, formation of industrial structure meeting the criteria of an advanced industrial country.	Yasin E. Modernization of the Russian economy: what is the agenda? / E. Yasin // Society and Economy. – 2001. – № 3-4. – Pp. 5-29.

Meaningfully the category "modernization" is closely connected with the category "innovatization", reflecting the development and adoption of innovations[4] in all spheres of human activity. Therefore, it is necessary to differentiate these categories: if under the category "innovatization" one means the accelerating territory's socio-economic development on the ba sis of something again created ("movement from the present to the future"), and the category "modernization" is the creation of fundamental infrastructural preconditions for a such development according

[4] Innovation is the end result of innovation in the form of new or improved final product that is introduced into the market, new or improved technological process that is used in practice, or in a new approach to management and social services (source: Science and innovation statistic: a brief terminological dictionary / ed. by L.M. Gohberg. – M: CSRS, 1996. – Pp. 30-31).

Figure 1. Characteristic features of the economic modernization



to already well-known achievements in science, technics and technology ("movement from the past to the present"). In sum, *modernization*, in our opinion, *is the basis for the territory transition to an innovative way of development*, where innovation plays the main role in ensuring the effective functioning of the economy and social sphere.

Thus, on the basis of the aforesaid, under **economic modernization** we will understand the process of overcoming by this or that territory its social and economic backlog in the development, that can cause the loss of competitiveness and economic and political positions on the world scene (according to the definition offered by Doctor of Economics V.L.Inozemtsev, the editor-in-chief of journal "Free thought") [14].

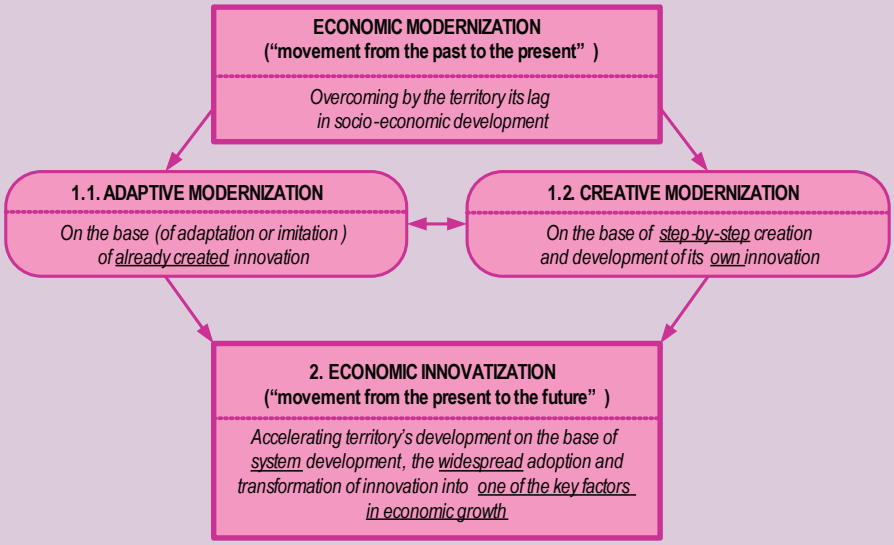
It should be noted that economic modernization can be subdivided into *an adaptive and creative* one [1, 2].

The former is implemented by borrowing (adaptation / simulation) already created innovations that are closely connected with buying of copyrights, licenses, etc. The latter one is implemented in conditions of step-by-step creation and implementation of its own technological developments.

Creative modernization involves not only high financial costs, but it also makes a great demands on the scientific and technical potential of the territory. Thus, this type of modernization is a kind of intermediate stage from borrowing to the system designing, developing and transforming innovation into one of the key factors in economic growth, i.e. innovatization *(fig. 2)*. As a rule, the both types of economic modernization are combined in different proportions, reflecting the level of innovative development of the territory.

Awareness of the need to realize the economic modernization arises when a gap in the development level of the territory compared to the best experience, becomes obvious, and even critical. It should be noted that the problems of economic modernization in different countries arise in different contexts. Thus, for developing countries to serve as benchmarks advanced nations that took a leading position in the world. Thus, the highly-developed countries taking a leading position in the world set the example for developing nations. In turn, from time to time even the most advanced countries faced with the impossibility of further development on the basis of previous economic, social and political arrangements.

Figure 2. The modernization (adaptive and creative) and economic innovatization



In this case, the ability to use the full potential of the economy at every stage of historical development is the criterion of the modernization for the leading country [11].

Industry changes forming a technological mode[5] *are at the heart of the economic modernization* (according to the theory of "long" waves by N.D. Kondratiev, to an innovative theory by J. Schumpeter and G. Mensch). It must be said that the technological level of development in the last four decades belonged to the fifth technological mode, which core consisted of electronics and computer engineering, telecommunications, robotics, information services. Technological leadership in this way of life belongs to Japan, the USA, Germany, Sweden and other EU countries. Now begins the fundamental development of the next – sixth technological mode that is based on the introduction of computer technology into all stages of the reproductive process, and the development of nano-and biotechnologies *(tab. 3)*.

[5] Under *the technological mode* one understands the technology-associated production united by general technological principles, labor culture and production organization, its orientation on the appropriate type of public consumption and lifestyles of the population (source: Glazyev S.Y. Strategy of accelerated development of Russia in the global financial and economic crisis. – M.: Economics, 2010. – 255 p.).

An analysis of the world experience of modernization and innovation development suggests that now there are *three main strate-gies of development* [17]: *a) "transferring", b) "catching up development", c) "increasing" (tab. 4)*.

The strategy of "increasing" is characterized for highly-developed countries and it suggests the active exploration and development of innovation through the use of existing scientific and technological potential. Developing countries widely use strategies of "transferring" and "catching up development", implying the borrowing (adaptation) of technologies and development (imitation) of production have been previously released in highly-developed countries.

At the heart of a strategy may be *two alternative ways of modernization* [26]:

1) *"from above"* – the way of the strong state power influence on achieving goals of modernization (typically for developing countries, where there is a strong role of the ruling elite);

2) *"from below"* – the support of private initiative and everybody's energy and in this case the state creates the conditions and institutions promoting modernization processes (typically for countries with open free economies).

Table 3. Chronology and characteristics of technological modes

Characteristics of the mode	The number of the technological mode					
	The first mode	The second mode	The third mode	The forth mode	The fifth mode	The sixth mode
Periods of dominance	1770 – 1830s	1830 – 1880s	1880 – 1930s	1930 – 1970s	1970 – 2010s	2010 – 2050s
Technological leaders	Great Britain, Belgium	Great Britain, Germany, the USA, France, Belgium	Great Britain, Germany, the USA, France	Western Europe, he USA, the USSR, Japan	the USA, Japan, the EU	the USA, Japan, the EU, China
Core of the technological mode*	Textiles, textile machinery, iron smelting, iron processing, construction of canals, water engine	The steam engine, railway construction, transportation, car- and shipbuilding, coal-, machine-tool industry, ferrous metallurgy	Electrical and heavy engineering, steel production and distribution, power lines, inorganic chemistry	Car- and tractor building, non-ferrous metallurgy, production of durable goods, plastics, organic chemistry, oil manufacturing and oil refining	Electronics, computer, fiber optic equipment, software, telecommunications, robotics, gas production and gas processing, information services	Nano electronics, molecular-and nano photonics, nano materials and nano structured coatings, nano biotechnology, nano system technology
Key factor**	Textile machinery	Steam engine, machines	Electric motor, steel	The internal combustion engine, petrochemicals	Microelectronic components	Nano technology, cell technologies
Advantages of this technological mode compared to the previous ones	Mechanization and the concentration of production in factories	The increase in volume and in concentration of production on the base of using the steam engine	The increasing production flexibility through the use of an electric motor, the standardization of production, urbanization	The mass and serial production	Individualization of production and consumption, increasing production flexibility, overcoming the environmental constraints on energy - and material consumption on the base of CALS-technology	The sharp decline in energy- and material production, construction of materials and organisms with predetermined properties
Modes of economic regulation in the leading countries	The destruction of feudal monopolies, restriction of trade unions, free trade	Freedom of trade, restriction of state interference, the emergence of sectorial trade unions, the formation of social legislation	Expansion of government regulation institutions, state ownership on natural monopolies, basic infrastructure, including social one	The development of state institutions of social security, the military-industrial complex, indicative planning and policy	State incentives for research and development, increase of spending on education and science, the liberalization of the regulation of financial institutions and capital markets	Strategic planning of scientific and technological and economic development, e-government, development institutions and funds financing innovative activity

* ***The core of the technological mode*** is a complex of basic sets of conjugate technology industries.
** ***A key factor*** is technological innovation involved in creating the core of technological mode.

Table 4. Analysis of strategies for developed and developing countries [17]

	The type and content of the strategy	Disadvantages of the strategy	The basic requirements for strategy realization
Modernization	The strategy of "transferring" (the Japanese experience in the mid-twentieth century). Use of existing foreign technical and scientific capacity and transfer (borrowing / adaptation) of innovations into its own economy	Dependence on highly developed countries and a threat to national security	The need for significant financial costs to acquire licenses
	The strategy of "catching up development" (the experience of China and South-East Asia). Development (simulation) of production have been previously released in the developed countries	Inability of "catching up" nation to create structures and institutions, signaling correctly to the public about the declining trend, and thus preventing the system from "overheating". Inability to concentrate the efforts on modernization of all sectors of the economy	Sector development of small businesses in innovation. The sharp increase in investments due to current consumption (for example, the share of savings in GDP of leading countries in South-East Asia is 35-37% against 14-17% in the USA). It is necessary to borrow technologies and to attract foreign capital
Innovatization	The strategy of "increasing" (the experience of highly developed countries). One uses its own scientific and technical potential with the participation of foreign scientists and engineers, the integration of basic science and universities of applied sciences	–	With limited funding it should be based on the implementation of a narrow circle of highly innovative projects. It is necessary to provide a system of government orders issued on a competitive basis, in the conditions of guaranteed state financing and equity participation by private investors

Thus, for developing countries, unlike developed countries (where the modernization was realized most often spontaneously, as a result of the gradual accumulation of spontaneous assumptions, which connection gave impetus to develop), and its characteristic feature was a transferring to modernization through the conscious efforts of individual, influential groups in society (often elite) who realized destructiveness of the existing socio-economic and political situation in the country [24].

The need to **modernize the Russian economy**, especially its industrial production, is of particular importance in the post crisis period. Currently country is experiencing a difficult time, and it is on the important stage of development: the future of Russia and its position on the world stage depend on that, how successful its modernization will be realized.

What chances does Russia have to make the next breakthrough, and what should be done for this? Let's consider it.

Firstly, it should be decided what is the purpose of modernization, and what result is supposed to achieve.

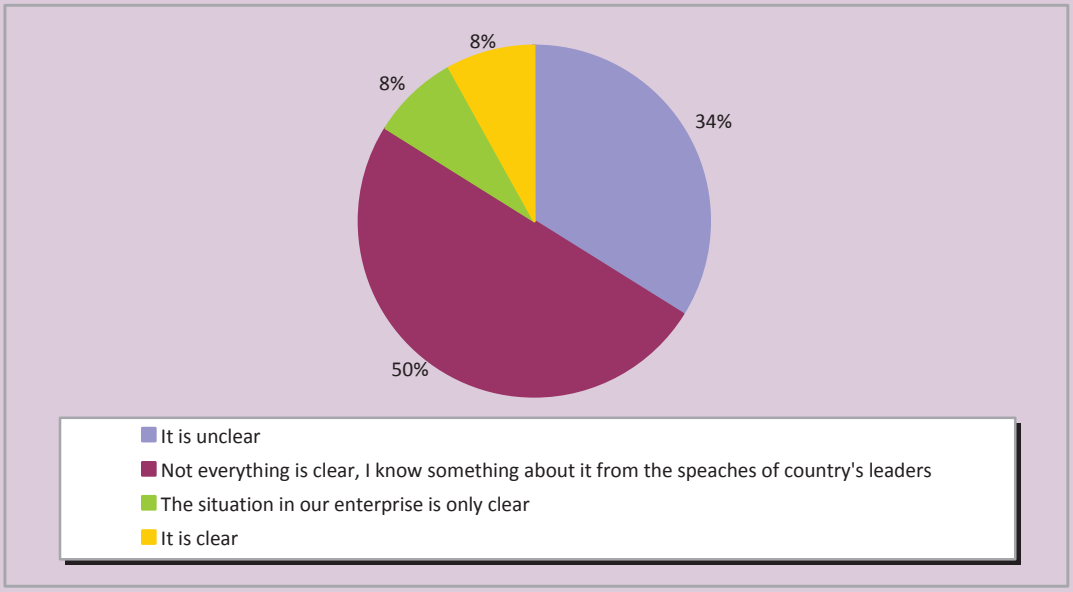
This will allow developing a strategy of modernization and the appropriate set of criteria, tools and mechanisms for its realization.

On the federal and regional levels, the authority takes a number of specific measures to revive the economy, to re-equip economic branches, to establish modern industries. However, a long-term strategic guidance and a clear program of actions that would unite the efforts of all participants in the modernization process, has not yet been established by the government.

As the results of the questionnaire [12] show, the representatives of business (as well as the Russian society in general) do not have a clear conception on that how the economic modernization should be realized *(fig. 3)*.

However, it should be noted, that there is not a single model of modernization and it cannot exist, as the internal and external development conditions of the territories are different (determined by the results of historical heritage and long-term political development, socio-economic opportunities and needs for scientific and technical potential, etc.).

Figure 3. Answers to the question: "The state has declared about realizing modernization of the Russian economy. Do you understand the practical measures of this realization?", % of respondents



Therefore, it is necessary to develop our own strategy, taking into account the local experience of the past years[6] and the examples of successful modernization in other countries[7].

In our view, *the task of Russia's modernization* should be to overcome the lag in the socio-economic sphere and to create conditions for the next transition of the country in an innovative way of development.

Innovative economies of the most developed states were firstly on the industrial stage of development, therefore, *a priority task of Russia's modernization* should be to create a modern and competitive industry, which position in the domestic and foreign markets in recent decades have suffered (the information on this issue will be presented later). Only the real sector of the economy (industry with agriculture and construction) now actively developing is able to perceive innovation, to create lines of future breakthroughs into the global markets.

Among other important *tasks of economic modernization of the country* there should be also creating comfortable environment for world-class research, developing labor potential of the population, providing favorable investment climate, developing competitive environment, etc.

It should be noted that a large-scale industrialization[8] was realized in the Soviet Union, its result was the development of industries of the fourth technological mode.

[6] History of Russian modernization shows that the country was a leader in the global economy. Most researchers believe that Russia, as a minimum, three times went to the international level as a result of catching-up development modernization: the reforms of Peter I at the end of 17th – at the beginning of 18th century; Agrarian reform in 1861 and the subsequent transformation by S.Y. Witte and P.A. Stolypin at the end of 19th – at the beginning of 20th century; the widespread industrialization of the 1930s. (source: Nikologorsky D. Modernization as a stage of development // The Economist. – 2010. – № 6. – Pp. 25-32).

[7] Russia is interested in modernization that developed in the XX century, firstly in the USA, and then in the middle of the century overtook leading Western European countries and in its last third part - a number of Latin American and Asian countries. This modernization has produced an industrial basis and preconditions for the transition on the innovative development way by these countries (source: Modernization of the Russian Federation: conditions, preconditions, chances: the collection of articles and materials / ed. by V.L. Inozemtsev.).

[8] Industrialization is the transfer of the economy on industrial tracks, a significant increase in the share of industrial production in the economy, the creation of a large-scale machine production throughout the economy and in its individual sectors (Modern dictionary of Economics / B.A. Raizberg, L.Sh. Lozovsky, E.B. Starodubtseva.).

An outstanding feature of that industrialization was the creation of some companies that made up the complete technological chain (from raw material extraction to final product output) in conditions of its own research and development base. As a result, the Soviet Union took the leading positions on a number of technologies, mainly for military purposes (e.g. manufacturing of small arms and nuclear weapons, armored vehicles and multiple launch rocket systems, space industry, etc.), and then in term of the peaceful use of existing developments (for example, nuclear power, heavy engineering, automobile and aircraft manufacturing, medicine, etc.).

But during the past decades the success of Soviet modernization was virtually neutralized: the industry did not develop but also actively destroyed. For example, if in 1990 the average life of machinery and equipment accounted 12 – 13 years, then in 2010 it increased to 19 years (in Western Europe – 8 years). The level of labor productivity in Russia in comparison with developed countries is lower in 2.5 – 3.5 times, and energy intensity of the GDP is higher in 2 – 3 times, material intensity is higher in 1.5 – 2 times [25]. Costs of scientific organizations and industrial enterprises on research and development and their further transformation into innovations are also insignificant compared to the abroad leaders *(tab. 5)*.

As a result, in the economy of modern Russia about 50% of industry belongs to the fourth technological mode, 4% – to the fifth mode and less than 1% – to the sixth one. The third and the fourth technological modes are dominant in most industries. As a result, the share of high-tech, a science-intensive and innovative industry in the national GDP reaches only 10 – 11% (in developed countries – more than 30%) [10].

The crisis demonstrated the problems in industrial production and in the Russian economy in whole accumulated during two decades of economic reforms. The main ones are: a) the dominance of primary industries and industries with a low degree of processing, b) raw material export orientation and high dependence on the domestic market from imported products, c) the low competitiveness of enterprises, and d) the dominance of large- and mega-sized companies with small share of small- and medium-sized businesses, etc.

According to some experts, in particular, V.L. Inozemtsev, A.I. Kolganov, V.A. Krasilschikov, N.Y. Petrakov, L.G. Simkina (that corresponds to the author's position), *under these circumstances, Russia needs a new industrialization, that consists in creating a competitive industry producing most of the necessary products.* After this will be a need for innovation and the conditions for significant technological breakthroughs.

Table 5. Indicators of science and innovation activity in Russia and developed countries [18, 19]

Indicator	2005	2006	2007	2008	2009	Leaders*
The share of domestic expenditure on research and development in GRP (GDP),%	1.07	1.07	1.12	1.04	1.24	France – 2.02 Germany – 2.53 Japan – 3.39
The amount of the produced security documents on inventions and the useful models per 100 thousand population, units	19	21	20	22	26	France – 22 Germany – 26 Japan – 111
The share of expenditure on technological innovation in the GRP (GDP),%	0.66	0.79	0.71	0.73	0.92	France – 2.3 Germany – 2.5 Japan – 2.8
The share of organizations realizing the technological innovations, in the total number of organizations,%	9.3	9.4	9.4	9.6	9.4	Japan – 33.0 France – 36.1 Germany – 62.6
The volume of innovative products in total production volume,%	5.0	4.7	4.6	5.0	4.5	Germany – 10.2 France – 10.9
*Presented in 2009 or in the years in which data are available.						

Modernization of the economy will determine the reforms in other activities; the successful experience of modernization in Japan, South Korea, Singapore, China, etc. shows it.

First of all, Russia needs to acquire and to develop the most advanced technologies, to modernize the infrastructure, to attract investors. It is necessary to rely on fundamentally new developments of the fourth and fifth technological modes, that would require replacement of physically and morally obsolete funds in all sectors of the economy into the latest technological systems that provide the cost-effective use of resources, high economic efficiency and production competitiveness. And as we reach the level of developed countries we should increasingly switch into innovation, focusing on the formation of the key ways of the sixth technological mode, and choose from them such ones, where Russia can become a leader and find its niche in the global market[9].

Thus, in modern conditions for the development of Russian economy and of the country in general it is reasonable to combine the strategies of "transferring" and "catching up development" according to production previously manufactured in developed countries, and to adopt the strategy of "increasing" in terms of active development and exploration of their own innovation on the base of using existing scientific and technological capacity.

Secondly, it is necessary to define, who will carry out modernization, and what means for this purpose are required. As in many respects this depends on a choice of the main participants of modernization processes, their condition and resource support.

Currently in Russia there are two main concentration centers of significant financial resources (the potential modernization subjects that could be an accelerator for economic development): state and primary monopolies, formed in the last decade of the twentieth century due to the privatization of the most profitable, mainly primary, enterprises. Academic institutions and small[10] and medium-sized businesses are of great importance in terms of research and advanced development and implementation of these results into the production.

In the current socio-economic conditions, the situation is the following one: the Russian government reaches to save being afraid of wrong investments and the danger of "burying" of funds (which are restricted as a result of the crisis), as it has happened in the USSR. Not less carefully the large-sized capital behaves, estimating the high cost of any technological projects, their high risks and the delayed economic benefit in comparison with investments into oil, gas or trade. And small- and medium-sized businesses are passively involved into the design and development of innovation. According to surveys in Russia in whole [8], this situation has the following reasons: lack of own funds and poor financial support from the state, lack of qualified personnel, the imperfection of the legal framework, lack of demand, etc. It's not a secret that in the past decades the insufficient attention was given to the development of Russian science, and this is evidenced by the decrease in funding and numbers of scientific personnel, reduction of inventive activity, aging laboratory facilities, etc[11].

[9] The world has already the experience of technological breakthroughs by such countries as China, India, Singapore, Taiwan, and others, that show that the state can increase its level of innovation and become one of the most technologically advanced countries in the next phase of growth technological mode (source: Modernization of the Russian Federation: conditions, preconditions, chances: the collection of articles and materials / ed. by V.L. Inozemtsev).

[10] Small business has a greater mobility and flexibility to respond to changing conditions and demands in the market (market demand, inflation, unemployment, etc.), than medium- and large-sized enterprises, so now it is one of the main tools for solving social and economic problems (source: Glazyev S.Y. Strategy of accelerated development of Russia in the global financial and economic crisis.).

[11] More information about the scientific and technical sphere in Russia is shown in the works by such researchers as A.E. Varshavsky, B.N. Kuzyk, G.A. Lakhtin, V.L. Makarov, L.E. Mindeli, Y.V. Yakovets etc.

State leadership is very necessary in this situation, and political will and professionalism of state leaders gain exceptional value. In addition *the state* must fulfill its primary function in the economy – to identify priorities and to create conditions for development of private initiative, free market, fair competition, creating an investment climate under which in Russia it would be profitable and safe to produce goods and services. In turn, *small-, medium- and large-sized businesses* should be the main agent for future modernization, undertaking the role of the acquisition, development (with the active participation of representatives from the science), distribution and introduction of advanced achievements.

In order to achieve a desired result, in the process of their activities the authorities and government bodies should rely on various forms of public-private partnerships that are profitable for the both sides – government and business, *with a maximum use of competitive advantages that the country possesses* [6, 10]:

- a high level of education and spiritual traditions that guide people to the creative artistic work;
- abundant natural resources that provide the largest part of domestic demand for raw materials and energy resources;
- a vast territory and large domestic market that provide a wide variety of vital functions and needs of population;
- a large amount of unbound savings, which are engaged into economic turnover and it can increase the level of investment activity;
- advanced scientific and technical potential, possession of significant technological developments in a number of promising scientific areas;
- free capacity to quickly increase production with negligible costs, etc.

According to the academician A.G. Aganbegyan, *sources of additional investments to modernize the Russian economy can be:*

a) increase of the investment share in the consolidated budget by reducing operating costs;

b) use of a part of gold and exchange currency reserves of the country;

c) privatization of non-strategic public enterprises;

d) bonded investment loan released by the government and profitable for the population and foreign investors;

e) loans provided by Russian banks after the decision to strengthen the incentives for the implementation of "long" money, including at the expense of pension, insurance and mutual funds; e) use of economic entities funds in the case of reduction of taxes, customs duties, etc [25].

Thirdly, it is necessary to select the priority ways of economic development (defined by the state), on which the success of the modernization depends.

The possibilities are always limited, so it is reasonable to determine the vector of force application, and to build an effective scheme of allocating resources and coordinating efforts of modernization subjects.

At the first meeting of the Commission on Modernization and Technological Development of Economy[12] from 18.06.2009 the Russian President named five lines of modernization and technological development of economy, such as medical technology, energy efficiency, nuclear technology, telecommunications and space industry, information technology. However, the contribution by nuclear energy, space segment, pharmaceuticals and computer science in GDP is around 3.5%, but less than 3% of all workers in the country employ in these industries. One can get the impression that the planned targets reflect the "residual" approach to the problem of modernization [9].

According to many experts (V.L. Inozemtsev, B.Y. Titov, V.A. Tsvetkov, M.M. Spiegel and others), these five priorities in the coming years will not change the situation in the economy and in the country in whole.

[12] Established according to RF Presidential Decree from 20.05.2009 № 579 to considerate problems of public policy in the modernization and technological development, to define priority lines, forms and methods of state regulation, to coordinate activity of executive power in this area.

It is necessary to develop the traditional economic sectors providing high potential of growth, productivity and demand for innovations:

- machinery-producing industry, including machine-tools and other precision industry, transport and power engineering, shipbuilding, aerospace and automotive industry, including production of its components;
- chemical, biotechnology industry: the production of polymers and composite materials, new fuels, fine chemicals, including pharmaceutical and cosmetic industries;
- food industry: extensive processing of agricultural raw materials, primarily domestic ones;
- information and communication technologies, including instrument making industry, electronics, development of software, telecommunications equipment and medical devices;
- production of consumer goods, etc. [3].

At the same time, it should focus on the elements of the future technological mode, i.e. on the new "growth points": the extension of active human life, nano-and biotechnology, alternative energy, etc. And, considering features of the Russian economy development, it is necessary to work according to internal requirements (import substitution, national safety), and to occupy exclusive niches in the system of global demand.

Summing up the consideration of theoretical aspects of the category "modernization" and the possibilities of its carrying out in the conditions of the Russian economy, it would be desirable to note the following:

1. Modernization as the pulling up of the society's development level to the level of the most developed countries, relates to a greater degree of health improvement problem, economy development to further transition of the territory to the innovative way of development, where innovation plays a main role in effective functioning of the socio-economic sphere.
2. Modernization is not an one-stage step, but a complex problem which requires a realization of the coordinated actions in a broad range of issues. So there must be developed a strategy with a clear program of actions that will provide the mobilization and concentration of all resources of the country to carry out the modernization.
3. By the developing strategy it must be taken into account that modernization is being carried out in the concrete country and takes into account the historical and cultural traditions of the people which should organically fit into the modernization process, increasing their potential. And in this case, the state fulfills a function of setting priorities and shaping the conditions for the further development of the national economy, and business sector with the active participation of science carries out the reproductive activities in the given orientation.
4. Russia has a chance to make innovation and technological advance, focusing on the acquisition of new achievements of the fourth and fifth technological modes, and as it reaches the level of developed countries it will develop the basic technology of the sixth mode taking into account its own unique potential and historical experience.

References

1. Bochkov, A.A. Modernization as the current stage of Russian development: conditions, priorities, mechanisms (according to the agricultural sector) / A.A. Bochkov // Finance and business. – 2009. – № 1. – Pp. 25-34.
2. Vardomsky, L. Modernization of the economy in the CIS countries: types, resources, tools / L. Vardomsky, A. Shurubovich // Economic review of the EurAsEC. – 2008. – № 1 (13). – Pp. 4-8.
3. Out of the crisis: nonuse of the raw-materials model, the new industrialization: the annual economic report by the all-Russian public organization "Business Russia" / A.D. Golubovic, A.B. Idrisov, V.L. Inozemtsev, B.Y. Titov, M.M. Spiegel. – M., 2009. – 44 p.

4. Gavrishenko, M. About regional industrial policy // M. Gavrishenko / Smart production: journal for industrial leaders. – 2010. – № 12.

5. Gelman, V. Authoritarian modernization: what are its prospects in Russia [Electronic resource] / V. Gelman. – 2008. – Available at: http://www.eu.spb.ru/

6. Glazyev, S.Y. Strategy of accelerated Russian development in the global financial and economic crisis / S.Y. Glazyev. – M.: Economics, 2010. – 255 p.

7. Ilyin, V.A. Modernization of the regional economy (according to the Vologda oblast): synopsis of a Ph.D. thesis in Economics: 08.00.05 / V.A. Ilyin. – St. Petersburg., 1999. – 39 p.

8. Indicators of innovative activity. 2009: stat. vol. – M.: Higher School of Economics, 2009. – 488 p.

9. Inozemtsev, V. Modernization: who and how will pay? /V. Inozemtsev // The Russian Federation today. – 2010. – № 22. – Pp. 18-21.

10. Institutional problems of technological modernization according to the Russian economy / G.V. Artamonov, A.V. Koltsov, V.I. Kosarev, E.A. Naumov, S.F. Ostapyuk // Information analysis bulletin. – 2010. – № 6. – 46 p.

11. Kolganov, A.I. The experience of the four modernizations in the Russian economy and the problem of catching-up modernization in the post-industrial era / A.I. Kolganov // Philosophy of Economy. Almanac of the Center for Social Sciences and the Faculty of Economics of Moscow State University. – 2002. – № 1.

12. Kolennikova, O.A. Economic problems: views of business producer managers / O.A. Kolennikova // Econometric society. – 2010. – №9. – Pp. 94-101.

13. Kondratiev, N.D. Problems of economic dynamics / N.D. Kondratiev. – M., 1989.

14. Modernization of the Russian Federation: conditions, preconditions, chances: the collection of articles and materials / ed. by V.L. Inozemtsev. – Vol. 1. – M: The center of researches of the postindustrial society, 2009 – 240 pp.

15. Modernization of Russia as the construction of a new state: An independent expert report / I. Ponomarev, M. Remizov, R. Karev, K. Bakulev. – M., 2009.

16. Nikologorsky, D. Modernization as a stage of development / D. Nikologorsky // The Economist. – 2010. – № 6. – Pp. 25-32.

17. Polyancheva, A.G. Analysis of foreign experience in managing scientific and technological development and evaluation of its use in the Russian context / A.G. Polyancheva // Management in Russia and abroad. – 2007. – № 2. – Pp.34-40.

18. Regions of Russia. Social and economic indicators. 2010: stat. book / Federal State Statistics Service. – M., 2010. – 996 p.

19. Russia and the countries of the world. 2010: stat. book/ Federal State Statistics Service. – M., 2010. – 372 p.

20. Modern dictionary of Economics / B.A. Raizberg, L.Sh. Lozovsky, E.B. Starodubtseva. – 5th ed., rev. and add. – M.: INFRA-M, 2007. – 495 p.

21. Science and innovation statistic: a brief terminological dictionary / ed. by L.M. Gohberg. – M: CSRS, 1996. – 111 p.

22. Federal State Statistics Service [Electronic resource]. – Available at: http://www.gks.ru

23. Tsvetkov, V. About the starting point of neo-industrial modernization / V. Tsvetkov / Economist. – 2010. – № 11. – Pp. 16-26.

24. Chulanov, V.A. Modernization paradigm in the study of transformation processes in Russia / V.A. Chulanov, I.A. Knyazev, V.I. Bondarenko // SRSTU (NPI). – 2010. – № 1. – Pp. 99-110.

25. Shcherbakova, L.A. Modernization of the Russian economy: a multifactorial problem with many indeterminates / L.A. Shcherbakova // Econometric society. – 2010. –№ 9. – Pp. 73-94.

26. Yasin, E. Modernization of the Russian economy: what is the agenda? / E. Yasin // Society and Economy. – 2001. – № 3-4. – Pp. 5-29.

UDC 37.014

Electronic education and innovative economy development in Russia*

Demand for education for human potential development in the innovation economy, demographic problems of Russian society and reforming the education system force to think about the development and introduction of new forms of learning. One of them is E-Learning. The concept of e-learning meets the new paradigm of "education through life", and also it is the most effective tool for the development of information society and innovation-based economy.

Education, human potential, e-education, education system, distance education, E-Learning system, innovation economy, knowledge economy, information society.

Elena I.
MEDVEDEVA
Ph.D. in Economics, Associate Professor, Doctoral Candidate of Institute of Socio-Economic Studies of Population of RAS
E_LenaM@mail.ru

Sergey V.
KROSHILIN
Ph.D. in Technics, Associate Professor of Moscow State Regional Socio-Humanitarian Institute
krosh_sergey@mail.ru

What is E-Learning?

E-Learning is an electronic (virtual) or, as more commonly called in Russia, distance learning.

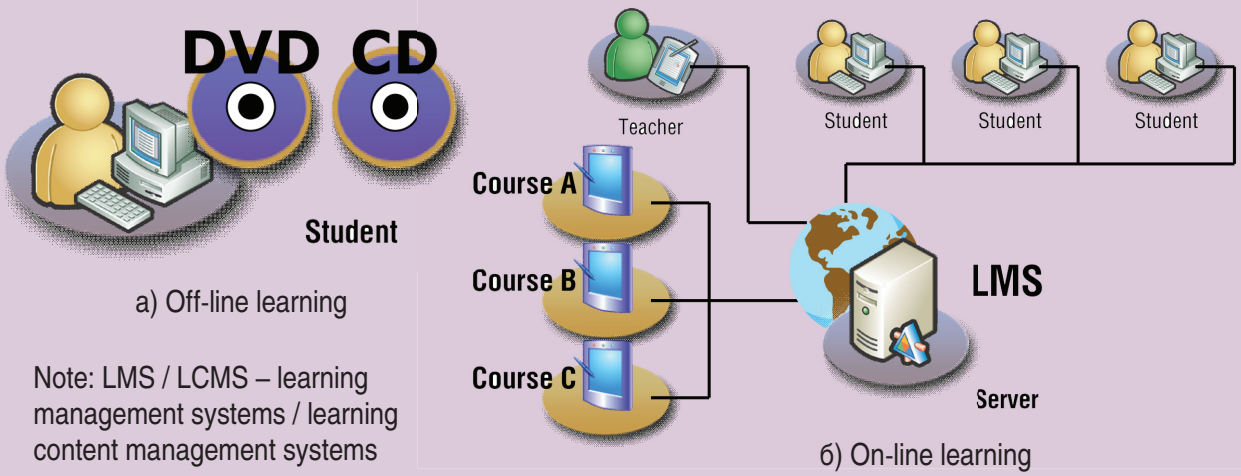
This training involves computer, information and web-based technologies to support the learning process.

E-Learning today is based on network technologies, i.e., there is an integration of educational techniques and capabilities of Internet technologies to transfer the necessary competencies to the trainee.

E-Learning does not virtually have any branch restrictions in use (especially in theoretical courses).

* The study was performed within the framework of RSSF "The influence of human potential on innovative socio-economic development of regional society" № 11-32-00227a1.

Figure 1. Different variants of E-Learning



Numerous studies note a number of *advantages of E-Learning*, among which the most significant are the following[1]:

- mobility – access to training programs in any place and at any time;
- interactivity – simultaneous access to an unlimited number of students;
- informality – the learning process takes place in a comfortable environment;
- efficiency – reduced training costs;
- technological effectiveness – recording and playback of educational materials;
- individual approach – the possibility of personalizing the program for each student.

The learning itself can take place either in the *on-line mode* (with networking or the Internet), or in the *off-line mode* (based on multimedia platform CD or DVD) *(fig. 1)*.

E-Learning in 2005[2] is most popular among the inhabitants of the central region of Russia, i.e. Moscow, the Moscow region, and St. Petersburg (about 100 thousand people). They are followed by the Novosibirsk and Sverdlovsk regions, Krasnoyarsk Krai, the Republic of Tatarstan, etc.

According to the level of access to IT resources the leadership positions are held by university students (almost all have modern computers at homes with an Internet connection), businesses and of public authorities employees.

According to a survey of 16 major companies conducted by SkillSoft Research Company, employees are ready to resort to the E-Learning for several reasons *(fig. 2)*[3].

According to SkillSoft's estimates a number of educational fields are leading in E-Learning *(fig. 3)*.

As can be seen from the charts above more than a third (34%) of respondents choose this form of training for competency improvement, 20% on the orders of superiors, 16% want to acquire new knowledge and skills. If we analyze the direction of training in E-Learning, almost a quarter (22%) belongs to information technology.

This is easily explained by the fact that most firms engaged in IT for a long time have their own designs for the training of their personnel. It is obvious that this form of training will be required and relevant to Russia and in the future.

[1] Golubeva Yu.S. E-Learning: from virtual training to real success http://www.training.com.ua/live/news/ELearning_ot_virtualnogo_obuchenija_k_realnim_uspeham

[2] Long drawn-out start of E-Learning in Russia http://corp.cnews.ru/reviews/free/national/articles/e-learn/index.shtml

[3] Long drawn-out start of E-Learning in Russia http://corp.cnews.ru/reviews/free/national/articles/e-learn/index.shtml

Figure 2. Reasons for E-Learning

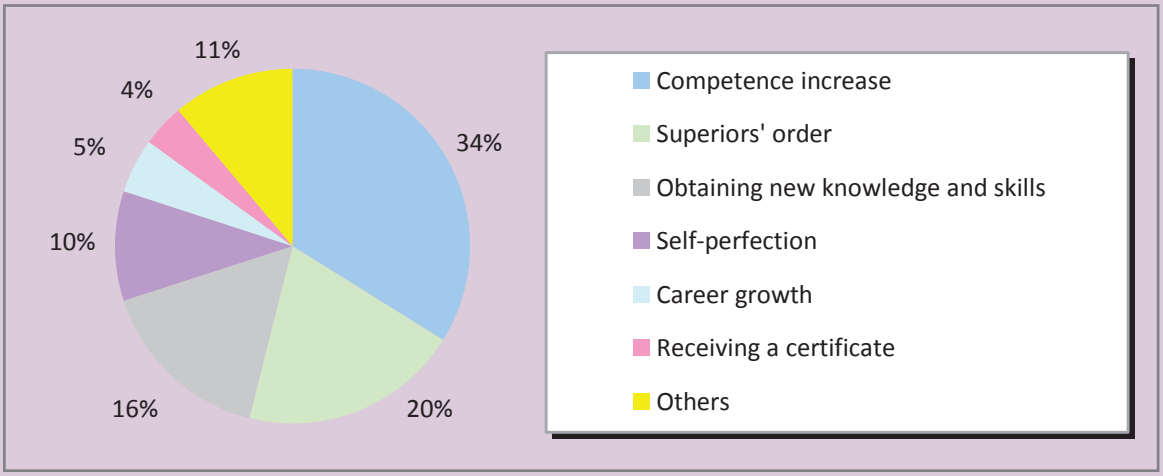
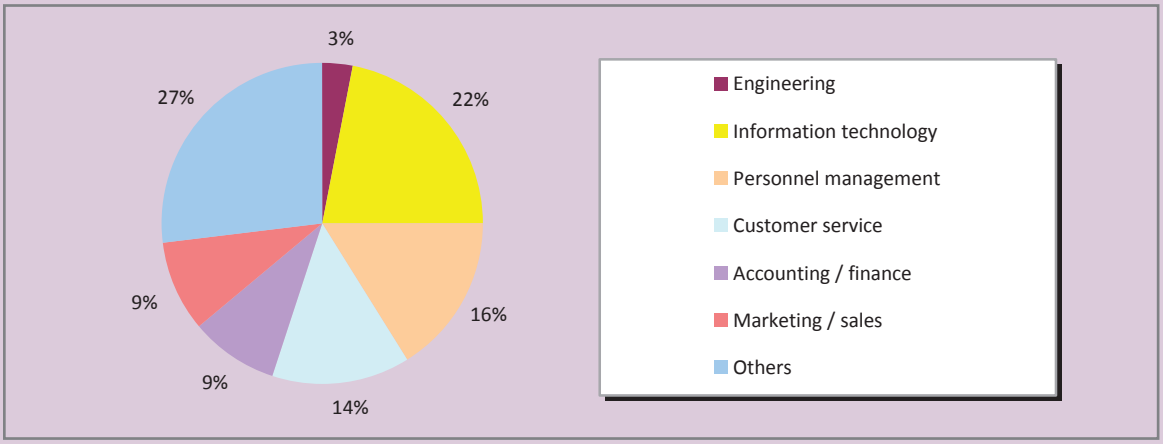


Figure 3. Fields of study in E-Learning



Relevance of E-Learning in modern conditions

The effectiveness of e-learning is confirmed by foreign experience, for example, the former head of GE, Jack Welch has invested 2 million dollars in the bankrupt unit of Cleveland University, and together with other investors wants to turn it into a center of online learning. In the online university there will be MBA, undergraduate and graduate programs. The strategy is simple: to use scientific, theoretical, and human potential, which is available at the university, and to create an online university on its base. *Russian universities have enormous potential*, which may be irretrievably lost. The situation could become similar to the present state of kindergartens and primary vocational education system, when it is easier to rent the available resource base and not convert activities to develop new directions and opportunities for training.

During the crisis, the demand for many types of business education dropped. For example, analysts record a drop of 30 – 40% on MBA courses. The use of distance learning (E-Learning) significantly reduces the cost of education process and may contribute to survival and maintenance the scientific potential of many universities in the country including the government ones. However, to implement such forms of education training institutions need to have some technical, informational and regulatory framework.

According to the estimates of EduVentures research firm about 11% of American students study most of the subjects outside the university using online resources. A decade ago, there was only 1%. In the U.S., *students of traditional universities can learn up to 30% of courses* without leaving home, and in this case, *education would still be considered full-time*. For other forms of learning online classes can occupy 80% of the entire program. In the U.S., about 4 million students (20%) learn at least one course online[4]. In Russia, this practice is applied only in commercial universities (e.g., MHA); in state educational institutions you cannot master the program online by law.

According to The Economist Intelligence Unit, Russia is takes the 55th position in the world in its readiness to implement e-learning. At the same time, Russian citizens spend about 10 billion dollars a year for remote education in foreign universities. Market volume of E-Learning in Russia in 2010 amounted to about 4.7 million dollars. Next year, in connection with the implementation of public education programs and growing demand, it is projected to increase the volume of E-Learning Market in Russia to 10 million dollars[5].

In Russia, the forms of distance learning have significant limitations. Online education is implemented in only a few universities. There are many reasons for that but the main one is in the population's prejudice against this form of learning. This is due mainly to issues of quality of such education. The attitude to distance education is in general dismissive, and in Russia it is more often practiced by commercial universities, which are reproach for the low quality of education as it is. For business educational institutions online training is just a way to cut costs. For online education to be claimed, state or corporate orders are necessary.

E-Learning in the information society and knowledge economy

Modern informatization of society has an impact on all spheres of activity. Education is no exception, as knowledge as well as information is very quickly becoming obsolete. It is important to teach a person to find current and relevant information and thus gain new knowledge – this is the main task of education today.

Analyzing the processes of information society formation, we can distinguish five main areas of radical changes in the education system:

- development of non-formal education conditioned by the impact of information technology;
- strengthening the individualized nature of education, which allows taking into account the capabilities and needs of each individual;
- adoption of self-education self, self-learning as a leading form of education;
- focus on education creating knowledge;
- formation of continuous education system, i.e. education throughout life.

All of the above items to some extent overlap with E-learning. There is also a problem of "avalanche-like" increase in the amount of information that a person has to analyze in the course of his or her work in the era of knowledge economy.

What percentage of knowledge necessary to perform work, can a modern worker hold in the head? According to Robert Kelly (Carnegie-Mellon University), this percentage is steadily declining and if in 1986 it was 75%, in 1997 is was 20 – 15%, in 2008 this value did not exceed 8 – 10%[6]. The tendency to expedite the updating of professional knowledge is obvious. For a modern person the main question is the following: "Where and how to obtain the necessary knowledge?" And the sooner the worker is able to find an answer to his or her question, the faster the result in work activity will be obtained.

[4] Chekmareva E.S. A problem university can be turned into a profitable institution of online education // www.ubo.ru/articles/?cat=120&pub=2563

[5] Rudycheva N., Koroleva E. Long drawn-out start of E-Learning in Russia // www.cnews.ru/reviews/free/national/articles/e-learn/index.shtml

[6] Dukhnich Yu.V. Distance learning in the CIS. Development trends of 2010 – 2013 // www.ubo.ru/articles/?cat=120&pub=3067

Obviously, that the educational process requires mobility, which can be obtained only through E-Learning. In this regard, a remote access to educational resources published on the Internet, and the possibility of quick access to them is essential for the development and modernization of Russian education system.

Development of the Internet served as the basis for the introduction of network technologies in learning and knowledge dissemination. This allowed the use of new forms of dissemination of educational material, such as electronic books and libraries, convenient testing system, as well as a means of communication *(fig. 4)*.

E-Learning and distance education in Russia

In Russia today, distance learning develops mostly through corporate programs of private enterprises, which, therefore, want to minimize the cost for staff training, so they develop or record on video standard courses and then update them from time to time.

There is also a lack of educational content, i.e. the number of lectures and materials that could be provided to students. There appears a problem of transformation of the existing paper course books into electronic form, including the project of electronic libraries creation, and perhaps it will be resolved in the near future in connection with the manifestation of the interest of the state to this sphere of activity.

The very essence of the electronic (distance) learning is based on three components: content, technologies and services *(fig. 5)*.

Only the presence of all three components can make the Russian education market really accessible to everybody: the employees of Russian companies, including the provincial ones, will be able to use the teaching materials of any Russian, and even global university.

The question of quality E-Learning course still remains open. Currently, the list of components, which should be included in any high-quality E-Learning content is the

Figure 4. The system of electronic (distance) learning

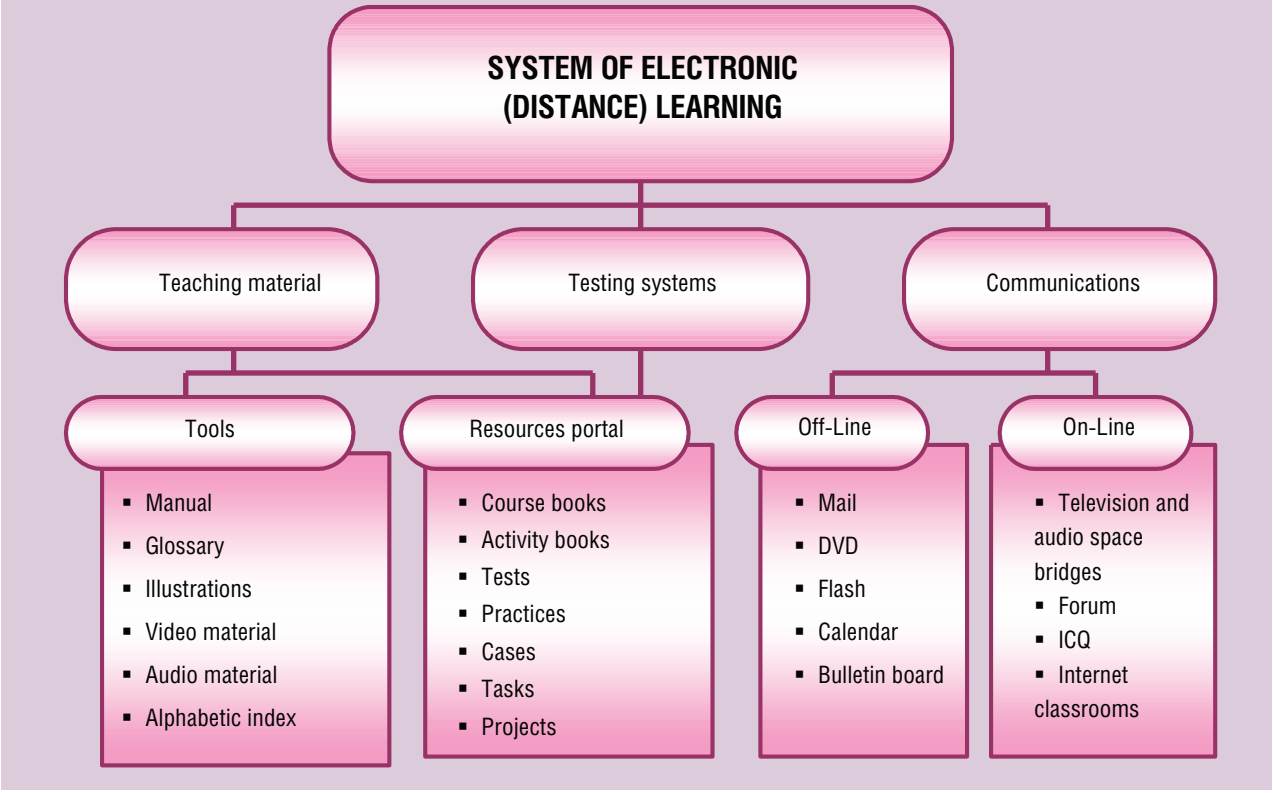
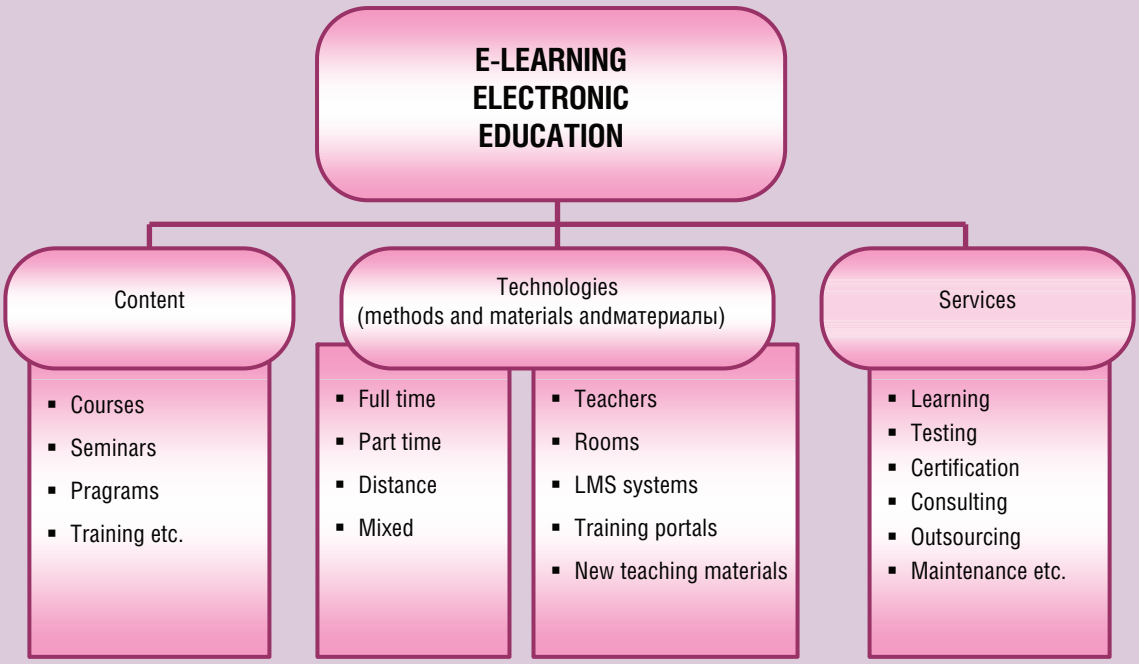


Figure 5. The main components of E-Learning



following: user manual, training planned schedule, tutorial, tests and tasks for self-check, presentations, a list of compulsory and additional sources, questions or plans for the forums and chat; an acceptable design and user-friendly interface. However, there are still no specific evaluation criteria for each of the components today.

Legal regulation of E-Learning and distance education

We should not forget about the problem of legal regulation in the E-Learning sphere. In Russia, the legal grounds for the introduction of distance learning are the laws: "On Education", "On Higher and Postgraduate Vocational Education", the Order of the Ministry of Education of the Russian Federation dated 18.12.2002 № 4452 "On approval of methods of application of distance learning technologies (distance learning) in institutions of higher, secondary and additional vocational education of the Russian Federation". These laws are not enough for a clear regulation of relations in the sphere of public education. In the current drafting of this law, distance learning, as a separate form of training, was not present. The law says only about distance learning technologies. Therefore the question of certification of specialists in this field remains open. At the moment, it is not possible to get an integrated certificate.

In Russia, there is an Agency on Public Control of Education Quality and Career Development (AKKORK), which provides services for public and professional assessment of the quality of education, conducts a comprehensive audit of the university, introduces an effective quality management system at the university, provides consulting and methodological support on business issues in higher and vocational education and, together with the European Foundation for Quality in E-Learning (EFQUEL) and the European Association for Quality Assurance (ENQA), it is able to produce certification of personnel working in the field of distance learning[7].

[7] Dukhnich Yu.V. Distance learning in the CIS. Development trends of 2010 – 2013 // www.ubo.ru/articles/?cat=120&pub=3067

Certain educational institutions provide education and training in e-learning, confirming the qualifications of the trained with issued diplomas or certificates, but there has not yet been worked out a unified system of certification.

If you analyze the situation with online learning in higher education, it is obvious that its development is inhibited by state standards. According to them, to get state diplomas a student must not only pass the exam, but also attend the "classroom hours" within the walls of the university. Universities have been already waiting for several years for the development of new fourth-generation standards, so there is no counting on that the standards for online (or distance) learning will be developed at the earliest possible date.

Despite the fact that in Russia there are already students studying remotely, the final assessment of knowledge and defense of graduation projects is not remote. Such certification system is envisaged by the legislation and is a guarantee of an objective assessment of knowledge gained by students during their studies.

According to current legislation in the Russian education system with this form of study, students can get only two versions of a document certifying the passage of learning. In the first case it is a course certificate of private training center (for example, such certificates are used in the training center for programmers in the program "1C Accounting"). The second case it is receiving of the so-called educational credit, recognized by colleges and universities with the traditional form of training (this form is used today by training institutions, such as IPKIR).

This form is very promising. Over the past ten years, virtual forms of learning have become familiar to most large institutions around the world. Today there are still only about 400 different learning platforms and 30 virtual classrooms in the world. However, their number is constantly growing. In 1998, 1.5 billion dollars was spent for this purpose, and already in 2005, according to the USA Institute of Standards and Technology, the amount of money invested in the education Internet services, has reached 46 billion dollars[8].

IT architecture of the distance E-Learning system

E-Learning involves changing the very form of training, taking into account certain specifics of e-learning. First of all, it is that you can study at any place where there is a computer with Internet connection (even at home or at work). Today it is possible to view and work with data using advanced cell phones and netbooks almost everywhere. Students can choose the beginning and the end of their classes themselves, and they can attend a virtual classroom every day, or at any convenient schedule. Receiving or sending information associated with the study of the course, students are constantly interacting with the teacher and other students *(fig. 6)*.

As with traditional learning, the teacher who leads one or another virtual course, develops curriculum, conducts classes in a virtual classroom, organizes and directs the discussion on the topic of study, answers students' questions and, of course, checks the correctness of assignments. Each course has its own time frame. In order to study the subject students will require books. They can be ordered through virtual bookstores operating under courses.

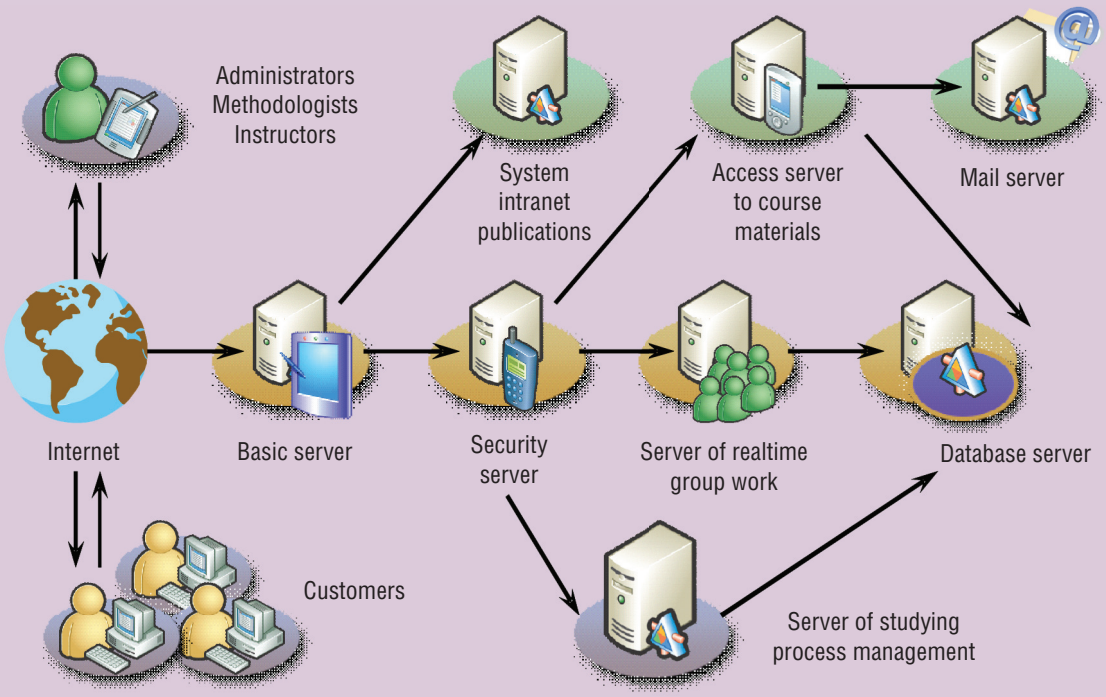
The virtual education system itself makes it possible to acquire additional knowledge for everyone, regardless of national, racial, sexual, social and other characteristics that might otherwise become a pretext for discrimination. The special role is played by personal characteristics, preferences and qualities, contributing or not contributing to the successful E-Learning.

Disadvantages of E-Learning

Freedom and schedule flexibility in training may be interpreted as permissiveness by many Russian students.

[8] Semenkov I.S. Education via the Internet – it's real // www.websoft.ru/db/wb/88E9B0A18D19DD29C3256C84004FE0A0/doc.html

Figure 6. IT architecture of distance learning system



Source: Education in the 21 century, the presentation of IT Academy

Therefore, a real internal motivation to studies and self-discipline is required from the students (regardless of age). It is necessary to abide by the terms and requirements of the assignment and understand that e-education system is not easier than the traditional one. It is extremely important not to skip classes and complete the assignments on time.

Not all professional skills can be obtained through an electronic (distance) education. There are a number of academic disciplines, in which distance learning is unacceptable. For example, when studying the structures of technical facilities it is necessary to have practical studies with the full-scale exhibits and their layouts, so as not everything can be replaced by computer simulation. You cannot become a doctor without curriculum of clinical practice, a hairdresser – without practical job skills, etc. There is a certain list of disciplines and specialties of such kind of course. It should be understood that there is specific of training in any profession and one should intelligently select those areas that can be realized through the E-Learning with the greatest efficiency.

High quality of electronic (distance) education is determined by the following factors[9]:

- ability to attract highly qualified scientific and pedagogical staff and experts in the field of new information technologies to develop broadly replicable training and methodological support;
- high intellectual potential and development of informational educational environment;
- high level of self-reliance in students' cognitive activity;
- large number of various cases and assignments, including those of research character;
- potential and openness of collective creativity during teleconference on the Internet / Intranet;
- opportunity of almost daily personal contact of the teacher and the student. Obviously, not all factors can be implemented today in the Russian education system.

[9] Solovov A.V. Myths and realities of distance learning // cnit.ssau.ru

Distance education services of high quality require a large initial cost for developing the information environment as well as e-learning is implemented primarily on the IT basis. Organization of e-learning in any educational institution from scratch is a rather expensive exercise, which can only be recouped through increased enrollment, compared with classroom forms of learning. That's why many Russian schools use different forms of e-learning depending on their technical capabilities.

Advantages of E-Learning

Having all the above negative views on e-learning there is one indisputable fact – it is the cost of training, it is 3 – 5 times lower than the cost of the traditional education. In this form of training, if there is a need to suspend classes, you may always do it and resume them when there is an opportunity to study. This is especially important for those who are learning on the job, because very often at work there are questions, which require obligatory intervention. For example, at the beginning of the crisis there was an outflow (20 – 30%) of the enrolled in MBA courses, which was associated specifically with the necessity of their presence in the workplace, but not with financial difficulties.

That is why E-Learning is gaining popularity. Especially large and medium-sized companies rely on distance learning. A variety of distance education is online learning: it can provide ongoing on-the-job training. In 68% the learning takes place in the workplace, 17% – in the classroom, 14% – at home, 1% – in different locations *(fig. 7)*[10].

At present, the average operating time in one place (in the same organization) in the big cities is just more than 1.5 years. This means that the time frame for the adaptation and training of employees is constantly reducing. Under these conditions, the employee's long-term plan has ceased to exceed the bar in three years.

The main burden of education is shifted from the formal structures to the structures of informal learning (social learning – mutual learning, learning on demand, knowledge-sharing systems, independent work with information). Enhancing role of informal education leads to the fact that the training of personnel in organizations makes a stronger emphasis on knowledge sharing in the personal interactions between the staff and in the process of engagement through enterprise portals, sites, and specialized applications (information systems for education)[11].

Can E-Learning replace traditional forms of education?

Today it is still too early to say that the E-Learning can supplant the traditional form of teaching, as there is a number of reasons for this:

- first, the learning process becomes entirely dependent on technology, ICT and its possibilities, and in terms of pedagogy there is little positive in it;
- second, E-Learning requires, above all, discipline and ability to work independently, which is clearly not the case with the Russian students;
- third, computer equipment and technology cannot replace a live person – the teacher. Therefore, the most promising today is blended learning – the so-called mixed or of full-time and distance learning. It combines the E-Learning and traditional teaching.

It should be noted that the proliferation of electronic forms of training is a natural stage in the evolution of the education system from the classical to the Virtual University, i.e., from the blackboard with chalk to computer training programs, from conventional libraries to electronic ones, from small study groups to virtual audiences of any size, etc. The processes taking place in education are not antagonistic, and therefore the virtual and traditional forms of learning should not be considered as mutually exclusive.

[10] Long drawn-out start of E-Learning in Russia http://corp.cnews.ru/reviews/free/national2006/articles/e-learn/index.shtml

[11] Dukhnich Yu.V. Distance learning in the CIS. Development trends of 2010 – 2013 // www.ubo.ru/articles/?cat=120&pub=3067

Figure 7. Place of studies in distance learning

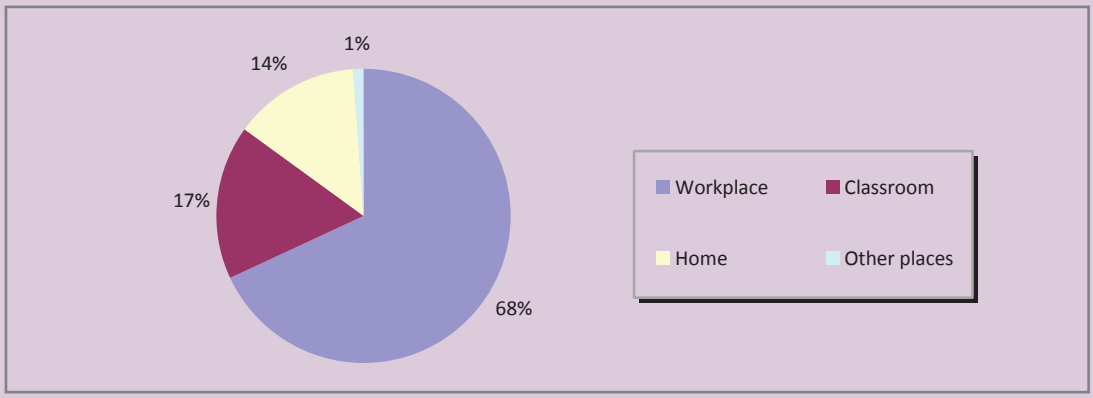


Table 1. State and municipal educational institutions equipped with classrooms for computer science and computer technology (at the beginning of school year)

	1990/91	1995/96	2001/02	2003/04	2005/06	2007/08	2009/10
The number of educational institutions having computer classrooms							
Total	12155	24472	27787	33762	35073	34988	43209
as a percentage of the total number of educational institutions	37.1	68.6	74.5	90.6	94.8	96.7	78.6
having places with a computer, thousands	142.8	315.7	311.0	336.5	381.4	419.6	522.3
Source: Russian Statistical Yearbook. 2010: stat.coll. / Rosstat. M., 2010.							

A good education today is a synthesis of various forms of obtaining knowledge and modern technology, the optimal combination that can be determined for themselves only by the students.

It is obvious that electronic (distance) education requires significant investment on the part of those who want to offer this service to the market. It is necessary to create the E-Learning infrastructure. Infrastructure[12] is a set of technology systems, business processes, business culture and control mechanisms, which determine how the organization operates, and its very ability to work. You should not confuse the infrastructure with assets and resources, because the existing infrastructure allows using or restricts the use of assets such as technology, personnel and time.

[12] Patrick Lambe. An alternative method of calculating the efficiency of investments in e-learning in professional training // Straits Knowledge, Singapore // www.websoft.ru/db/wb/A4213FD3/doc.html

E-Learning infrastructure in Russia

The main problem of the Russian education system at almost all levels is the lack of normal (decent) funding. The situation has changed for the better before the crisis, when the government began to implement the national project "Education". Schools and universities of the country were being provided with modern computer equipment, interactive boards, projectors, video and audio equipment *(tab. 1.)*.

The above table shows that over the past 20 years there has been a qualitative leap forward in providing Russian school classrooms for teaching the basics of computer science. The number of places for students has increased almost 5 times, and for the period of implementation of the national project "Education" there appeared 100 thousand more places with a computer in our schools.

It is very important as the foundations for all subjects are laid in elementary and secondary school. Besides at the beginning of the academic year 2009/10, 32,633 educational institutions had their own site on the Internet, allowing implementing the foundations of e-education at school level.

With the crisis the supply of computers and electronic learning tools reduced or eliminated at all in the Russian and world economies. Many schools faced the fact that they did not have financial capabilities to service the received equipment, and a number of educational institutions did not even have this line in the budget. As a result, a lot of hardware is simply idling in the classrooms and not used in the learning process. Many schools simply do not have enough experience and knowledge to operate it (for example, in schools interactive boards are sometimes used just to demonstrate presentations on them).

It is necessary to understand: how the Russian education system is ready today to implement new learning technologies, what are the qualitative and quantitative indicators of its informatization.

The development of electronic forms of education is impossible without the use of new technology and training tools. It is therefore necessary to analyze the extent of their use at all stages of the educational process. We use the statistical data for this *(tab. 2)*[13].

The data presented in the table demonstrates a positive trend in the use of information and computer technologies at various levels of the educational process in the Russian education system. However, one can call them qualitative or significant in the last 3 years only for comprehensive educational institutions, since there an increase in the number of personal computers from 674.5 thousand units up to 1056.1 thousand units is observed, that is, almost 1.6 times.

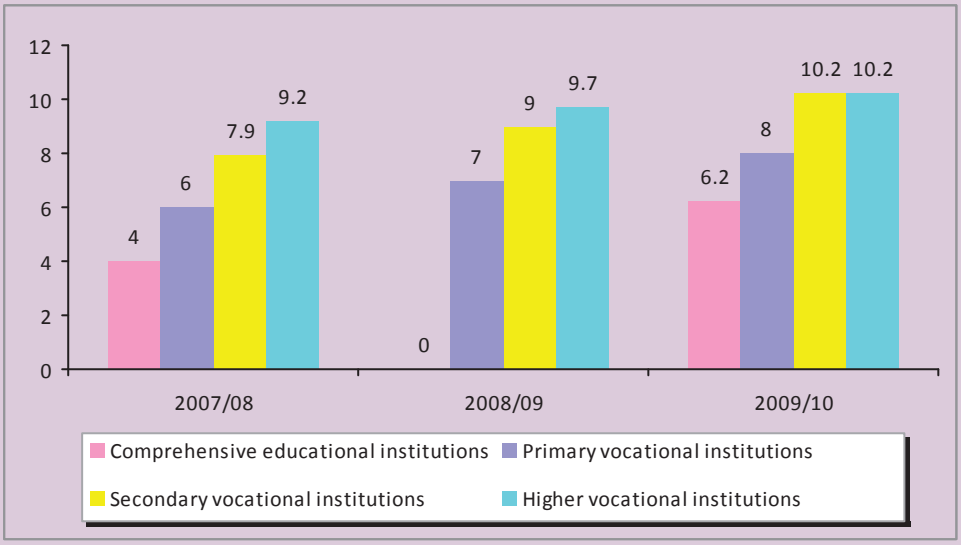
Table 2. Electronic means of learning in educational institutions at various levels of the educational system (at the beginning of school year)

Indicators of educational institutions	2007/08	2008/09	2009/10
Comprehensive educational institutions			
Number of personal computers, thousands pieces, including:	674.5	-*	1056.1
in a local computer network	353.2	-	555.3
having access to the Internet	286.5	-	524.3
The number of PCs used for training purposes, for 100 students, pieces	4.0	-	6.2
Primary vocational institutions			
Number of personal computers, thousands pieces, including:	60.0	63.3	63.6
in a local computer network	32.9	34.4	35.4
having access to the Internet	11.7	15.9	19.0
The number of PCs used for training purposes, for 100 students, pieces	6.0	7.0	8.0
Secondary vocational institutions			
Number of personal computers, thousands pieces, including:	181.3	192.4	210.1
in a local computer network	124.5	139.2	155.8
having access to the Internet	78.6	94.7	114.0
The number of PCs used for training purposes, for 100 students, pieces	7.9	9.0	10.2
Higher vocational institutions			
Number of personal computers, thousands pieces, including:	568.1	603.7	627.6
in a local computer network	409.4	461.2	520.3
having access to the Internet	382.3	430.9	486.0
The number of PCs used for training purposes, for 100 students, pieces	9.2	9.7	10.2

* Up to the academic year 2009/10 statistical observation was carried out once every two years.

[13] Russian Statistical Yearbook. 2010: stat.coll. / Rosstat. M., 2010.

Figure 8. Indicator "The number of computers used for educational purposes, for 100 students, pieces" in educational institutions at various levels of the educational system



Russian Statistical Yearbook. 2010; authors' calculations.

During the same period in higher educational institutions the number of computers has increased only 1.1-fold, and in primary vocational educational only by 3,600 pieces. A more important and interesting figure in terms of informatization of education is the number of computers used for training purposes for 100 students. This figure will be analyzed with the help of the diagram *(fig. 8)*.

Institutions of higher and secondary vocational education now have a score of 10 computers per 100, which is a positive trend compared with previous years, but this is clearly not enough for modern forms of the educational process with the use of electronic means of learning, the effectiveness of which first of all, depends on the use of PCs by each student.

In comprehensive educational institutions this figure was 6 out of 100, i.e. only six out of 100 students can use a computer in class at a given time.

Prospects for E-Learning in Russia

Prospects for E-Learning in Russia are quite positive thanks to a combination of significant demand for alternative ways of training (primarily corporate: skills development) and opportunity to learn the most successful experience of foreign companies. The corporate sector, government institutions and centers of retraining seem to be the most promising in terms of E-Learning implementing. In the education sector, uniting institutes of higher education, the introduction of combined learning options seems to be possible. In this case full-time students will study some of the subjects remotely. To obtain basic education in Russian universities the E-Learning, apparently, is not prospective. Primarily it is due to a significant reduction in the number of entrants. In 2010 their number will amount to only 62% of 2005 level, and it is easy to guess that the overwhelming majority of entrants will prefer a familiar and reliable way of full-time studies.

Despite the existing problems, the real savings of universities and companies-employers with the organization of distance learning is obvious. But to be honest E-Learning will become widespread only when in Russia

there will be the appropriate technical capabilities, good telecommunication channels – primarily in the province, for which this version of training was originally designed.

As possible solutions to this problem we can offer, for example, the creation of computer network centers in public places (it is mostly related to the remote areas of the country), the development of a credit system for youth for educational needs, teachers training in universities to study with the use of IT (it is no secret that many qualified teachers are often not able to work with computers at the level necessary to conduct E-learning).

The most important condition for successful implementation of E-Learning in Russia is political and legal support from the government, the joining of resources of the Ministry of Education and Science and the Ministry of Communications, promotion from businesses and large IT-companies.

References

1. Rimashevskaya, N.M. The quality of human potential in the innovation economy / N.M. Rimashevskaya // Population. – 2009, № 3. – Pp. 16-29.

2. Nikolaev, E.M. State regulation of the education market / E.M. Nikolaev // Russian Economic Online Journal [Electronic resource]. – M.: 2006. – Available at: http://www.e-rej.ru/Articles/2006/Nikolacva.pdf

3. Suchkova, I.A. Socio-economic content of the category "Education" / I.A. Suchkova // Social sciences and humanities in the twenty-first century: proceedings of the international conference. Vol. 1. Economic organizations: the functioning and management / ed. G.V. Ulyanova. – Kovrov: KGTA. 2006, Pp. 236-247.

4. Medvedeva, E.I. Marketization of education: social and economic problems (southeast Moscow Oblast case): monograph / E.I. Medvedeva. – Kolomna: MGOSGI, 2010. – 224 p.

5. Revenues, expenditures and consumption of households in 2010 (based on a sample survey of household budgets) [Electronic resource] / Federal State Statistics Service. – Available at: http://www.gks.ru/bgd/regl/b10_102/IssWWW.exe/Stg/d03/3-01.htm

6. Emelianenko, A.S. With might and main for a scholarship, a radical initiative was not supported / A.S. Emelianenko // Rossiyskaya Gazeta. – 2011. – № 5387 (11). –January 21.

7. Putin ordered to restore order in Russian education. 1.02.2010, 18:40 // Policy News. Analysis of events in Russia [Electronic resource]. – Available at: http://oko-planet.su/politik/newsday/30144-putin-potreboval-navesti-poryadok-v-rossijskom.html

8. Rimashevskaya, N.M. Man and reforms: the secrets of survival / N.M. Rimashevskaya. – M.: ISESP, 2003. – 392 p.

9. Rimashevskaya, N.M. Demographic changes in Russia as a precondition for modernizing the education system / N.M. Rimashevskaya, V.G. Dobrohleb, O.V. Kislitsina // Population. – 2009. – № 1. – Pp. 6-9.

10. Silkin, R.S. Personnel training in terms of continuing professional education: a corporate aspect: practical-oriented monograph / R.S. Silkin, O.I. Sidorov, T.I. Suzdaltseva. – Tomsk, Publishing House "B-Spectr", 2007. – 152 p.

11. Rating of EGEMetr portal: popular specialties with the eyes of 2010 entrants. [Electronic resource]. – Available at: http://www.egemetr.ru/rating/ispec.php.02.03.2011

12. The most popular specialties in the labor market in Moscow [Electronic resource]. – Available at: http://cao.mos.ru/document/2010/02/24/d19275//

13. Staroverova, E. Five most popular occupations for university graduates of 2010 / E. Staroverova [Electronic resource]. – Available at: http://www.trud.ru/article/11-05-2010/241811_pjaterka_samyx_2010.html

14. Adaptive strategies of the population. collective monograph / ed. E.M. Avraamova. – SPb., 2004. – 196 p.

15. Medvedeva, E.I. The influence of education on human potential formation: the realities, opportunities and threats to the country's economic security / E.I. Medvedeva, S.V. Kroshilin // National interests: priorities and safety. – M.: Publishing House "Finance and Credit", 2011. – № 8 (101). – Pp. 57-67.

16. Sorokin, P. The present state of Russia / P. Sorokin // New World. – 1992. – № 4-5. – Pp. 35-39.

UDC 332.1:502.3

Demographic problems of the Republic of Belarus and their solutions

Last year the realization term of the National Program of demographic security of the Republic of Belarus for 2007–2010 was over. The author of the article analyzes the implementation of the program paper from the angle of some certain indices. Some current demographic problems of the country are also considered, short-term and long-term perspectives are estimated. The author suggests some ways for further protection of demographic security of the Republic of Belarus.

Demography, demographic security, demographic situation, fertility, migration, life expectancy, prognosis, population policy.

Lyudmila P.
SHAKHOTKO
Doctor of Sociology, Professor, Senior Researcher of the Institute of Economics of the NAS of Belarus
shakhotska@mail.ru

As of April 1, 2011 the population of the Republic of Belarus was 9474.2 thousand people [1]. The urban population was 74.5% and the rural one was 25.5% [2]. Belarus isn't distinguished by the population among other countries of Europe and takes a middle position.

Thus, it ranks fifth among the CIS countries after Russia, Ukraine, Uzbekistan and Kazakhstan. Its population is by 14 times less than the population of Russia, by 5 times less than the population of Ukraine, but by 1.3 times more than the population of all three Baltic states combined, by 2 times more than the population of Finland or Denmark.

There are more people than in Austria, Bulgaria, Sweden and Switzerland in our republic. The following European states such as Belgium, Greece, Hungary, Portugal, Czech Republic, Yugoslavia and some others have approximately the same size of population as in Belarus.

Throughout the postwar years, until the early 1990s the population of the Republic of Belarus was increasing steadily. However, the intensity of that growth started to decline since the early 1970s.

Reforming of the country's economy in 1990s has touched many aspects of life. The transition to a multisectoral economy, private sector development, informal activities, the removal of restrictions in the terms of re-employment, unemployment, the forming of the housing market – all these things substantially affected the living conditions and, accordingly, the dynamics of its size, composition and processes of population reproduction.

Currently, Belarus is facing a difficult period in its demographic development, joining the stage of the demographic crisis. A number of trends and events increasingly assume the features of the demographic threats to sustainable development of society and more – to national

security. Demographic security of the state becomes the most important area of national security and, therefore, an important state task.

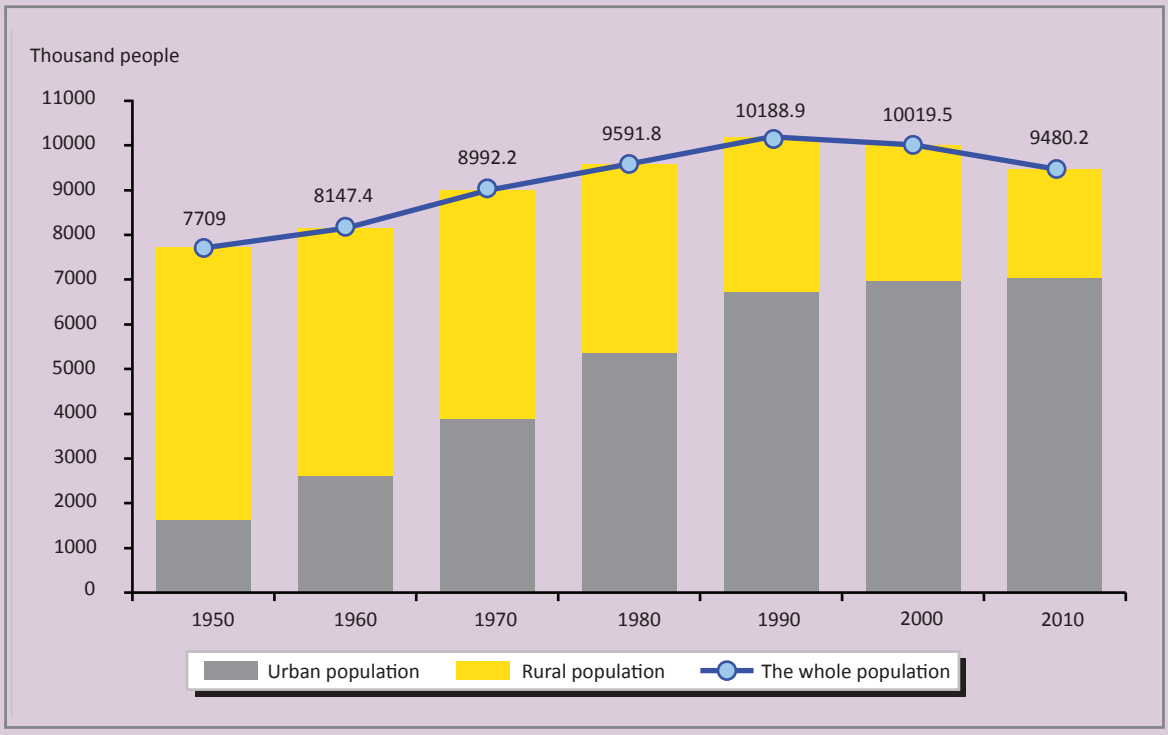
Even in the recent past the demographic changes were not seen as threats to national security because they do not have a broad aspect of the negative social, economic and other consequences and, therefore, they had no significant impact on individual areas of national security. Currently, such impact or better to say – interaction – appears quite clearly and, most importantly, it is growing.

The modern model of demographic development in the Republic of Belarus was not established in recent years – it is the result of development over the century. Practically since the end of the 1970s our country (and the urban communities – since the late 1960s) doesn't reproduce its population, except for the mid-1980s, when there was short-term growth of some coefficients of population reproduction. Natural population increase for more than 20 years was provided only at the expense of the demographic potential of the age structure accumulated in previous years, and the potential run out gradually, and the reproduction rate decreased. Thus, the absolute decline in population of Belarus in the last 15 years was due to the population reproduction mode existing in the country for more than 40 years. The crisis in the socio-economic and environmental development in the late 1980s – early 1990s only hastened an onset of depopulation, accelerating the basic trends in the population changes of Belarus *(fig. 1)*.

You don't have to be a demographer to foresee clearly right now some negative for the State and society consequences of current deep demographic changes.

Moreover, the demographic trends in their development have great stability and time persistence. In 1990s and the first decade of the 21st century small and not enough healthy generations were born, some of whom have already left high school, and in the foreseeable future they will have to work, serve in the Army and provide the financial basis of all state system of social protection and social maintenance.

Figure 1. The population changes of Belarus over 1950 – 2010

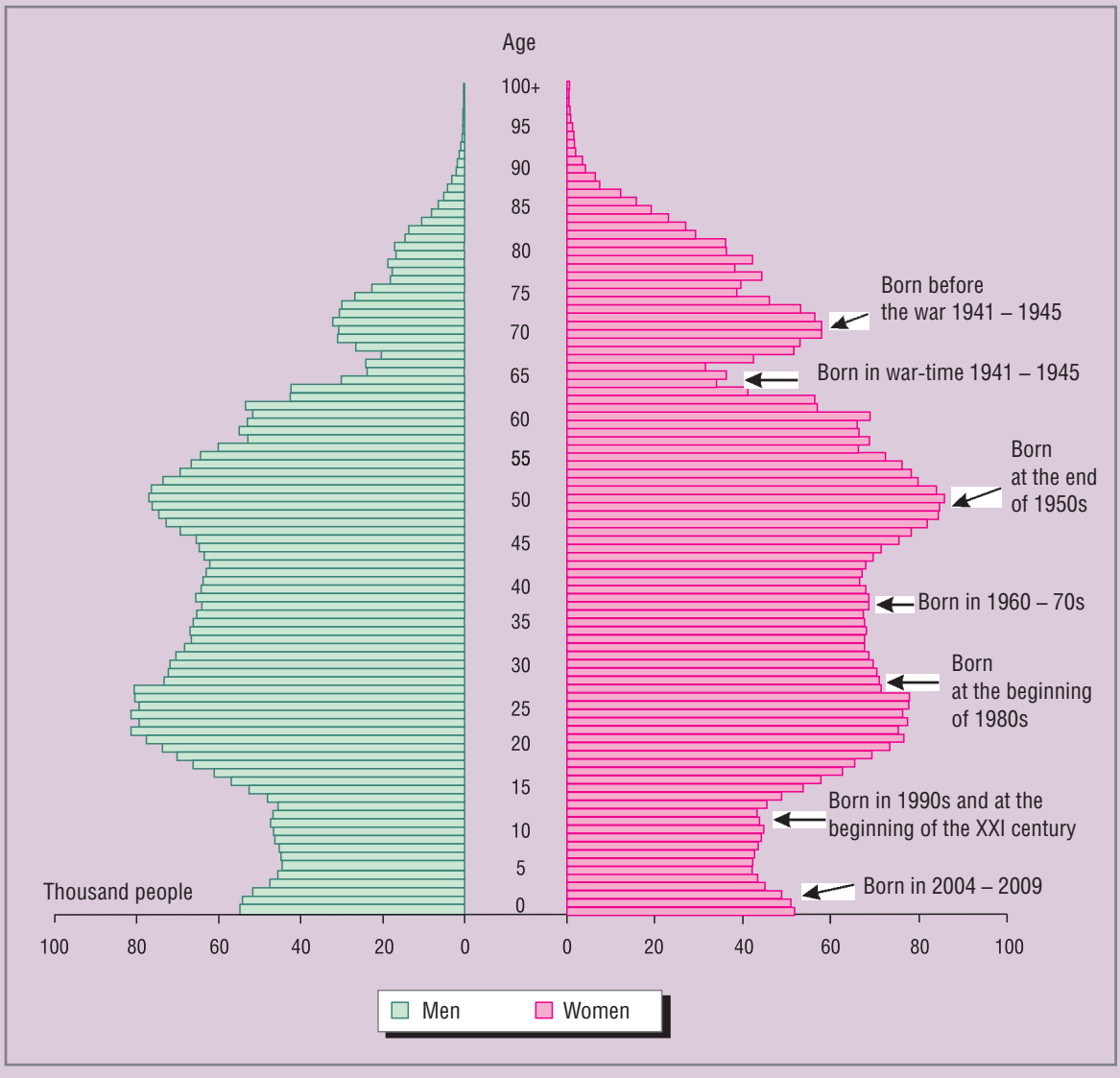


Numerous generations of people born in the postwar decades live and have already begun to go beyond working age, filling up the ranks of retirees. This is clearly seen from the age-sex population structure *(fig. 2)*.

Operating in our country the social system supposes a considerably number of employed people of working age paying compulsory contributions to the social insurance system. Until recently in Belarus despite the rapid decrease in the total population, the population of working age has risen steadily, reaching 6 million and 66 thousand people in 2007.

Only over the years following the 1999 census the population of working age went up by 100.7 thousand people, with an increase of more than a half was due to young people aged 16 – 29 years. Naturally, the share of working-age population to the total population was growing more rapidly, reaching a peak in 2008 – 62.5%. It is the highest figure in the history of the country. The demographic burden on the working population was constantly decreasing. Thus, according to the data of the 2009 census, the share of disabled population was 624 people per 1000 people of working age,

Figure 2. The age-sex population structure of the Republic of Belarus as of the date of the 2009 census



while in 1970 – 894 people, and in 1989 – 785.7 people. This situation was favorable for economic development, which mitigated the social and economic problems that were typical for this period. Later, however, such situation will be changed in a negative direction very quickly. The total population will continue to decrease, but the population of working age will decrease with even faster. This will increase the demographic burden on the working population and, if we are not ready for this, it can cause a number of negative socio-economic events. For example, the Ministry of Defence can have some difficulties in staffing the units and recruits, both quantitatively and qualitatively. So, in 2009 the recruiting contingent was formed from 70.1 thousand young people under the age of 18. In 10 years the number of those will be reduced to 46.1 thousand people. Approximately the same number of boys was born each year in the late 1990s and was 8 years old according to the data of the 2009 census. With this fact in mind as well as the level of health of the younger generations, the future national defense challenges arising from current demographic situation, are obvious and inevitable [1].

One can give other examples of negative consequences of current demographic trends, such as in economics (economic growth, aggregate demand, investment, labor productivity, labor force, etc.) or education, health-care system, culture, social welfare and even policy.

Demographic security is an integral part of national security, which determines the condition of protection of socio-economic development of the state and the society from demographic threats, at which the development of the Republic of Belarus is provided in accordance with its national demographic interests [2]. Thus, security in the demographic sphere is, on the one hand, to eliminate the causes of negative trends in reproduction processes, to mitigate their consequences as much as possible, and on the other - to prevent their occurrence. The demographic threats are phenomena and trends, the results of which are negative quantitative and qualitative changes in population development, they have a negative impact on sustainable development.

The effective role of government in the demographic aspect, in particular, to provide demographic security can be realized only if the supreme bodies of state administration recognize the existence of the problem and those profound social and economic consequences that they entails. It is necessary to realize that the solution of demographic problems is a very complex task. We need targeted measures, time and available financial funds, we need the concept of long-term public policy directed to demographic security.

In Belarus the complexity of the demographic situation has been realized, and some certain measures are taken at the state level. Thus, October 22, 2010 at the meeting with the participants of All-Belarus action "Question to the President" the President of the Republic of Belarus, Alexander Lukashenko, said that the ensuring of demographic security is becoming one of the main activities of the state [3].

The crisis in the economic, political and environmental development of the Republic of Belarus in 1990s were accompanied by worsening of demographic situation. Population growth has changed into its diminution and until the middle of the first decade of XXI century the depopulation intensity increased. The age-sex population structure has significantly deformed (see fig. 2). The birth rate did not ensure a simple reproduction and tended to further decrease as well as the indicators of life expectancy at birth, which were already at a low level. Death rate grew. The Belarusian Institute of the family was in a critical situation. Significant changes took place in the migration mobility of the population: there were streams of refugees and immigrants resettling from other former Soviet republics and areas of environmental contamination associated with the disaster at Chernobyl. In addition, the flow of immigrants from Belarus to the "far abroad"

increased and was accompanied by "brain drain", the problem of illegal migrants became an acute one. All this caused some complex social and economic problems and put the state under a real threat to the security of the country, which had not previously encountered with these problems before.

The complexity of the demographic situation had caused the urgent need to develop a law on demographic security of Belarus, which was passed by the House of Representatives, was approved by the Council of the Republic, and January 4, 2002 was approved by the President of the Republic of Belarus. In accordance with this law the "National Program of demographic security of Belarus for 2007 – 2010" was developed and approved by Presidential Decree of March 26, 2007 [4].

The aim of the Program was to stabilize the demographic situation and the formation of a prerequisite for population growth in the Republic of Belarus, to ачшуму the aim it is necessary to accomplish the following tasks:

- implementation of an integrated system of socio-economic, legal and organizational measures aimed at improving the quality of life for families with children;
- implementation of a package of measures to improve the reproductive health of the population and to protect maternal and child health;
- reducing morbidity and mortality through the measures on forming healthy lifestyles and eliminating the influence of unfavorable environmental factors;
- an annual phased reduction in mortality from all causes with the level of 8 percent a year by 2011;
- optimization of internal and external migration flows.

The result of the program was to be:

- an increase in the total fertility rate up to 10 – 11 per 1000 people;
- an increase in the aggregated fertility rate - the number of children that would be born by a woman during the whole reproductive period (15 – 49 years) – up to 1.4 – 1.5 children;
- reduction in the infant mortality rate to 6 per 1000 babies born alive;
- reduction in total mortality of the population to 10 – 11 per 1000 people;
- achieving the life expectancy at birth 70 – 72 years by 2011;
- providing an annual increase in population up to 5 thousand people due to external migration, mainly the people of working age.

To achieve this goal and to get the expected results a series of specific measures was carried out, such as preferential credits for housing construction and financial aid in paying off debt on preferential credits to large families (with 3 or more children); differentiated benefits for child birth depending on the order of birth: the birth of the third and subsequent children – 3 living wages, the birth of the first and the second child – 2 living wages; monetary compensation at the birth of twins – 2 living wages for each child; raising the one-time cash payment to mothers of large families awarded with the Order of the Mother; raising the benefits for the first child up to 5 living wages, and the birth of the second and subsequent children – to 7 living wages.

The measures to improve reproductive health, maternal and child health have been implemented, they included screening of congenital malformations and genetic diseases; diagnosis and treatment of genetic diseases of newborns and children; equipping the medical genetic centers with ultrasonic diagnostic apparatus of expert class; improvement of family planning services on premarital counseling, preparation for childbirth and advocacy of family births, abortions after rehabilitation; opening in vitro fertilization (IVF) units using the center "Mother and Child", the purchase of equipment, reagents, etc.

The measures for promoting healthy lifestyles and creating a favorable environment: for this purpose there have been developed and implemented some state and industry programs: tobacco control; rational, balanced and safe food of the population; prevention and

overcoming of hard drinking and alcoholism. The measures to train staff and to develop some educational programs aimed at creating a healthy lifestyle and to provide an information and advertising support have been taken.

The measures for increasing the life expectancy have been taken to improve the delivery of primary health care population: the differentiated clinical examination has been carried out (by the screening in the age groups with risk factors); the Interior Ministry, the Emergency Ministry, the Transport Ministry, teachers and workers of dangerous production skills were trained to give first medical aid, a set of measures for the prevention, diagnosis and treatment of hypertension was carried out, there were open social rehabilitation centers for the persons released from prison and find themselves in situations of extreme, there was continued a development of effective methods of diagnosis, treatment and prevention of all forms of dependency and etc.

In order to solve immigration problems in the country there were taken some measures to attract able-bodied population and experienced personnel in the rural economy, to encourage employers in creating jobs in the areas with high population outflow and with critical condition of the labor market, to extend rural structures of small businesses, farmers and private farms, including farmstead farms, focused on the development of rural tourism.

To solve the problems of external migration there were taken some steps to reduce the emigration of individuals that make up the scientific, technical, intellectual and creative potential. The monitoring of the migration processes, including intellectual migration and forecasting of migration situations was organized.

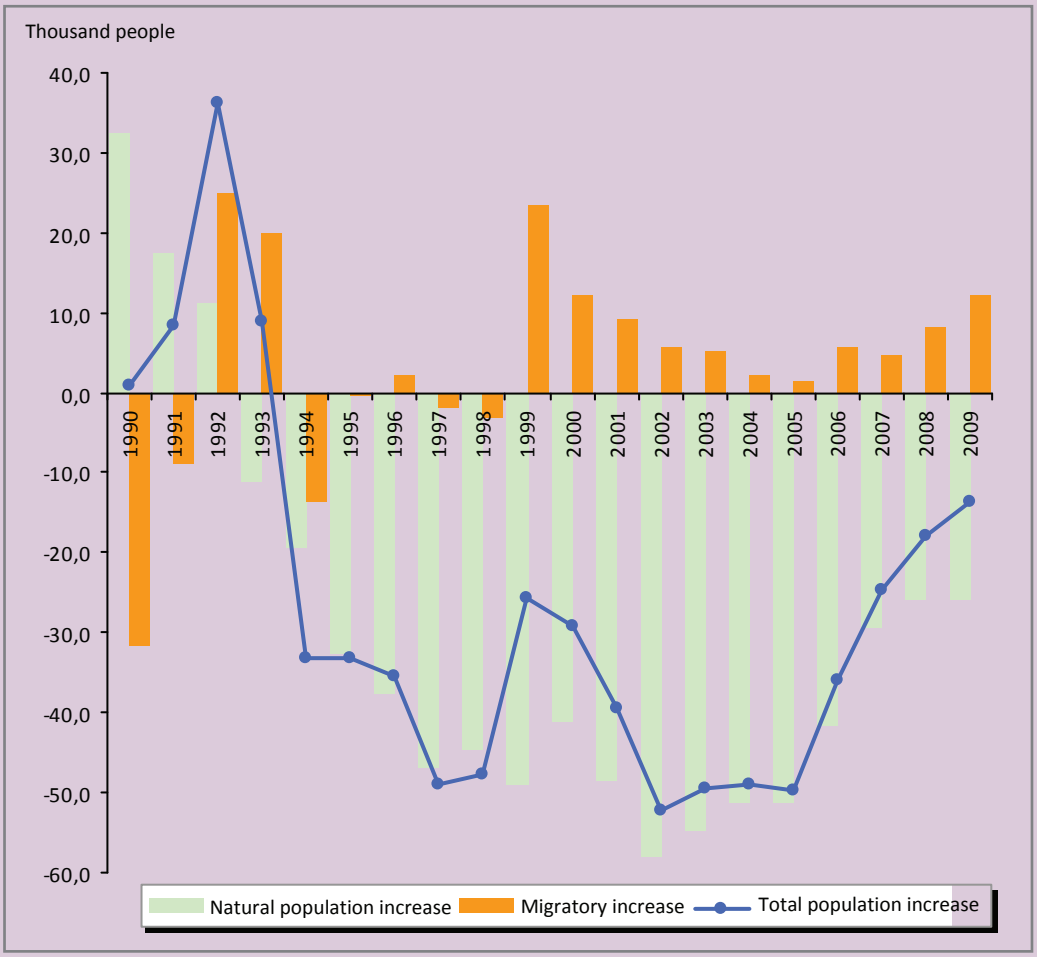
There was adopted a simplified procedure for obtaining documents for entry with the inhabitancy in the Republic of Belarus for foreign citizens and the persons without citizenship who have reasons to acquire the nationality of the Republic of Belarus as well as for Belarusians and those who identify themselves as Belarusians.

The measures were taken to create conditions for social and domestic resettlement of immigrants and their integration into society, for realization of their constitutional rights and freedoms, including employment and housing. A set of measures to return highly qualified and promising scientists holding a contract abroad for a long time to the Republic of Belarus was developed. Foreign citizens and stateless persons were given information about a legal status of foreign citizens and stateless persons on the territory of the Republic of Belarus and about the procedure for acquiring citizenship of the Republic of Belarus. The control over the activities of legal entities and individual entrepreneurs who use foreign labor was strengthened.

In 2010 the life of the policy document was over – it is possible to sum up. By now, the most targets provided for in the National Program of demographic security for 2007-2010 have been achieved. Thus, according to the data for 2009, the total fertility rate in Belarus amounted to 11.5%, the aggregated fertility rate – 1.442 children per a woman. By the way, taking into account the most recent census data, which clarified somewhat the number of population by different age groups, and showed that the number of women of active reproductive age of 20 – 34 years were somewhat exaggerated in the current statistics, we can say that the aggregated fertility rate in 2009 was even slightly higher.

The increased intensity of fertility in these years was observed in almost all age groups of women. During 2004 – 2009, a cohort of women younger than 20 years the birth rate increased by 7%, in a cohort of 20 – 24 years – 7% too, in the cohort of 25 – 29 years – by 22%, in a cohort of 30 – 34 years – 40% and in a cohort of 35 – 39 years – 56%. The number of births of various birth-taking has increased, while there has been a positive trend of more intensive birth of the second and following orders: the number of the firstborn has increased by 12%, the number of the second children has increased by 35%, the number of the third and subsequent children – by 28%.

Figure 3. The changes of total, natural and migratory population increases over 1990 – 2009



Other targets have been performed: the infant mortality rate declined to 4.7%, life expectancy at birth increased to 70.5 years, migration increase amounted to 12.2 thousand people. As a result of it the population decline was much slower *(fig. 3)*.

Among all target indices only the index of the total mortality rate is below the planned standard – in 2009 it was 14.2%. However, it is rather an error in the Program itself: the peculiarities of the established age structure of population in the country have not been fully taken into account. This remark was made by demographers at the stage of formation of a program document, but it has not reflected in the final document.

The peculiarities of the established age structure of population in the country should be considered when developing a regular program for 2011 – 2015, the concept of which has already been developed. Because of the objective reasons in Belarus the population development and the growth of proportion of elderly population accelerate, with a decrease in the total population, as a result of this the overall mortality rate will rise, even with a reduction of age mortality rates and increase in life expectancy.

As a whole, the National Program of demographic security for 2007 – 2010 can be considered to be running successfully. Almost all assigned tasks have been solved, and the most problems of demographic development has gained positive trends, but there is a danger to a public opinion about an easy solution of these problems in future. But it's not so.

First, the absolute success of the National Program of demographic security of the Republic of Belarus for 2007 – 2010 and its high efficiency are not so large as regards the necessary population to establish a simple type of reproduction, and especially for the "slightly expanded one". It is this type of reproduction at this stage of development of the country that is considered to be optimal most often.

The Republic, as before, doesn't reproduce its population, and its number is going down. Despite some certain growth recently the birth rate of the country is still low. They cover only 65% of the reproduction of population. The lifetime raty has increased by almost two years recently, but at the same time they are 10 – 15 years behind the rate of the developed countries of the world. They are even lower than those in the Republic in 1950 – 1980. Although the migration increase in population remains permanent positive in the last 20 years, its size isn't enough to compensate the natural population loss completely.

Secondly, the beginning of the XXI century was characterized by very favorable conditions for positive trends in the demographic development of Belarus. The country had improvement in the socio-economic environment, growth of the population, which had a positive impact on demographic processes. In addition, special measures improved the welfare of families with children, in particular, reduction of the gap in incomes of families with children or without them, creating a favorable environment for education, increasing an accessibility of health and education services for the population. Under these conditions the most population was able to exercise their reproductive attitudes. During these years the so-called «delayed children» actively came into the world, i.e. those children whose parents postponed their birth to better times because of the difficult socio-economic situation. As the surveys show, it is the second and third children most often, as the parents postpone relatively rare the birth of the first child for a long time without reference to the socio-economic environment.

According to calculations, the increase in the number of births in 2006 – 2009 by 88 – 90% is due to the increased intensity of fertility in the country [5, p. 219]. However, there is no reason to talk about increasing of the population's reproductive attitudes. It should be noted that in Belarus two and all the more three or more children in the family is still a serious risk of falling into the category of low-income families. At the same time it is undeniable that a certain percentage of families among those who have not clearly been formed their attitudes to the number of children could be pushed for a decision in favor of another birth by the possibility to obtain benefits for housing.

Increase in the people's well-being and improvement of their quality of life, of course, had a positive impact on health improvement, it was promoted by special measures taken to improve the work of the health-care system of the country. This may explain the change in this period in the trend of life expectancy.

Thirdly, the demographic processes in the country in the first decade of the XXI century were also positively impacted by structural factors: the composition of the population by sex, age, marital status, etc. During these years a significant part of the population was in the active reproductive age and its relation to sex and marital status was also favorable. The age-sex structure of population contributed to the growth in the number of births due to rapid growth in the number of women of active reproductive age: numerous cohorts born in 1983 – 1986 were at this age. According to the latest census, the active child-bearing age (20 – 34 years old) were 1088.8 thousand women and it is by 39.1 thousand more than it was in the 1999 census (1049.7 thousand) [1]. The growth trend in the number of women of active childbearing age is almost exhausted. In the short run the opposite situation will occur. As the numerous cohorts born in 1990's come into active childbearing age, their number will decrease rapidly. This has a negative impact on the dynamics of the number of children born in the country during the second and third decades of the XXI century.

At the beginning of the XXI century the features of the age structure of population of Belarus had a positive impact on the dynamics of the number of deaths in the country. In these years small cohorts of people born during the Great Patriotic War became to go beyond the age of 60. This reduced the population of older ages and, correspondingly, reduced the number of deaths, because the older the person is, the higher chance to die during the current year he has. Thus, according to the 1999 census, there were 2160.1 thousand people of retirement age, and according to the census of 2009 – 2139.3 thousand, i.e. it is by 20.8 thousand less. Naturally, this has reduced the number of deaths. As the numerous cohorts of population born in 1950s go into retirement age, respectively, it will increase the number of deaths, even with positive trends in the age-specific mortality rates.

To evaluate the role of each of the three main components ensuring the population growth (fertility, mortality, migration), we have developed variants of demographic projections after six hypothetical scenarios [5].

The projections have showed that if the state level does not take any special measures to improve the demographic situation, the population will continuously decrease, and the pace of reduction will increase. It is possible to achieve positive trends in the reproduction of population and to repay its losses by changing the trends of development of all three components in the complex.

The problem cannot be solved by reducing only the indicators of mortality, even to the lowest level existing in the world now. This will lead to a shift of deaths to a later period, which will increase the population at older ages and will have no impact on the number of population of younger and middle ages. Dramatic increase in immigration will have a positive effect on population size and structure. However, in order to solve the problem of preventing the population loss, the indices of the size of positive balance of migration should be very large.

The admittance of even 50 thousand people a year will not solve the problem of depopulation, but by mid-century on the territory of Belarus the one third of the population will be migrants and their descendants, and by the end of the century they will make up two-thirds.

Theoretically the problem of depopulation in the country can be solved the most radically by quickly rising the fertility rate up to the level of simple reproduction, but in this case the effect is only possible by mid-century. To solve the problem faster it is necessary to have at least three or four children for almost every fertile family. But it is practically impossible to realize this in the near time. Increase in the birth rate, as well as the reduction in mortality or an increase in migratory flows cannot happen overnight, as provided for in the hypothetical scenarios. Consequently, it is necessary to influence all components of population growth at the same time in a comprehensive way.

Among socio-economic factors the quality of life, especially the economic conditions and living conditions have a great impact on demographic processes. The economic well-being of the family is one of the most important values in life. To improve it and increase the level of satisfaction of citizens with their life standards it is necessary to increase minimal state standards (the living wage, the minimum wage, etc.) forming the family economic well-being, which should be the primacy of the direction of family policy.

The implementation of this direction is possible only through the establishment of the economic prerequisites for the growth of wage; its targeted increase in low-paid categories of workers, raising the minimum state guarantees on salaries up to the level of the living wage, strengthening the legal protection of the rights of employees to work and fair pay.

The priority principle of government programs that provide financial assistance to the people in need should be a stimulation of their activities for the independent solution of economic problems.

In other words, the relevant principle is when every able-bodied person has got opportunity to provide his family well-being by using his work and enterprising. People engaged in public production should not fall into the category of the poor.

In order to strengthen the social protection of the families with small children it is necessary to compensate to the family both for the income not received in connection with the employment of one of the able-bodied members caring for young children and supplementary expenses in connection with the birth and upbringing of the child. In this regard, we must continue gradually to improve the system of state benefits to the families raising children, as well as to reform it, to stimulate the birth of the second child in the family by giving additional support to the family. The forms of such support can include: additional payments to the family with the birth of the second child, by analogy with the "parent capital" provided by in the Russian Federation. Is a timely statement of the President that "a good incentive to increase the birth rate will be an increase in benefits for child care. Now it has the level of living wage. But this is not enough anymore. It should be a binding to the mother's average wage before her maternity leave" [6]. In principle, the financial support for the families with children is designed primarily to compensate for the financial disparities between people with and without children.

Alignment of the families with children and without them is assisted by improving tax policy, in particular, increase in the standard tax deduction for working parents in dependence on the number of children under age in the family. When increasing the opportunities for a more complete implementation of reproductive intentions, a significant role is played by increasing the accessibility of housing for families with children by providing grants to the low-income families and preferential credits for housing construction (purchase) with financial assistance in the repayment of credit indebtedness, by giving housing of social use exclusive of gross income to the families raising a disabled child. One can also examine the question of state assistance for families with children in renting the housing.

In raising the prestige of the family, parenting and other family values, in forming higher population's attitudes to the number of children per family, healthy living and optimization of migration policy, important tasks are assigned to the media, literature and cinematography. In addition, one can also use other facilities, including advertising. For example, it is reasonable to encourage advertising of goods and services related to the promotion of healthy lifestyles and a strong complete family with several children, in which relationships are built on an equitable basis.

Since the solution of the problem of higher-number-born children in the family is important for the society and the country as a whole, we should go into the issue to rank one of the parents upbringing four and more children under the age to the category of the employed in the economy. At the same time appropriate salary should be drawn, and these years should be included in the working pensionable life.

To obtain reliable and regular information about the changes related to forming the public attitudes about certain demographic processes, it is reasonable, for example, once every 2 – 3 years to include an expanded set of questions on marriage and family life, lifestyles, health and other issues touching the population policy into the questionnaire of the National Statistical Committee of the Republic of Belarus on conducting the sample surveys of households.

To stimulate research in the field of demographic problems it is necessary to promote basic and applied research projects of economic, sociological, legal, educational, social and psychological issues as well as interdisciplinary issues of demographic development, to provide for coordination and funding of such research in research institutes and higher education establishments of the country.

This will make it possible to create a scientific data base for the development of evidence-based effective population policy in the country in the future. To improve the demographic literacy of the population, especially the workers who take management decisions, it is necessary to introduce lecture courses on demography in all humanities departments of universities.

Under depopulation, when the population reproduces only by half, migration is to compensate for loss of population. Therefore, the state holds an interest in the flow of population to the republic and tries to pursue an effective migration policy directed to active attraction of immigrants, especially from the CIS countries, their successful integration in the Belarusian society and neutralization of the possible negative effects. However, as the data of recent years show, there are not any opportunities in the country to repay the depopulation due to the inflow of young people from CIS and Baltic countries.

Despite the fact that in recent years a positive migration balance of the population to Belarus from the CIS and Baltic states has increased significantly, and according to the reported data, for the first time in recent years the migration balance to other countries became positive, this increase is not large and cannot exceed the decrease in the population due to natural movement.

Thus, the demographic security will be the one of the most problematic aspects of social security in the long run.

References

1. National Statistical Committee of the Republic of Belarus. Census data in 2009 [Electronic resource]. – Available at: http://belstat.gov.by/homep/ru/perepic/2009/itogi1.php. and http://belstat.gov.by/homep/ru/indicators/pressrel/demogr.php - Date of access: 21.5.2011.

2. Law of the Republic of Belarus on Demographic Security of the Republic of Belarus on January 4, 2002 № 80-L. Registered in the National Register of Legal Acts of the Republic of Belarus, January 9, 2002 № 2 / 829 [Electronic resource] / The Ministry of Labour and Social Protection of Belarus. – Available at: http://mintrud.gov.by/ru/activity/new_url_1386472912/new_url_172861313 (date of access: 16.01.2011).

3. The official internet-portal of the President of the Republic of Belarus, Archive of community news service, October 22, 2010. The meeting of Alexander Lukashenko with the participants of All-Belarusian action "Question to the President" [Electronic resource]. – Available at: http://www.president.gov.by/press90647.html (date of access: 16.01.2011).

4. National Program of Demographic Security of Belarus for 2007-2010 [Electronic resource] / The Ministry of Labour and Social Protection of the Republic of Belarus. – Available at: http://www.mintrud.gov.by/ru/min_progs/prog22 (date of access: 01/16/2011).

5. Shakhotko, L.P. The model of demographic development of the Republic of Belarus / LP Shakhotko. – Minsk: Belarussian Navuka, 2009 – 439 p.

6. Report of the President of the Republic of Belarus Alexander Lukashenko at the Fourth All-Belarusian Assembly 06.12.2010. The official internet-portal of the President of the Republic of Belarus. [Electronic resource]. – Available at: http://www.president.gov.by/press101782.html (date of access: 16.01.2011).

UDC 314.424.2(470.22)

Influence of socio-economic factors on the suicide type of behavior

The given research was carried out for estimating the structure of suicide emotional frustration (by the example of Karelia Republic), in its interrelation with the socio-economic and climatic factors, so as to develop the algorithms of diagnosing and preventing this negative phenomenon. The clinical data of Petrozavodsk Republican Psychiatric Clinic's patients, who made one or more suicide attempts within the last 5 years, served as the material for this research. By means of application of mathematical methods there were revealed the general features of the persons who had committed suicide and the factors influencing suicide behavior.

Suicide behavior, socio-economic factors and climatic factors, region.

Ekaterina V. MOLCHANOVA
Ph.D. in Technics, Research Associate of Institute of Economics of Karelian SC of RAS
molchanova@karelia.ru

Ekaterina N. BAZAROVA
Assistant Professor of Petrozavodsk State University
psychiatrist of the highest category, a psychologist-psychoanalyst

According to the World Organization of Public Health Services (WOPHS), mental health is defined as a condition of well-being at which each person can realize his/her own potential, cope with usual vital stresses, productively and effectively work, and also bring some contribution to the life of the community [1]. In the middle of the twentieth century the problem of mental illnesses became one of the major one for the medical science and for the public health services of economically advanced countries.

Mental health is determined by socio-economic, biological and ecological factors.

The World Organization of Public Health Services enumerates the basic determinants of mental health in its bulletin [2]:

1. Person's mental health at each definite moment of time is determined by numerous social, psychological and biological factors. For instance, steady socio-economic pressure is considered to be a risk factor for mental health of separate people and communities. Evident facts are connected to the parameters of poverty, and to the low educational level of a person.

2. Mental health is also connected to fast social changes, stressful conditions at work, gender discrimination, social alienation, an unhealthy way of life, risks of violence, various illnesses, and also with infringements of human rights.

3. There are also specific psychological and personal factors which make people vulnerable for mental disorders. Finally, there are a number of biological reasons of mental disorders, including genetic factors and imbalance of chemical substances in a brain.

According to the experts' opinions, by 2020 depression as a widespread phenomenon will rank second after ischemic illness of heart. Nowadays about half-billion people suffer from depression. Steady despondency and loss of interest to life alongside with psychological, behavioral and physical symptoms are characteristic for depression. It is one of the principal causes of physical inability of people all over the world. The increase of suicides' number takes place in connection with the fast growth of depression in the world.

It is necessary to pay attention to two important features of the definition of suicide. Suicide can be defined as both the conscious actions resulted in death, and the actions which led to the attempt of deprivation of life, but by virtue of circumstances didn't lead to a fatal end.

According to the data of the World Organization of Public Health Services, on the average, annually about 800 000 people commit suicide, 86 % of them commit suicide in the countries with a low and an average level of the income. More than a half of self-murderers are of age from 15 to 44 years old. The highest parameters of suicides are registered among the man's population of the countries in the Eastern Europe. Mental disorders are one of the suicides' reasons which can be treated rather successfully [1].

For the comparative analysis of suicides' frequency in different countries the parameter "suicides' level" is used, it shows the number of the committed suicides for 100 thousand people. In the beginning of 2000 the average world-wide parameter was 14 or 15 cases. Among the countries, which inform the World Organization of Public Health Services about the quantity of suicides, the highest parameters of "suicides' level" are observed in the countries of the Eastern Europe, and the lowest ones are observed in the Muslim countries.

Russia is included into the number of the countries which occupy the leading position according to the number of suicides. The parameters on suicides in Russia 3 or 4 times exceed the average world-wide parameter (from 10 to 20 cases for 100 thousand people) *(tab. 1)* [3].

Karelia Republic is one of problem regions in the Russian Federation according to the parameters of death-rate, life expectancy and diseases.

Table 1. Description of the countries according to the death rate from suicides in 2006

Country	Death rate from suicides (for 100 thousand people)	Life expectancy at birth (years)	The general death rate (for 1 000 people)	GNP per head (in USA $)
Countries with the high level of suicides				
Lithuania	28.94	71.16	13.2	8410
Russia	27.63	66.67	15.21	5810
Kazakhstan	27.27	66.18	10.27	3860
Slovenia	22.79	78.35	9.05	19560
Hungary	21.77	73.57	13.07	11020
Countries with the low level of suicides				
Cyprus	2.39	80.59	6.65	22880
Greece	3.05	79.79	9.42	23650
Italy	5.15	81.58	9.48	32190
Israel	5.65	80.68	5.47	21020
Malta	6.04	79.59	7.91	15160

The negative tendencies found their reflection in the high level of the fixed suicides, which on the average exceeds the all-Russian parameter for 25% *(fig. 1)*. In 2009 in the structure of the death-rate reasons among the Russia's population suicides made about 2 %, they are prevailing among the external reasons of death *(tab. 2)* [4, 5].

A very high level of suicides in the post-Soviet Russia, as well as in some other ex-socialist countries, is one of the parameters of difficulties characteristic for the transitive economic period. Scientists state the following factors, influencing the suicides' level [6 – 10]:

- characteristics of sex and age,
- time parameters,
- social features,
- influence of taking alcohol and drugs,
- easy access to the specific means of suicide,
- influence of the quality of life,
- influence of the ethnic characteristic.

Figure 1. Suicides' death-rate in Russia and in Karelia Republic (for 100 thousand people)

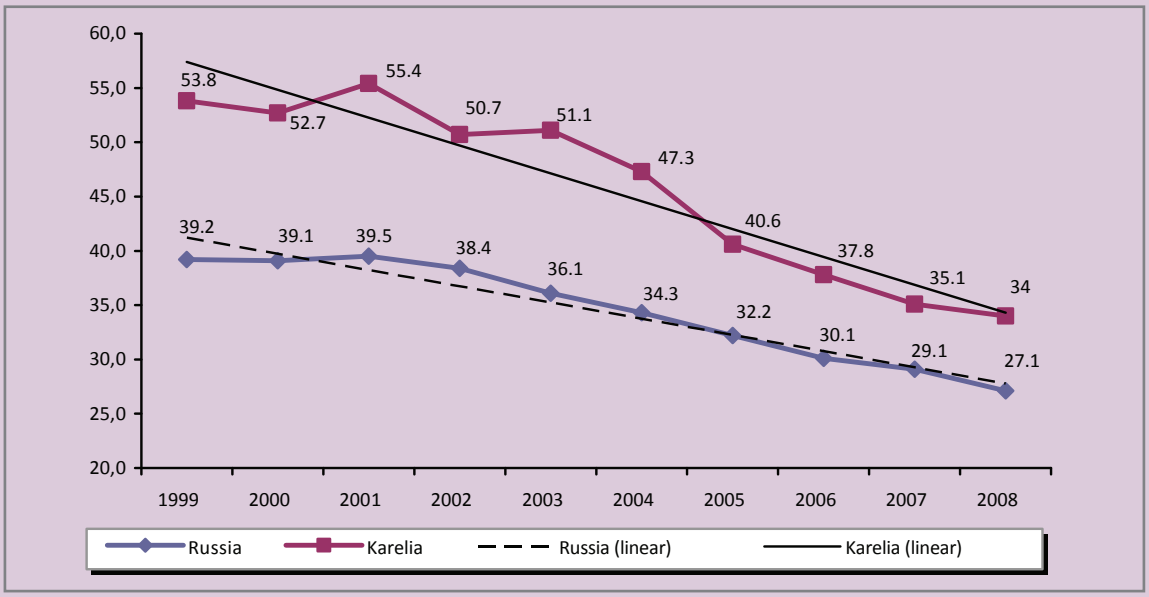


Table 2. Structure of the causes of death among the population of the Russian Federation (for 100 thousand people)

Cause of death	2005	2006	2007	2008	2009
The number of people who died of different causes, for 100 thousand people	1609.9	1520.6	1463.9	1462.4	1416.8
Of them: Some infectious and parasitic diseases	27.2	25.1	24.2	24.3	24.0
Cancer	201.2	200.9	203.0	203.8	206.9
Circulatory system illnesses	908.0	864.7	833.9	835.5	801.0
Respiratory system illnesses	66.2	58.1	54.8	56.0	56.0
Digestion organs' illnesses	65.5	62.8	61.7	63.7	62.7
Other causes of death	220.7	198.5	182.5	172.2	158.3
Of them: Accidental alcoholic poisonings	28.6	23.1	17.7	16.9	15.0
Transport accidents	28.1	26.8	27.5	25.0	21.2
Road accidents	-	17.5	18.2	16.5	14.5
Suicides	32.2	30.1	29.1	27.1	26.5
Murders	24.9	20.2	17.9	16.7	15.1

The purpose of this research is estimating the structure of suicide-dangerous emotional disorders (by the example of Karelia Republic), in their interrelation with socio-economic and natural-climatic factors for developing the algorithms of diagnosing and preventing this negative phenomenon.

The problem of suicides is multi-complex and multidisciplinary. In spite of the fact that there exist a lot of researches on the mentioned problem, they basically have a clinic descriptive character. In such researches the factors of suicide risk are stated, but in a very abstract view (sex, age, steady psychological characteristics). Meanwhile, the clinical data show that the presence of the emotional problems of depressive and disturbing spectrum frequently make the motive of the voluntary deprivation of life.

One of the most important problems is suicide risk forecasting. For such a small region in Russia as Karelia (with the population less than one million people), the problem of suicides remains traditionally actual. While carrying out this research we have made the mathematical processing of the survey results of those people who made one or more suicide attempts for the last 5 years (according to the data of Petrozavodsk Republican Psychiatric Clinic). 54 patients who made attempts of committing suicides were interrogated.

The information about the patients was represented as an information system including seven blocks: suicide date, general information about a patient, personal peculiarities, financial position, situation that caused the attempt of committing suicide, state of health, family status *(fig. 2)*.

Each patient was characterized according to 19 attributes *(tab. 3)*.

Figure 2. The structure of the data on the unaccomplished suicides

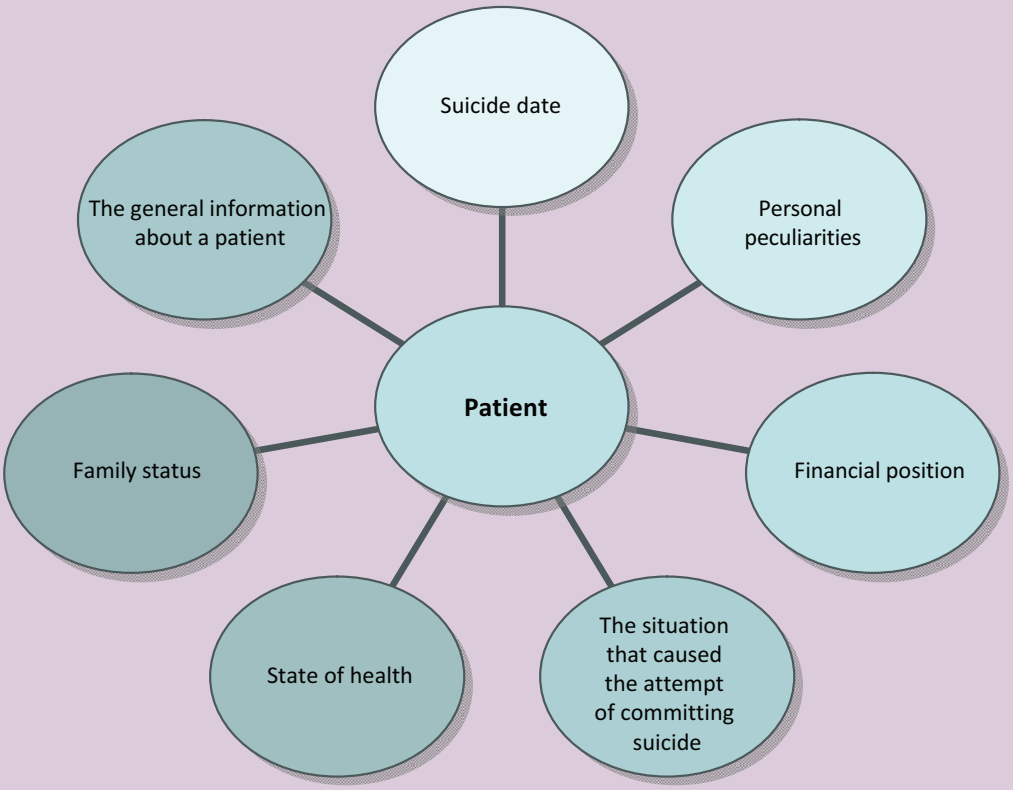


Table 3. Features describing the patients of Petrozavodsk Republican Psychiatric Clinic, who made attempts of suicide

Feature name	Variants	Cases (%)
Month of the suicide's commitment	**January**	**9.3**
	February	9.3
	March	11.1
	April	13.0
	May	13.0
	June	11.1
	July	9.3
	August	0.0
	September	7.4
	October	9.3
	November	3.7
	December	3.7
Diagnosis (cause)	**Stressful situation**	**16.7**
	Alcoholic dependence	9.3
	Depression	22.2
	Neurosis	25.9
	Mental disorders	25.9
Age	**From 13 to 18**	**22.2**
	18-30	27.8
	30-40	22.2
	40-50	16.7
	50-60	5.6
	Over 60 years	5.6
Sex	**Male**	**24.1**
	Female	75.9
Environs	**Own family (spouses, children)**	**48.1**
	Parents	33.3
	Other relatives	7.4
	Friends	1.9
	Neighbors	7.4
	No environs	1.9
Occupation	**Unemployed**	**14.8**
	Military service	1.9
	Student	27.8
	Pensioner	9.3
	Intellectual labour	7.4
	Manual labour	38.9
Education	**Secondary education (school)**	**35.2**
	Specialized secondary education	51.9
	Inchoate higher education	1.9
	Higher education	11.1
Interests	**Intellectual and aesthetic**	**7.4**
	Connected with nature	1.9
	Sporting	3.7
	Professional and household	87.0
Means	**Low**	**53.7**
	Average	46.3
	High	0.0

Finishing table 3

Situation	**Interpersonal problems**	**61.1**
	Personal problems	35.2
	Social problems	3.7
	Household проблемы	0.0
Physical inability	**Not presented**	**83.3**
	Mental illness	7.4
	Somatic illness	9.3
Way of suicide	Poisoning	**63.0**
	Injuiring	29.6
	Fire	0.0
	Hanging	7.4
	Drowning	0.0
	Other	0.0
Type of suicide	**Real**	**72.2**
	Manipulating	27.8
Order of attempt	**First**	**68.5**
	Repeated	31.5
Expert's supervising	**Was supervised before a suicide**	**25.9**
	Was not supervised before a suicide	74.1
Additional illnesses	**Therapeutic**	**31.5**
	Neurological	11.1
	Narcological	7.4
	No illnesses	50.0
Hospitalization	**Was hospitalized**	**75.9**
	Was not hospitalized	24.1
Housing	**First-class accommodation**	**75.9**
	Not-equipped accomodation	13.0
	Rented	3.7
	Hostel	7.4
	No habitation	0.0
Place of residence	**Petrozavodsk**	**88.9**
	Other	11.1

General characteristic of suicide attempts. As a result of the carried out research the general features of self-murderers, despite differences in age, social status and environs, were stated. We managed to analyze the clinical features and to find the key symptoms which led to the attempts of committing suicides.

The probability of committing a suicide decreases with age (the most critical age is till 30 years) and can be described by the logarithmic function of regress *(fig. 3)*:

$$y = -4,42 \times \ln(x) + 12,08, R^2 = 0,828,$$

where y – is the quantity of the committed suicides;

x – is the age of committing a suicide.

The share of women, who made attempts of committing a suicide, makes 76% and considerably surpasses the similar parameter among men (24%) *(fig. 4)*.

The majority of suicide attempts (72%) had true character, i.e. the serious attempts to commit an act of self-murdering were really made. The most part of suicides (63%) are poisoning with the big dozes of medical products, serious wounds make 30%, hanging makes 7%. 68% of patients made attempts of committing a suicide for the first time, 32% of patients made them again.

The material shows that there practically were not impulsive suicide attempts. Crisis situations and the condition of mental

Figure 3. Dependence of the committed suicides' quantity on the age

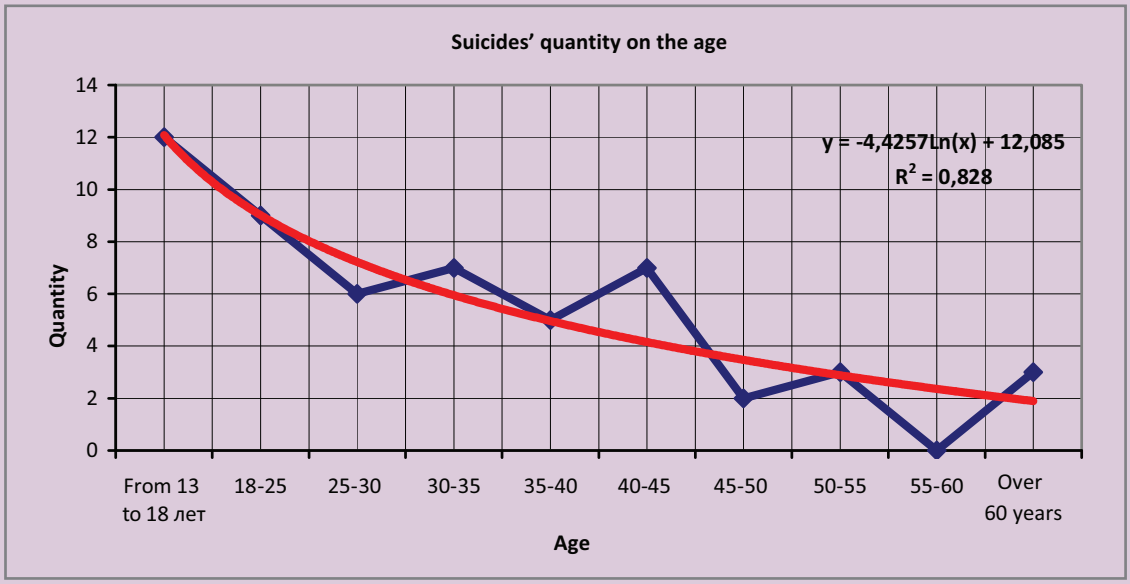
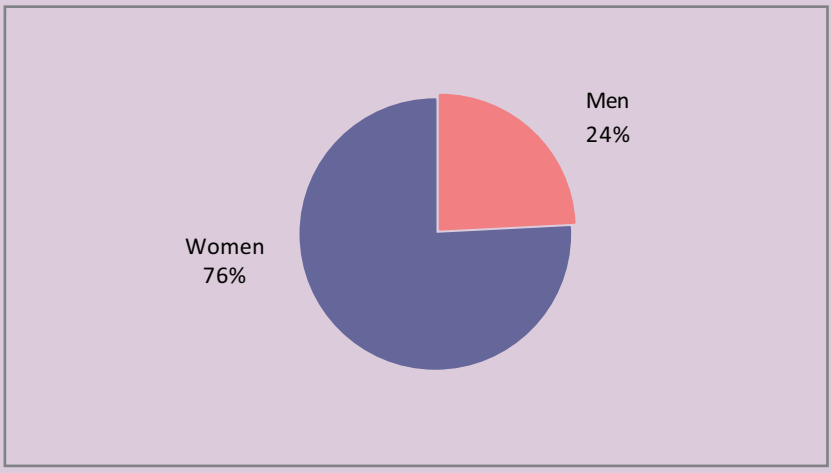


Figure 4. The share of the suicide attempts committed by men and by women



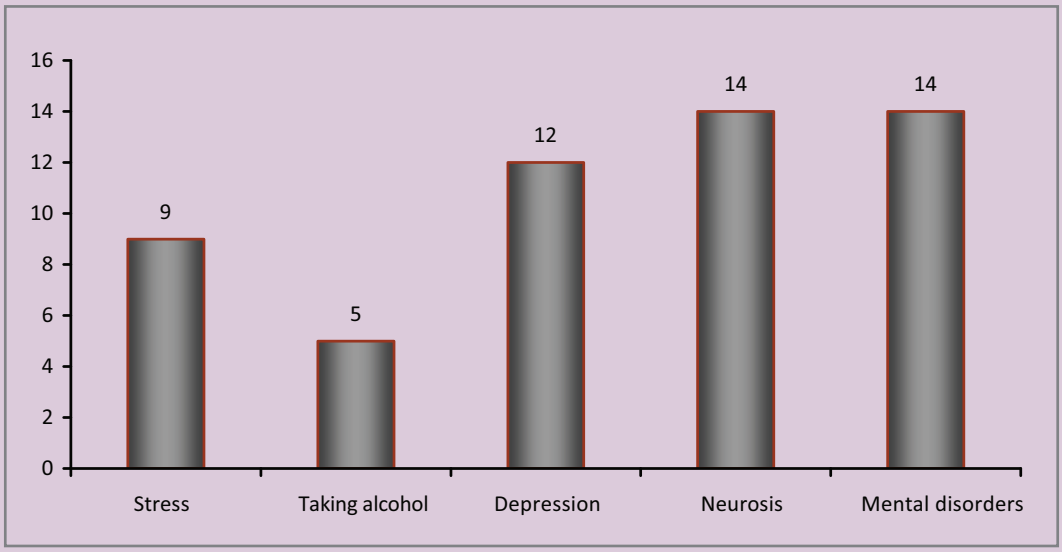
discomfort arose long before the attempts of committing a suicide, but no measures for solving these problems were undertaken by suicides *(fig. 5)*. Indirectly it can prove the absence of the valuable attitude towards self, and to health.

In overwhelming majority of cases (76%) applying for medical treatment followed the attempt of committing a suicide though the staff at Petrozavodsk Republican Psychiatric Clinic gives consultations and the help is rendered anonymously and free-of-charge.

While analyzing the clinical information it became possible to state the socio-economic and natural-climatic factors, which led to attempts of committing a suicide.

Natural-climatic conditions. Karelia republic does not join the group of large advanced industrial territories; therefore one of the factors influencing a person's health is a natural-climatic factor. Climate as the factor forming ecologically caused diseases of a natural origin has its peculiarities in Karelia. Great variability of meteorological elements from year to year and from day to day is characteristic for it.

Figure 5. Crisis situations which led to suicide attempts



Winter usually lasts more than 5 months with the temperature reaching 30 below zero. The whole territory of the Republic is the zone with the excess moisture (the relative humidity makes >80% for 150 or 200 days in a year, 600 or 750 mm of atmospheric precipitation, frequent fogs). Sharp changes of the weather conditions cause fluctuations of the oxygen contents in the air that greatly affects a human organism.

In Karelia the natural shortcoming of the ultra-violet radiation is marked. Thus, the territory of Karelia Republic can certainly be referred to the zones with discomfort conditions for people's habitation, and according to some parameters it even can be referred to the zone with extreme condition.

In this connection, the high level of depressions of various structure and genesis accumulates with depressive syndromes of the seasonal affective disorders (SAD).

SAD are characteristic for the countries of the Northern Europe as a whole, and for Karelia in particular. The period of the SAD clinical features is more than five months: from October to March. The combination of various depressive symptoms is an uneasy clinical problem. In this research the depressive symptoms were practically always combined with the alarm condition which is a through symptom at suicides. We should note the specificity of defying depressions: they are categorical and non-alternative; the ideas of self-deterioration, hopelessness, senselessness of life prevail. Existential emptiness logically crowns any depression even if it is not comprehended in such terminology and up is not realized completely. All these symptoms are the matrix in which the suicide ideas and plans form.

The peak of suicide attempts, as a rule, falls to the spring and some summer months (March, April, May, June). The quantity of the committed suicide attempts depending on a year's month is represented in Figure 6 and is approximately described by the multinomial regress function:

$$y = -0{,}003x^5 + 0{,}096x^4 - 1{,}079x^3 + 5{,}077x^2 - 9{,}135x + 10{,}04$$

$$R^2 = 0{,}66,$$

where y is the quantity of the committed suicide attempts;

x is a month of a year.

One of the probable interpretations of such pattern is coincidence of this time period with the end of SAD symptoms. As we know, it is

widespread in the countries of the Northern Europe from October to March and proceeds with the sub clinical depressive symptoms. Probably, the examined patients had accumulation of affective disorders and SAD simultaneously. Long-lasting condition of being in a low spirit, ambiguity of the clinical picture at remaining of the functions of declaration of will and pessimistic attitude could result in gradual formation of the suicide plan and its realization at the end of SAD.

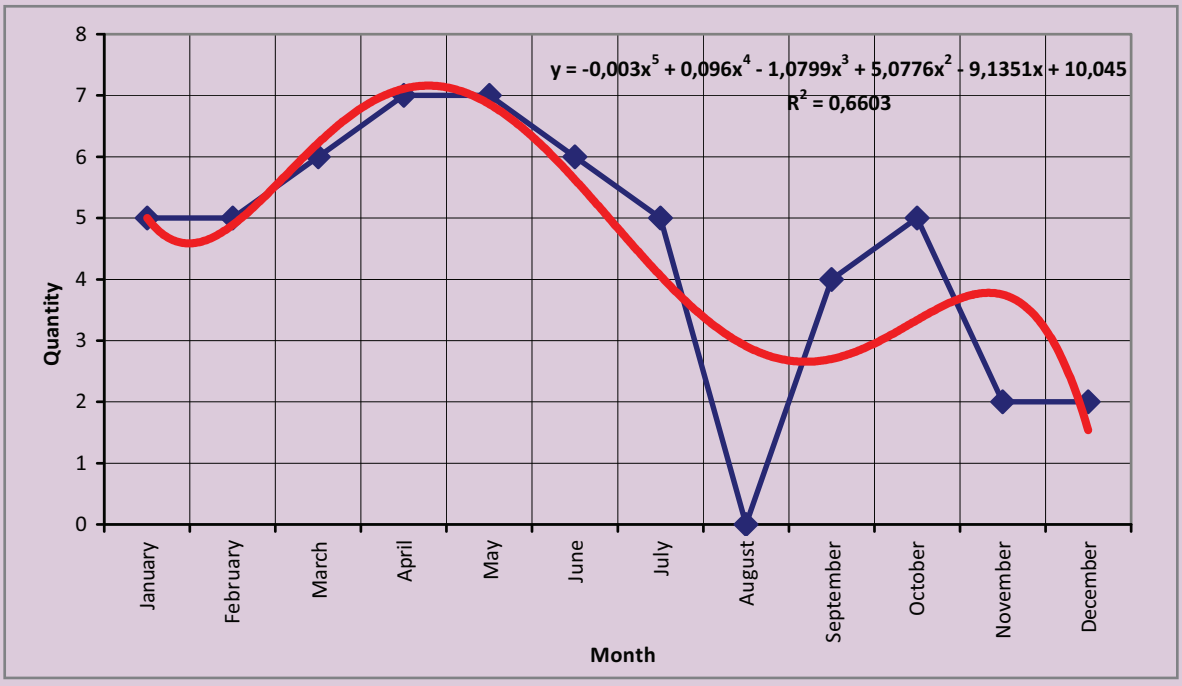
Personal characteristics. Besides the clinical component it is necessary to mention personal characteristics. The richer is a person's inner world, his or her values, beliefs, the more he or she is tolerant towards the crisis situations, the greater resource a person has at solving vital problems (in our case at depressive disorders). Such person forms an anti-suicide barrier against the suicide ideas and actions. A person with a weak personal structure doesn't have the anti-suicide barrier, so the risk of committing a suicide increases.

The problem of values, to be more exact, their absence or weak share in a person's structure, is characteristic for suicides in general. The values of personal growth, professionalism, mutual relations with people were not developed and were not significant for the examined patients. As a rule, they had a low social status, non-creative jobs (15% are unemployed, 28% are students, 9% are pensioners, 39% – are occupied with manual labour).

Crisis situations arose mostly in families; committed suicides were addressed to family, actually suicide attempts occurred in home conditions, more often at the presence of family members (81 % of patients had families or lived in parents' family). It is necessary to note, that not only the suicides themselves, but also the members of their families did not pay attention to the changes of the relative's mental condition. No one appealed to the expert for consultation for this occasion.

Existential, cultural values were weakly represented in the personal structure of the examined patients. 87% of the examined patients had secondary and specialized secondary education; and only 11% got higher education. 87% of patients had no hobbies, and were involved into the decision of economic problems.

Figure 6. Suicide attempts' quantity in its dependence on a month



Economic factors. The features of the economic structure in Karelia Republic are a rather low level of the population's incomes, economic opportunities' limitation, difficulties with the professional employment, and non-providing with the high-quality rest.

Values of the material order also could not be estimated by suicides. Money cannot give freedom itself, but it can give the feeling of this freedom. However the patients' level of incomes was low (54%), and average (46%), no one had the high level of incomes. So, poverty and weakness of the inner world were the uniting criteria which all the patients had.

Thus, we managed to analyze the clinical features and to find the key symptoms which led to the attempt of committing a suicide. It was an affective complex of symptoms, namely: either anxiety, or depression, or even (more often), the combination of anxiety and depression. According to a rather exact definition given by Alfried L'Angle, depression is "the loss of the ability to experience the value of life". Anxiety is a subjectively badly tolerable feeling of alarm and pressure. Either separately, or in a combination with each other alarm and depression sharply reduce the valuable experience of life in all its variety and many-sidedness. Thus, even sub clinical forms of the affective pathology led to the realization of the suicide behavior.

Undoubtedly, that significant influence was rendered by the social environment in which the patients lived: low income, absence of strong family mutual relations, and scarcity of personal interests. In many respects it was determined by a complex socio-economic situation in which a person did not feel necessary for the society.

The results received during mathematical processing of the clinical supervision data proved to be true: suicide attempts were made by immature persons with weak values, with non-creative jobs, with the inability to make emotionally stable interactions with the associates, with the extremely limited range of reactions in crisis situations.

To lower the level of suicides, a serious work should be carried out. The initial features of the affective disorders can be seen by both the patients' relatives and the doctors of the general practice, hence:

- Training the general practice doctors is necessary for revealing suicide-leading affective disorders, and for this purpose the diagnostic questionnaires of depression and alarm in the standard of examining are expedient to be introduced. Revealing mood disorders at early stages could lead to a timely patient's direction to experts. All the patients, mentioned in this research, appealed for help months after the beginning of the depressive disorders.
- Crisis situations basically arose in the family environment. Psychotherapeutic work with families, as well as popularization of the family values can become a basis of the preventive work, both with the potential suicides, and with the real ones.
- It is necessary to take appropriate measures on the improvement of the socio-economic position of the representatives of the suicide risk groups: unemployment reduction, labor motivation, creation of the specialized psychological centers.

References

1. The World Organization of Public Health Service / [Electronic resource]. – Available at: http://www.who.int
2. The World Organization of Public Health Service, Bulletin № 220. Mental health: struggle against mental disorders / [Electronic resource]. – Available at: http://www.who.int/mediacentre/factsheets/fs220/ru/index.html
3. The World Organization of Public Health Service's database: Health for everybody / [Electronic resource]. – Available at: http://www.euro.who.int/hfadb?language=Russian
4. The Russian statistical year-book. 2009: stat. coll. / Rosstat. – M., 2010.
5. Karelia Republic in figures: stat. coll. / KareliaStat. – Petrozavodsk, 2009.

6. Durkheim, E. Suicide / E. Durkheim. – M.: Myisl, 1994.

7. Efremov, V.S. The bases of suicide-studying / V.S. Efremov. – Saint-Petersburg: Dialect, 2004.

8. Morev, M.V. Socio-economic and demographic aspects of suicide behavior / M.V. Morev, A.A. Shabunova, K.A. Gulin; ed. Doctor of Economic Science, Professor V.A. Ilyin. – Vologda: Institute of socio-economic development of territories of the Russian Academy of Science, 2010. – 188 p.

9. Suicide-studying: past and present. The problem of suicide in the works of philosophers, sociologists, psychologist and in fiction. – M.: Kogito-Centr, 2001.

10. Suicide-studying in the works of foreign scientists / ed. A.N. Mohovikov. – M.: Kogito-Centr, 2003.

UDC 336.581 (076.5)

The competitive status of the mining company: mechanisms of formation and management

The essence of the competitive status of the company is considered, the specificity of influence of the basic external and internal economy factors on formation of the competitive status of the mining company is established, the factors of institutional regulation, investment attractiveness of the industry, the structure of the industry and the markets, the degrees of integration and diversification, the type and efficiency of the company's strategy are studied. The methodical approach to formation, estimation and management of the competitive status of the mining companies is offered.

Mining company, competitive status, institutional regulation, investment attractiveness of the industry, industry and market structure, investment strategy.

Tatyana V.
PONOMARENKO
Ph.D. in Economics, Associate Professor of Saint-Petersburg State Mining University
stv_mail@mail.ru

Fyodor D.
LARICHKIN
Doctor of Economics, Professor, Director of G.P. Luzin Institute of Economic Problems of Kola SC RAS
lfd@iep.kolasc.net.ru

One of the unsolved problems and one of the least grounded and well-established terms of modern theory and practice of competition is the definition of the competitive status of the company. The complexity of this concept is due to the reflection in it of both static characteristics (subject's condition in the competitive environment) and dynamic ones (subject's behavior, which is realized in the competitive strategy). The static component of competitive status is determined by the structure and the concentration degree of industry and market, the presence and the formation of competencies and specific strategic assets

and resources of the company. The dynamic component depends on the company's strategic and investment activity, the specifics of its competitive behavior, the efficiency of use of assets and resources.

The competitive status of the company refers to its position in the business system, integrally reflecting the set of strategic and competitive positions, formed in each field of activity and a set of strategic competitive behavior stereotypes. In this sense, the competitive status of the business subjects serves as an integrated status of a set of the strategic competitive positions of these subjects, defended by them in the process of implementing their strategic target aims, creating additional value to the company [1, p. 314].

It is known that the founder of the approach to the study of the competitive status of the company is I. Ansoff [2], who treats the concept of competitive status as a competitive position (a specific index) of the company's position in the market. He proposed a method for assessing the competitive status, which reflects the profitability of strategic investments, corrected for the degree of "optimal" strategy and the extent to which the company's capacity corresponding to its optimum value. This method of calculation reflects statics and dynamics of the competitive status assessment.

Inadequate methodological elaboration of the concepts and the method of determination of the competitive status in relation to mining companies rises the need to clarify the characteristics of the competitive status taking into account the specifics of its operation, the application of the typology of competitive status to the companies of mineral and raw complex (MRC), the development of assessment methodologies, and the methodological approach to the formation and managing of the competitive status of the mining company.

Formation of a competitive status of the company includes the definition of the very concept, its structuring, classification of species, establishment of influencing factors, the analysis of the competitive environment and competitive markets, as well as industry structure, assessment of the company's competitive status.

Managing the competitive status of the company includes the assessment and selection of strategic directions for development, taking into account the potential reserves and opportunities, ensuring the creation or increase of competitive advantages and maximizing the value of the company; feasibility study of the effectiveness of financial and investment strategy as creating or breaking the company's value; assessment of competitive status, taking into account the implementation of the chosen strategy.

To clarify the definition of competitive status we should set the specifics of impact of major external and internal economic factors on the company (in MRC). The main external factors of the company's competitive status include: institutional regulation, investment attractiveness of the industry, industry and markets structure. Internal factors of competitive status are: the degree of integration and diversification of the company, the type and effectiveness of the company's strategy. We consider the main factors determining the level of competitive status, the degree of their manifestation in the MRC markets and the possibility of their estimates.

The institutional regulation's significance and the degree of its influence vary depending on the economic activities and the industries. The institutional environment is one of the main factors determining the dynamics and development character of national economy and industry sectors. The degree of influence of institutional constraints is, first of all, determined by the strategic importance of the industry to the national economy at present and in the future, the systemic character of the industry and other strategic factors.

Contemporary strategy of efficient subsoil management cannot be based solely on market opportunities. The market mechanism, even in developed countries does not provide the strategic objectives of subsoil use, environmental protection, sustainable development and economic security. In Russia it is necessary to implement such a principle of rational subsoil use as an organic combination of market mechanisms of self-regulation and government support for sustainable consumption and saving of mineral resources.

Subsoil use is a scope of interweaving and collision of interests of the federal, regional and mining companies, local governments, public organizations and population. These interests are quite different, sometimes even opposite, so the institutional system of subsoil use is to provide search and balancing of the multifaceted interests of all parties. Its most important "elements" are: legislative and regulatory framework, strategy and policy of mineral wealth development, the mechanism of granting rights to subsoil use, where the balance of interests is established by competition between mining companies, exploration program on new subsoil areas to be placed on auctions and contests.

Institutional constraints are based on a particular resource mode, and can be analyzed from the perspective of institutional-evolutionary theory, including the theory of property rights, transaction costs theory, and others. Property rights to natural resources always include limitations on their use by the owners, and under present conditions there is a definite tendency to increase such limits [3]. For the world practice it is characteristic the transition from the guidelines of direct action in the regulation of subsoil use to generalization and dissemination of the cases of "best practices". Thus the "regulatory space" (or resource mode) evolves not only as the characteristics of assets changes (especially in connection with the transition of the resource extraction regions to the stage of maturity as far as mineral resources exhaust, their characteristics deteriorate, human impact is strengthening), but also as they gain experience and form the stable "specific organization knowledge".

The most significant elements of the institutional environment are the following: subsoil use mode, tax system (including its specific rental component) and organizational structure. These elements of the institutional environment are closely interrelated and mutually conditioning, the state and dynamics of their change is largely dependent on the state policy in respect of MRC, and they are actually a part of the state regulatory system. However, the current regime of subsoil use in Russia does not provide for adequate monitoring and control stiffness during the development of mineral resources [3].

Active regulation in the institutional sphere of subsoil use should include a range of measures. The effectiveness of the licensing process, which is a key institution in the subsoil use, is largely determined by the completeness and consistency of laws and other legal acts of the federal and regional levels. However, the monitoring of the subsoil use conditions compliance is insufficient, that is why it is necessary to increase the responsibility of subsoil users up to the license withdrawal. In modern Russian conditions in MRC and FEC there are the specific features of the rent existence as a result of regulation incompleteness in the institutional sphere, besides a significant and economically reasonable portion of the added value of (quasi-rent) must be withdrawn by the owner of resources (assets) – the state. Improving the taxation based on the differentiation of tax rates should be based on differential accounting and monitoring of production operations and economic performance at the level of certain licensed objects. Operation of integrated companies in the MRC is focused on the widespread use of transfer pricing in intra-circulation of goods and services that does not provide an objective assessment of the effectiveness of mineral resources development and makes the transition to a flexible taxation

problematic. Therefore, regulation of transfer prices should stimulate competition in the MRC in the domestic market and prevent non-market pricing.

Investment attractiveness of the industry is uniquely determined. Exploring different points of view on the investment attractiveness of companies and industries revealed that in the current understanding there is no single approach to the nature of this economic category. The most common understanding of the investment attractiveness is as appropriate investment in the objects which are interesting for investors, which depends on several factors. More precisely, the economic substance of the investment attractiveness can be defined [4] as a set of objective features, properties, assets and opportunities that determine the potential effective demand for investments. This definition is broader and allows taking into account the interests of any member of the investment process. Accounting and analytical interpretations of investment attractiveness (including those of L. Gilyarovsky, V. Vlasova and E. Krylova and others) are based on an assessment of the structure, efficiency of own and loan capital use, analysis of solvency and liquidity. In assessing the investment attractiveness in terms of income and risk, it can be argued that it is the presence of income (economic impact) on investments with minimal risk.

Thus, it becomes apparent that regardless of the approach used by expert or analyst to determining, more often, the term "investment attractiveness" is used to assess the feasibility of investment in this or that object, selection of the options and determination of the efficiency of resources allocation on the basis of objective purposeful information for making investment decision. Formation of a methodology for assessing the companies' and industries' investment attractiveness in Russia is at an early stage. This is evidenced not only by a small number of publications on the subject, but also by the almost total absence of specific working practices.

A generally accepted is an approach to assessing the investment attractiveness of industries based on the theory of competitive advantage theory of M. Porter and the positioning theory which have been dominating in strategic management for a long time. In this interpretation the competitive advantages are stated as conditions ensuring company's profit exceeding the industry average, mainly due to market power and monopoly rent. Factors of formation of competitive advantages are determined by the external environment of the company: the structure of industries and markets, entry barriers, product portfolio, the share of the company, etc. Management of competitive advantage is understood as positioning of business in a stable industrial structure, so the strategy should provide the best match of the company with specific external environment and can be defined as reactive [5, c. 336] or adaptive. This approach has the following disadvantages: exaggeration of the role of external factors of competitive advantage, impossibility of use in unstable environments and dynamic change of the competitive environment and industry structure, orientation to suppress competitors, strategy lagging.

Under current conditions of the MRC markets development, the investment attractiveness of the industry is affected by market structure and power of companies, as well as institutional management and development of artificial competitive advantages.

The industry and market structure determines the behavior and performance of the company to a large extent. The nature of competition and the emerging types of markets in the modern economy has changed fundamentally due to the concentration of capital and production, leading to economy corporativization and formation of oligopolistic market. At that the relationships in the markets change fundamentally, as a result free competition is substantially restricted, such specific factors of ineffectiveness as technical (failure costs), X-inefficiency, allocative inefficiency, the net loss of society's welfare become apparent.

The main institutional problem which is closely linked to the regulation of competition is state regulation of corporate economy, which requires the development of appropriate mechanisms in terms of the new paradigm of economic development – the state-corporate.

Factors that reflect the character of changes in the state of competition include both subjective factors: the behavior of competitors, the availability of institutional regulation of the market participants' behavior, and objective factors: the types of market, concentration, technology, the dynamic characteristics of their changes, etc.

When diagnosing the state of competition the crucial point is the analysis conducted on the coefficients and indices. The most common in the scientific, practical and normative literature on the analysis of the markets structure are the indices of concentration, Herfindahl-Hirschman index, ranking concentration index (Hall-Tydeman index, Rosenbluth index), the coefficients of Lerner, Linda, Gini, entropy, the maximum share, reciprocal share , variations in market shares, etc. In this case different indices and coefficients may show different levels of market concentration, the degree of market power and indicate the existence of different market structures. In addition, in the dynamics each of the applied indices and coefficients may show different directions of changes in the state of the market being diagnosed.

Assessment of the state of competition in the Russian market [6] reflects the following indicators of the commodity market: product and geographic boundaries, subject composition, size, proportion of businesses entities (BE) on the market, the level of product market concentration, entry barriers, assessment of the competitive environment state, potential BE. However, this list of indicators, in our opinion, is not exhaustive.

In general, the methodologies for assessing the state of competition prevailing today are in many ways behind the modern requirements for the reliability of estimates. First of all, it concerns the evaluation of dynamic characteristics, which often use expert (intuitive) assessment, giving only a fragmentary and approximate idea of the conditions of competition and not allowing to predict the direction of their changes. The conclusion about the ambiguity of approaches in the definition of the company's dominant position in the market is associated with a lack of common evaluation criteria against which it is possible to conduct research directly related to the definition of the market share. Practice has shown the possibility of using both qualitative and quantitative characteristics related to the assessment of the competitive environment and the level of monopoly in the domestic economy [7].

Internationally accepted institutional framework for the protection of equal conditions of competition include the legal basis for competition protection, principles of state regulation of cartels, natural monopolies, the application of antimonopoly regulation and its impact on international exchange. In Russia, the European principle of control and regulation was laid into antimonopoly regulation foundation [8]. Further development of the regulatory framework for the protection and development of competition was associated with the new Constitution and the Civil Code of the RF; then the appropriate changes and additions in almost every article of the first edition of the Law "On Competition..." were made. Modern institutional framework of competition policy in Russia is defined [9], where a special object of legal regulation is the monopolistic activity and the business entity's abuse of dominant position. With a dominant position a business entity gets a possibility to exert a decisive influence on the general conditions of commodity circulation in the relevant market and (or) to eliminate, and (or) obstruct the access to this commodity market to other participants.

Competition policy can be defined in different ways. Russian law defines competition policy as a set of consistent measures implemented by the state in order to ensure conditions for the competitiveness of

business entities, to improve efficiency and competitiveness of the Russian economy, modernization of enterprises and creating conditions for cost-effective way to citizens' needs for goods and services [9]. According to the OECD definition (1984), competition policy aims to support and promote the competitive process that ensures efficient production and distribution of goods and services over time through exposure to innovative development and adaptation to technological change. That is, the aim of competition policy is to support and promote the dynamic process of sustainable economic growth.

Competition support policy includes [10]: policy of regulation of monopolistic activities, policy of control over the restrictions of competition (vertical restraints), policy in the area of mergers and acquisitions, providing direct or indirect assistance to companies by the state and its bodies. The legislation is designed to monitor the compliance with three conditions: the independence of consumers' decisions in the market, freedom of choice of producers' competitive behavior strategy and the absence of artificially created barriers to market access.

In MRC most industries have the following characteristics: first, they are capital intensive, and therefore the concentration regulation of the internal market may be directed to the formation of large production units, with the formal characteristics of a monopoly. Second, many MRC industries are export-oriented, so the measures are needed for direct and indirect state regulation to encourage the development of the domestic market. Third, in MRC industries there is a high proportion of specialized investment and companies need to invest heavily in specific assets (firm-specific assets), which are the basis for the establishment of permanent competitive advantage. The concept of specific assets determines their special properties as rare, non-traded, impossible for the simulation and irreplaceable [11]. Government regulation can promote and protect specific investment and lead to long-term contracts.

Finally, the risks of different nature, the irreversibility of investment and considerable dynamism of the environment determine the complexity of the current and forecast assessment of competition. Investing in specific assets in order to acquire permanent competitive advantage by certain companies and the leveling of the competitive advantages of competitors means that the company takes on considerably more risk than in traditional investment strategies, which determines the need for the state's involvement in the distribution of risks, such as through public-private partnerships, etc.

Thus, the institutional regulation of competition includes: the regulation of state-corporate economy, modernization and implementation of competition policy, assessment and forecast of the competition dynamic state, protection of specific investments and stimulation of long-term contracts, lowering barriers to market entry.

The degree of the companies' integration and diversification forming the organizational, structural and operational characteristics and determining the degree of influence on the market, largely determines the competitive status of the company. A study of integrated mining companies has been done and the following characteristics are established:

- a high degree of interdependence with the state over the ownership and use of mineral resources;
- a direct interest of the region and the state to improve operational efficiency due to limited resources;
- integrated mining companies are the city main budget forming and socially-significant landmarks;
- the legal framework of vertically integrated companies (VICs) is a holding type public company;
- the core of VICs is a set of enterprises, which are successive stages of a production cycle and interconnected technologically with necessary production constraints;
- mineral resources are specific assets;

• integrated companies include supporting and service production ensuring the development of the specialization and their own needs;

• production and cash flow management is provided by the parent company;

• a high degree of risk, declining with the increasing degree of integration and diversification;

• diversification of production.

To assess the degree of diversification and integration there are no reliable methods developed, the following can be recommended as key indicators: the number of industries in which the company operates, the modified Herfindahl-Hirschman index, an index of entropy. Gathering the required information is quite difficult for Russian companies, as the requirements for presentation and disclosure of relevant information in Russian standards are not available.

The type and effectiveness of the strategy influences the type of competitive status. It is appropriate to implement the determination of the types of competitive status of business entities focusing on two parameters – the type of the implemented strategies of competitive behavior and the assessment of its implementation success degree through the use of the character of actually acquired strategic and competitive positions.

The priority for MRC is the analysis of the types of strong competitive status [1]: monopoly and dominant.

Monopoly status is manifested in two forms:

– common (absolute) monopoly, with monopoly positions in all the selected sectors and market segments,

– differential (relative) monopoly – the status corresponding to the firm with monopoly positions in some sectors of the market, at least one.

The dominant status is manifested in the following ways:

– common (absolute) dominant is successfully engaged in widely diversified business, as evidenced by the presence of a dominant position (25% and higher) in all selected market sectors;

– differential (relative) dominant – succeeded in at least one of the sectors of the market;

– specialized dominant – a company operating in a very limited number of market sectors and having achieved dominant positions there;

– highly specialized dominant – a company operating in a single sector of the market and having achieved dominant positions there;

– partial dominant – a company that has no dominant positions in any sector of the local market, but with the ability to influence and really impacting on weaker opponents, with a share of 7 – 25% of the respective market sectors;

– pseudodominant – an entrepreneurial firm that seeks to be similar to the original owners of the dominant positions in the nature of the competitive action, but having no dominant positions anywhere.

Most companies, given their specificity, integration and diversification in the MRC markets have a status of specialized and highly specialized dominant.

There are few methods for determining the competitive status of the companies being developed; all of them are built on a unified methodological basis – I. Ansoff's approach [2].

In the classical version the indicator of competition status of a firm (CSF) is given by the formula:

$$CSF = \frac{(I_F - I_K)}{(I_O - I_K)} \times \frac{S_F}{S_O} \times \frac{C_F}{C_O},$$

where I_F is the value of strategic capital investments;

I_k is the critical value of capital investments, which shows that capital expenditures below this value do not result in revenue;

I_0 is the optimum value of investments;

S_F, S_0 is acting and the "optimal" strategy of the firm, respectively;

C_F, C_0 are the best available capacities of the firm, respectively.

I. Ansoff's interpretation in its economic content is similar to the concept of competitive advantage in the treatment of Porter, as both treatments operate on the ratio of actual and basic productivity of companies' resource use. Competitive status of the company characterizes the prerequisites for achieving by a company a high-level competitive advantage, for which the availability of resources of all kinds of the firm's "capacities" to capture a leading position in the industry (the world market); favorability and the possibility of using by the firm of the environmental conditions to create and maintain a high level competitive advantage are determined.

The practical significance of I. Ansoff's approach is in the agreement of common and competitive strategy with the investment strategy of the company, the formalization and evaluation of the latter. The evaluation of future competitive status of the company is based on the determination of the relative investment positions in perspective: strategic investments provided and planed by the company, the critical point and the point of optimal volume in the future.

For each element of the strategic potential there should be identified the resources that can provide achieving of the company's goals. Comparing the values of actual and desired resource parameters we can determine the compliance of actual parameters required for each element of the strategic potential taking into account the adequacy extent of the external environment. I. Ansoff evaluates the performances S_F, S_0 and C_F, C_0 as the arithmetic mean scorings (on a scale from 0 to 1) to the extent of factors correspondence to the current strategy (or potential available) to the factors optimal strategy (or optimal potential). If $CSF = 1$, the firm will be able to secure an exceptionally strong competitive status and become one of the most profitable, if one of the indicators that make up the competitive status of the firm is zero, it will not gain profit.

This situation can occur if the firm lacks a strategy, a resource potential, or the firm's strategic investment comply with the critical point. Further, I. Ansoff suggests the following gradation of competitive status of the company: $0 < CSF < 0.4$ – weak, $0.5 < CSF < 0.7$ – average, $0.8 < CSF < 1.0$ – strong competitive position.

In our opinion, the main problem in determining the competitive status of the company is the complexity of assessing the adequacy of the strategic potential and environmental conditions to create and maintain a high level of competitive advantage. Other problems in the practical application of I. Ansoff's model include the absence of generally accepted quantitative methods of strategic investments level calculating, and the disadvantages of expert methods application for scoring optimal strategy (strategic standard) and the optimal capacity (capacity standard). There are no well-established methods of calculating the necessary, critical and optimal values of strategic investments, which makes it difficult to assess the competitive status of the company both at the current time, and in the future. Understanding the importance of the level of strategic investment has developed relatively recently, so satisfactory methods of assessment of this indicator have not yet been developed, although research in this area continues [1, 12].

Analysis of the ability to assess the competitive status of a company in crisis and post-crisis [13] shows that the solution of the problem of determining the optimal value of investments and the best opportunities is complicated under the conditions of high uncertainty and market volatility impeding the development of long-term strategies. Therefore, the formula for assessing the competitive status of the company is simplified and is based on expert assessments:

$$КСФ = (И_ф/И_К - К_0) \times И_{ст} \times К_{су},$$

where $И_ф$ and $И_К$ are respectively I_F and I_K (see above);

K_0 is the coefficient (average value on the basis of international practice) of the ratio of the optimal and critical value of capital investment, typical for the industry and being in the range 2.5 – 5;

$И_{ст}$ is the coefficient of production stability, determined by the ratio of the index of output growth and inflation rate;

$K_{су}$ is the estimate of the optimality of the applied methods of strategic management, provided by expert or scoring method.

The main advantages of the improved approaches are the account of the company life cycle influence, the variability of external factors in a crisis on its competitive status. This account is especially important for mining companies, as their life cycle is largely determined by the system-specific features of commodity assets, the companies have high operating leverage, and mineral markets are inertial and sensitive to the price situation. The main disadvantages of these approaches are the subjective evaluations, the impossibility of adequate considering the company's industry sector, the lack of statistical basis for calculations, thus the reliability of the calculations will be very low.

In our view, the competitive status of the mining company is affected by a wider range of factors whose influence must be taken into account by the index method:

1. Competitive intensity, the company's competitive behavior and the type of market competition in the industry markets at present and in the future.

2. Financial and investment strategy of the company, taking into account the irreversibility of investment and high barriers to entry into the industry.

3. The influence of the synergistic effect associated with the company's participation in integrated and especially holding companies.

4. The level of financial dependence on the creditor and the price of capital, significantly affecting the efficiency of strategies implementation.

5. Investment attractiveness of companies, industries and markets.

6. Corporate ownership structure, as with the company's participation in large corporate associations, the interest in performance is reduced, since the market transactions mechanism is replaced by their intra-firm organization.

The choice of the company's development strategy and investment policy depends on several factors: size, financial capability, performance, credibility, financial stability, solvency, competition level, barriers to entry and the extent of its influence on the market, the maturity of the company and the market, the development of external and internal capital markets; specific and institutional regulation of sectors and markets, and others.

The company carries out a strategic choice among the three groups of investment market objects: the objects of real investment (tangible long-term assets, including, mineral assets), financial assets, objects of intellectual capital. Making investment decisions aimed at creating, maintaining and developing of competitive advantage must be based on strategic management in view of predicting changes in the environment, adaptation of management decisions to them and flexible response.

In Russian companies one can meet the following types of investment policy [14, p. 195]: narrowed reproduction, simple reproduction, partial modernization of assets, complete modernization of the core assets, dynamic assets allocation, portfolio strategic investment.

The first three types of investment policy are implemented by about 30% of companies, especially by those with a high degree of public participation. In this case the key factors for project choice are to maintain solvency and profit growth, the traditional criteria for evaluating projects are the payback period and internal rate of return. Approximately 40% of companies are choosing a policy of full modernization of the core assets, the others focus on dynamic assets allocation and portfolio strategic investment (few companies).

Integrated mining companies are characterized by the more developed (the last three) forms of investment policy determined by the target-oriented strategies, shaped by the results and the scale. When there is complete redesign of core assets, investment is mainly in specific assets related to innovations, that provides keeping competitive advantage in the industry and increase company value. In a dynamic investment policy of asset allocation there are direct and portfolio investments, the projects are characterized by both investment and financial flexibility, a wide variety of sources is used including domestic capital market, as a result new competitive advantages in specific sectors and additional company's value are created. Strategic portfolio investment (investment in strategic assets) is aimed at developing strategic abilities (competencies) and resources (assets), taking into account the financial strategy, resulting in the creation and retention of long-term competitive advantages and sustainable growth of the company's value. The fundamental difference of such investment policy from the other species is the possibility of changes in the environment due to the formation of new needs, technologies and competencies.

To assess the effectiveness of the strategy implemented by the company, one should [2]:

1) analyze the competition factors and competitive advantages;

2) determine the significance of factors for the company's strategy;

3) make models of several competitive strategies;

4) define a model of competitive strategy, which may be an optimal strategy in the future;

5) compare each factor of the optimal model with the relevant factors of particular substrategies within the current strategy based on the scoring method in order to determine whether the current strategy is optimal.

It should be noted that the assessment of the competitive status is relative, as it is determined in comparison with the industry average values, or with the performances of the leading competitors. The quality and efficiency of the chosen strategy determines the company's behavior leading to the formation of the result - an increase of competitive status. Therefore the choice of the company's development strategy should take into account the generally accepted indices of economic efficiency of investment projects, the projected growth of the company's value and its competitive status increase.

References

1. Rubin, Yu.B. Theory and practice of business competition / Yu.B. Rubin. – M., 2004.

2. Ansoff, I. Strategic management / I. Ansoff. – M: Ekonomika, 1989. – 519 p.

3. Kryukov, V.A. Features of subsoil management system formation in Russia – a view of the problem from positions of the institutional theory / V.A. Kryukov // Mineral resources of Russia. Economy and management. – 2005. – № 5.

4. Zaitseva, N. How can investment attractiveness be estimated? [Electronic resource] / N. Zaitseva // Banks and the business world. – 2007. – № 12. – Available at: http://www.cfin.ru

5. Kat'kalo, V.S. Evolution of strategic management theory / V.S. Kat'kalo. – 2nd ed. – SPb.: Publishing house "Higher Management School", 2008.

6. Order of FAS of the Russian Federation dated 25.04.2006 № 108 "On the statement of order of carrying out of the analysis and estimation of the condition of the competitive environment in the commodity market".

7. Tkachenko, N.I. Institutional aspects of functioning of monopolies and a shadow rent in subsoil management / N.I. Tkachenko, E.G. Samoylenko // Science works of DonNTU. Economic series. – Issue 89-1.

8. RSFSR law dated 22.03.1991. № 948-1 "On competition and restriction of monopoly activity in the commodity markets".

9. Federal Law dated 26.07. 2006 № 135 "On competition protection".

10. Pahomova, N.V. Economy of the industry markets and the policy of the state / N.V. Pahomova, K.K. Richter. M.: CJSC Publishing house "Ekonomika", 2009. – 815 p.

11. Barney, J. Resources and Sustained Competitive Advantage / J. Barney // Journal of Management. – 1991. – Vol. 17. – Pp. 99-120.

12. Mlotok, E. Principals of marketing research of competition in the market [Electronic resource] / E. Mlotok. – Available at: http://www.marketing.spb.ru

13. Parahina, V.N. Management of enterprise's competitiveness and estimation of its competitive status [Electronic resource] / V.N. Parahina: North Caucasus State Technical University. – Available at: science.ncstu.ru/articles

14. Teplova, T.V. Investment levers of the company's value maximization / T.V. Teplova. – M.: Vershina, 2007.

UDC 338.436.33:33.3

Methodological foundations of sustainable development of the agricultural sector

The paper analyzes the different perspectives on the concept of "sustainability", "sustainable development", the content of sustainable development of the agricultural sector as a complex socio-ecological-economic system is clarified and supplemented. The factors and indicators of sustainable development of agriculture are identified.

Stability, sustainable development, factors, indicators, agriculture.

Valentin A.
IVANOV
Doctor of Economics, Professor, Head of Laboratory of the Institute of Socio-Economic and Energy Problems of the North Komi Scientific Center of the Ural RAS department
ivanov@iespn.komisc.ru

Anna S.
PONOMAREVA
Post graduate student of the Institute of Socio-Economic and Energy Problems of the North Komi Scientific Center of the Ural RAS department
anita-85_07@mail.ru

The modern concept of sustainable development

The idea of sustainable development of mankind began to dominate in 1960 – 1970s when a number of environmental and socio-economic problems began to threaten the life of current and future generations. These include: environmental degradation (chemical pollution of food, deforestation, desertification, bogging, pollution of surface and ground water, reducing the species diversity of living organisms, diseases, genetic abnormalities, reduced life expectancy, emergence of acid rain, ozone reduction, global warming and other environmental issues), the use of inefficient resource destroying technologies; disparities in socio-economic development between developed and developing countries, expanding poverty and increasing differentiation between the rich and the poor; the food crisis and the spread of hunger, exhaustion and escalating shortage of mineral raw material and energy resources; ethnic conflicts, etc.

The issues of sustainable development of the agricultural sector are particularly relevant to the northern regions. Fruitful life in the harsh climate is only possible if there is a healthy diet. Whole milk, fresh vegetables and meat, eggs as a source of adequate protein, vitamins, minerals and other biologically active substances are indispensable for a balanced diet of inhabitants of the northern territories.

The lack of fresh food here has a depressing effect on human and sharply reduces ability to work. The consumption of these foods is largely dependent on the level of their production on the spot. However, during the period of market reforms the production potential of the industry degraded. As a result, agricultural production has become significantly more difficult, having largely lost its industrial character.

The village is undergoing a systemic crisis, the main manifestations of which are not only decreasing agricultural production, but also worsening demographic situation, high unemployment among rural population, its poverty problems, reduced quality of life. Modern agricultural production is characterized by the preservation of nature devastating type of management. A considerable part of arable land, hayfields and pastures are not used and overgrown with forest. The removal of nutrients with the crops from the soil on arable land exceeds their entry.

The theory of sustainable development in recent decades has become the most popular. According to some scholars, the theory of economic growth has been replaced by the concept of sustainable development [1, p.46]. Now in the literature, there are more than 60 definitions of sustainable development. This reflects both the complexity of the concept including economic, environmental and social aspects of human development and the difference of views of scientists, businessmen and politicians.

Historically, the concept of "sustainable development" is associated with the ecology. One of the earliest definitions of sustainable development was proposed by the Canadian Commission on the Environment in 1915 "Every generation has a right to a certain percentage of natural capital, but the bulk of this capital should be transferred intact to the next generation" (cited by 2, p. 115).

The International Commission on Environment and Development in 1987 has defined sustainable development in the following way: "Sustainable Development is a development that meets the needs of the present, but without compromising the ability of future generations to meet their own needs. It includes two key concepts:

1) the concept of needs, in particular the needs necessary for the existence of poor people who should be the subject of primary importance;

2) the concept of constraints conditioned by the state of technology and social organization imposed on the environment's capacity to meet current and future needs" [3, p.50].

According to some scholars, the translation of the term "sustainable development" into Russian is not quite accurate. Thus, A.M. Reteyum believes that the recommendations taken by the UN Conference "Environment and Development" (UNCED), Rio de Janeiro, 1992, on the transition in the XXI century to a strategy of sustainable development, which was poorly translated in this country is closer to the meaning of 'self-maintenance' [4, p. 8].

According to N.V. Chepurnykh, the term "sustainable development" is inaccurate; the phrase "sustainable development" should be translated as "acceptable" or "permissible" development. The author also believes that the term "sustainable development" is also unfortunate because it is more related to engineering sciences and creates the illusion that crisis-free progressive socio-ecological and economic development is possible. In fact, we are talking about working out a strategy that would make the inevitable crises less painful [5].

A number of scientists believe that a more accurate translation of the term sustainable development is as "acceptable development" or "inexhaustible development" [6, p.133].

Scientists of the Institute of Geography of RAS consider sustainable development "as a multilevel, hierarchical, controlled process of co-evolutionary development of society and nature with mass, conscious participation of the population. Its purpose is to provide a healthy, productive life in harmony with nature for the present and the future generations based on the protection and enrichment of cultural and natural heritage" [7, p. 23].

N.F. Glazovsky believes that sustainable development requires social justice, economic development and high environmental quality. All three components of sustainable development are closely related to each other, but these relationships are not enough studied at the present time. It is particularly important to establish how the efficiency of natural resources use changes depending on the level of economic development, because it can help in developing strategies to improve it [8, p. 17].

According to E.I. Glushenkova, the most complete and accurate is the following definition of sustainable development. Sustainable development is a normative theory, which assumes control of living conditions on the basis of four principles: 1) satisfaction of the basic needs of all people currently living, 2) equal standards of this satisfaction for the entire world's population, 3) careful use of natural resources, 4) preservation of opportunities for future generations to realize the basic needs. All these principles are of equal value, but the central is the third one based on the idea of the limited ability of natural systems to economic carrying capacity, forming the core of the theory [cited by 9, p.67].

There are many other definitions of sustainable development (SD) associated not only with the environment, but also including economic and social components. Thus, A.D. Ursul notes: "Broadly speaking, SD is interpreted as a process of designating a new type of existence and development of world civilization, based on the radical changes in historical landmarks in all practical parameters of being: economic, social, environmental, cultural, etc. With this understanding of SD we are talking the optimal control of not only the natural resource potential, but also the entire socio-cultural sphere (economy, culture, public-legal institutions, etc.)" [10, p.22].

D.S. Lvov considers sustainable development in the narrow and broad sense. According to him, sustainable development in the narrow sense involves environmental sustainability, in the broad sense it includes all forms of resistance (demographic, economic, social, anthropogenic, etc.) [11, p. 48].

Analysis of the literature on sustainable development shows that, although many scholars and public figures indicate the inadequacy and inconsistency of the translation of the English concept of "sustainable development", translating it as "stable", "controlled", "supported", "equilibrium", "balanced development", the generally accepted interpretation for more than 20 years is the term "sustainable development", and it is not reasonable to change it. Most interpretations of the term "sustainable development" one way or another are based on the definition given by the Commission G.H. Brundtland, which is rightly considered as classic.

In Economics sustainability has been historically associated with economic development. In the classical theory of economic equilibrium, represented by A. Smith, D. Ricardo, K. Marx, the basic concept was reduced to the equality of supply and demand, income and expenses, profit maximization. The neoclassical theory of economic equilibrium (L. Walras, V. Pareto) adhered to the concept of competitive balance, price flexibility and optimal use of resources [12].

Currently, the term sustainable development has been applied in economic theory to describe the type of economic development. "... development, as well as its derivative meaning – economic development, is characterized by non-linear (abrupt and jerky) process of growing complexity in the transition from one qualitative state to another, as well as the change of these types. No accident that in the world economic science, along with the theories of economic growth, a new scientific field has spread – the theory of economic development" [13, p. 45].

The concepts of "economic growth" and "economic development" are closely linked. Sustainable economic development requires sustainable economic growth.

In turn, sustainable economic growth determines sustainable economic development. Sustainable economic development is a steady improvement of one state to another by virtue of the positive growth and a balanced interaction between the components of the economic system in the long interval of time. The instability of the economic system is its inability to keep moving along the positive growth trajectory because of its negative components [14, p. 8].

Based on the study of the concept of "sustainability" and "sustainable development" we can note the following. Stability should be understood as the ability of any system to return to a certain balance after the exposure to it of external and internal factors.

The following definition of sustainable development is the most common in the literature: it is a development where the material and spiritual needs of the present generation are satisfied without compromising the ability of future generations to meet their needs. At the same time ensuring sustainable socio-economic development of the economy depends on whether it is compatible with human development in the interaction with the environment (biosphere).

The transition to sustainable development of socio-ecological-economic systems at macro, meso and micro level, at the level of the overall economy, industry, enterprise, requires new legal regulations, new performance management system.

Based on the foregoing, it can be stated as follows. Currently, the term "sustainable development" has been universally distributed. Analysis of scientific literature shows that there are many definitions of sustainable development. Most definitions of sustainable development are associated with the concept proposed by the International Commission under the direction of G.H. Brundtland. One of the main essential features of sustainable development is the characterization of three closely interrelated components: economic, social and environmental.

The concept and essence of sustainable development of agriculture

In the scientific literature on agriculture and agricultural practice the term "sustainable agriculture" is commonly used. But the common definition of the concept has not been developed so far.

In many publications, sustainable agriculture is considered as "alternative agriculture", characterized by the transition from anthropogenic industrial agricultural system to an environmentally sustainable system, with minimal use of nonrenewable energy resources, "ecological agriculture", "biological agriculture", "dynamic adaptive" and "ecologically balanced agriculture" with a minimum use of material and energy resources of non-farm origin. In all these definitions, the main is the transition from an intense anthropogenic system to environmentally sustainable system of agriculture, in which agro landscape remains useful for a long time, low-cost technologies are used. Several scientists note the diversity of the term sustainable agriculture, which involves not only the conservation of natural resources, but also means a decent life of rural workers.

The definition of "sustainable development" in relation to the agrarian sector is formulated in the material adopted at the session of FAO (UN Food and Agriculture Organization) in Rome, in 1996, as follows: "The main objective of the Program of sustainable agriculture and rural development is to increase food production and provide food security.

To solve this problem it is necessary to support educational initiatives, the use of economic innovation and development of appropriate new technologies, thus ensuring stable access to the food corresponding human needs for nutritious elements; access for disadvantaged groups; the development of commodity production; reduction of unemployment and improvement of income level in order to reduce poverty; management of natural resources and environmental protection" [15].

The Second All-Russian Congress of Agricultural Economists in 2006 was dedicated to the review of sustainable development of agro-food sector as a major factor of socio-economic stability of Russia. I.G. Ushachev characterizes the essence of sustainable development of the agricultural sector as a unity of three components: economic, social and environmental, allowing to combine economic growth and increasing degree of satisfaction of the population's needs with the ecological requirements into a single social and nature system [16, p. 3-4]. I.V. Kurtsev believes that sustainable development of agriculture means the reproduction of resources at every stage of production cycle at a higher level in terms of positive outcomes: production, economic and social parameters, consistent building of capacity to improve them [17, p. 17].

P.D. Polovinkin determines the stability of reproduction in agriculture as the ability of the subjects of this reproduction to support the dynamic rational proportion continuously between the factors of reproduction in the agricultural sector and the required pace of development in terms of uncertainty to continually meet the needs of the population in food and consumer goods made from agricultural raw materials [18, p. 555].

Sustainable development of the agricultural sector is determined by closely interrelated components – economic, social and environmental. The main criteria for sustainable economic development of the industry are the increase in the production of safe food in order to meet the needs of the populations, ensuring economic efficiency of production, which provides expanded reproduction. The social component of sustainable development includes increasing the level and quality of life for farmers, stabilization the demographic and migration processes in the countryside. Stable, equilibrium nature management is related to the ensuring of sustainability of agricultural systems at present and in the long term, improvement the quality of the environment and conserving natural resources.

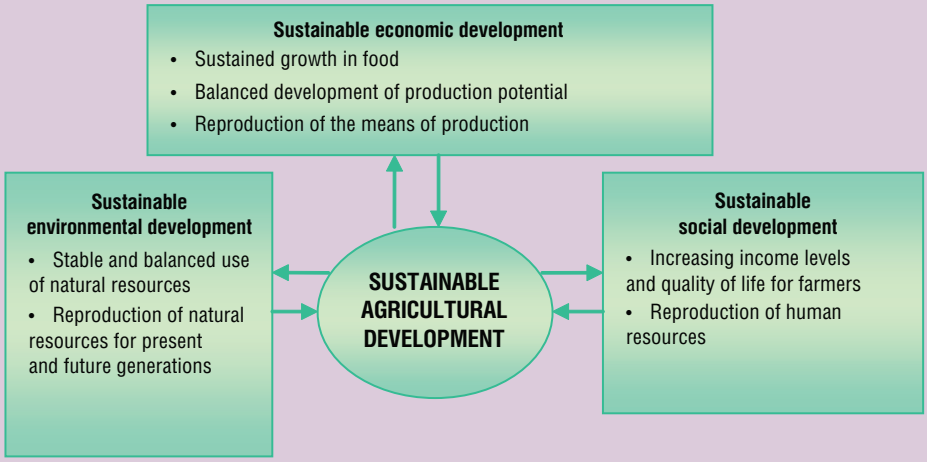
Sustainability of environmental development of agriculture will allow to avoid degradation and loss of arable land, to increase soil fertility.

The concept of sustainable development of agriculture is inextricably linked with the growth of food production, efficient use of economic and intellectual resources, improvement of wealth and quality of life for rural residents, stable and balanced nature management. Only when there is a balance of economic, social and environmental components, there is sustainable development in the industry for a long time. The close relationship of the components of sustainable agricultural development is shown in *fig. 1.*

Sustainability of agricultural production is determined by the specific industry and market relations in agricultural production – heavy dependence on climatic conditions, making the agricultural sector less stable compared to other sectors of the economy; the use of land in production as a rare and limited resource, and living organisms characterized by different production potential per unit of resources expended; the incomplete process of intensification and industrialization of agricultural production, a complex and poorly developed industrial and social infrastructure, leading to extremely low levels of productivity and wage; the fact that the agricultural sector does not fit into the modern model of market economy and can only develop with government support. The peculiarity of the approach to the justification of stable operation of agricultural enterprises and farms is the compulsory registration of the specifics of agriculture as a complex socio-ecological-economic system.

Agriculture as an unstable system cannot develop itself without external influence. Especially for the northern regions it is necessary to enhance the impact of the state to increase the efficiency of agricultural production, improve living standards of the peasant community, save the environment for future generations.

Figure 1. The relationship of the components of sustainable agricultural development



The dynamic development of the agricultural sector depends on the activity of the primary link (business), the rational inter-industry and industry relations, economic relations between the spheres of the reproduction process.

At the level of commercial organization the concept of stability is usually reflected in its financial position. Thus, in the contemporary economic dictionary stability of the enterprise, the firm is defined as "the financial condition of the company, economic activity of which provides under normal conditions the performance of all its obligations to employees, other organizations, the state through an adequate income and therefore income and expense" [19, p. 360].

In our view, it is improperly to determine the stability of the company only in terms of its financial position. It does not take into account other key factors of the production system efficiency, the most important of which are industrial-technological potential of the company and its ability to continue to fulfill its basic function, i.e. to produce the products demanded by consumers. Even with the bankruptcy of the company its productive capacity may not be susceptible to fracture. Worn production facilities, outdated technology, human capital impervious to innovation always result in a weakening of the stability of the enterprise, because it violates its functional properties.

Therefore, not less (if not more) adequate is the relationship of the stability of the enterprise not only with its financial situation, but also with its production and technological parameters, with their dynamics, i.e. with the state of the reproduction process and its adequate capabilities to respond to changing market conditions, technical and technological advances [20, p. 47].

In the works of local economists, there are many definitions of economic sustainability of the enterprise. Some researchers consider stable operation of the enterprise as the ability to maintain (or increase) the volume of sales over a long period of time with various changes in the infrastructure and with fluctuations in consumer demand [21, p. 185].

Others point out that economic stability requires a qualitative and quantitative conservation, restoration and expansion of profit-maximizing orientation, ensuring stable circulation of capital, its renewal and accumulation in the interests of the owners of the enterprise and socio-economic security of its staff [22, p. 21]. Still others believe that the economic sustainability of the enterprise is its ability to adapt with minimal losses to the impact of changes in the external environment, adequately responding to its impacts, as well as internal disturbances [23, p. 25].

A number of scholars believe that the company is a relatively stable, coherent and bounded on the environment independent socio-economic system, integrating the processes of production (realization) of goods and the reproduction of resources in time and space. The connecting link between these processes and the "face" of the firm is its potential – a set of resources and opportunities, determining the expected performance of its development under various real scenarios of environmental change. The main object of the decision-making is the distribution of resources and efforts of the firm between increasing potential and its use, between reproduction and production, between the present and the future [24, p. 20].

The initial production unit is rightly regarded as a complex system. Systems' functioning is performed by the laws of dynamic development. One of them is the transition of quantitative changes into a new qualitative state. At the same time every system has a tendency to a relative equilibrium when the forces acting on it are mutually balanced. This equilibrium can be stable and unstable due to the influence of factors disturbing this balance. Otherwise, the balance of the system loses its properties and becomes a new qualitative state, which is characterized in a different regime. The study of these discontinuities has led to the creation of catastrophe theory. Due to such changes agriculture in many regions of Russia has appeared to be on the verge of a catastrophe.

We share the position of the authors who believe that "development" and "sustainable development" are not concept-synonyms. Development requires an sequence of cycles of abrupt (through the stage of the disaster) transition of the system (e.g., agriculture) to another level as a prerequisite. In other words, "development" is presented as repetitive with a regular cycle: a gradual change in the spatial state of a system, a crash (fluctuation), the transition to the next level and start of a new cycle of development of a qualitatively different system.

In contrast to the regularly coming disasters (crises) in the case of "development", "sustainable development" implies a balance between interrelated elements of the system – economy, social and environmental spheres. Thus, for a "sustainable economic development of agriculture", it is necessary that it would be able to reproduce the natural environment, the means of production, the human, while avoiding disasters for an unlimited length of time [25, p. 9-10].

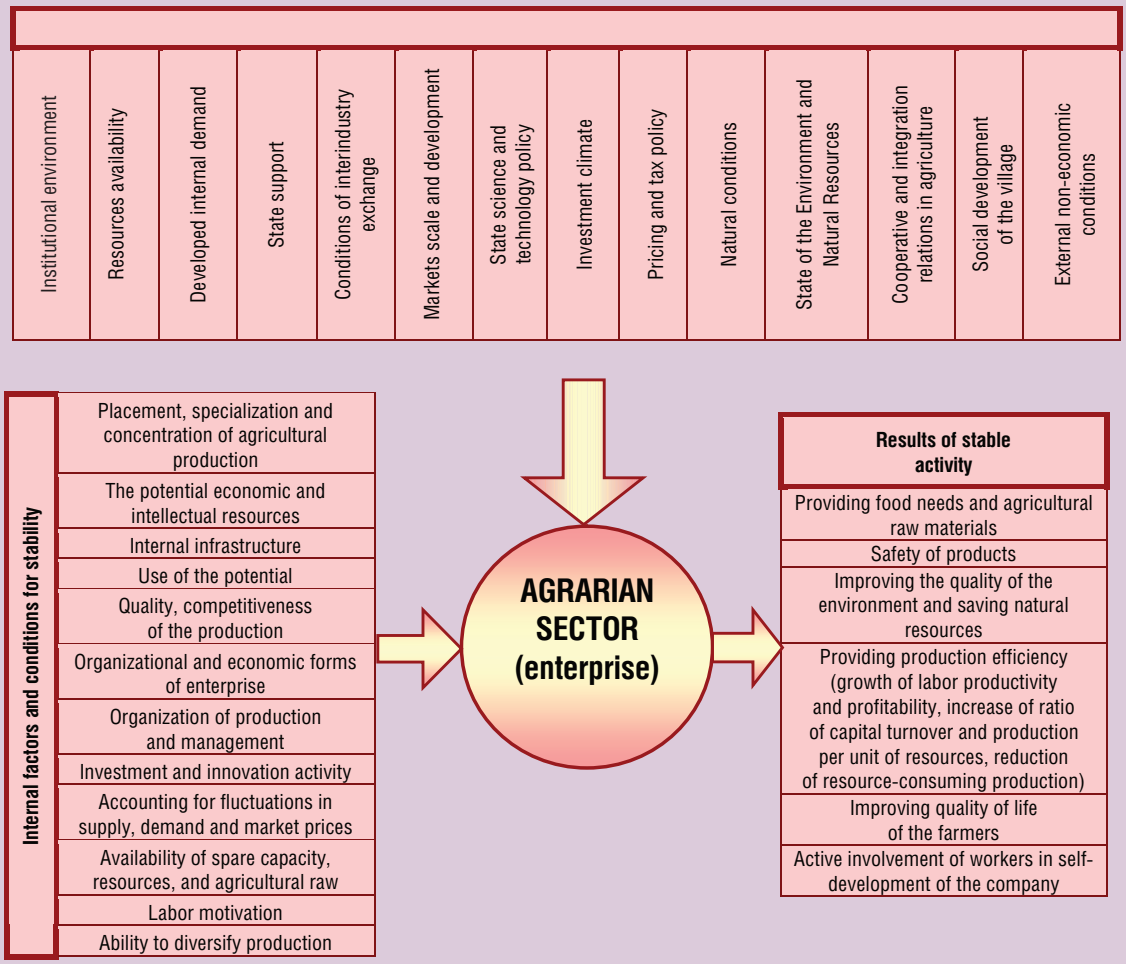
Thus, the sustainable development of the agricultural sector is defined by three closely interrelated components: economic, social and environmental. Sustainable development is achieved if the reproduction of productive capacities, human resources and the environment is ensured for a long time in the unity and interaction. A crucial role in sustainable agriculture and its various branches is played by the socio-economic and agrarian policy of the state.

Factors and conditions for sustainable development

Sustainability of the agricultural sector as a complex, open and multi-level system is determined by factors and conditions. We should find out the essence of the concepts of "factors" and "conditions". In the Dictionary of the Russian language factor' is "defined as the driving force, the cause of any process, phenomenon" [26, p. 834]. Condition', according to the dictionary is 1) "the circumstance on which anything depends", 2) "the rules laid down in some areas of life, activity", 3) "the situation in which something is happening" [26, p. 826].

In the classification of factors and conditions that foster sustainability of the industry, consider the following situation. The most reasonable is the division of agricultural sustainability in economic, social and environmental dimension. Based on the diversity of his home factors and conditions, they can be divided into two groups: external and internal *(fig. 2)*.

Figure 2. Factors and conditions for the stability of the agricultural sector (enterprise)



Decisive role in the stability belongs to the external factors and conditions: the institutional environment, resource availability, competitive environment, the development of domestic demand, government support, the terms of interdisciplinary exchange, the extent and sophistication of markets, state science and technology policy, investment climate, price and tax policies; natural conditions, the environment and natural resources, cooperative and integrative relations of agriculture, rural social development, external economic conditions.

The first group can be defined with the term "external environment". The external environment is essential for the functioning of the agricultural sector and its business entities defining all of their internal factors.

Stimulating or restraining influence of external factors on the stability primarily depends on the socio-economic and agricultural policy. Sustainability of agriculture of the North is defined by making and adjustment of agricultural legislation, the level of budget support, government participation in the marketing of local products, the market of provided material resources, the formation of multifunctional agriculture in the countryside.

The impact of internal factors on the stability of agricultural producers are subject to availability (lack) of highly skilled management team that is able (unable) to apply advanced technologies to modernize and diversify production, to use the resource potential efficiently, to adapt to changing environmental conditions.

Sustainable development of agriculture and some of its branches are also affected by such internal factors and conditions as location, specialization and concentration of agricultural production in accordance with local realities, the potential of economic and intellectual resources, internal infrastructure, the use of potential, the quality and competitiveness of production; organizational economic forms of enterprise, organization of production and management, investment and innovative activity, accounting fluctuations in demand, supply and prices in the market, the presence of spare capacity, resources, agricultural raw materials, labor motivation.

Agriculture as a complex production system will operate stably if all the factors of production are balanced, the socio-economic and agricultural policy is accompanied by legal and financial security. The system will be unstable if the factors of production are imbalanced and the level of resource potential is low.

A special place in the sustainable development belongs to the institutional environment, which is seen as a means to reconcile economic, social and environmental components of sustainability. The institutional environment in the Russian countryside has historically evolved under the influence of a particular manifestation of land ownership, serfdom, communal ownership of land and farm system that has shaped the mentality especially in rural areas. The moral and ethical standards of the Russian peasantry, their customs, traditions, patterns of behavior and thinking, spiritual values and way of life that still continue to exist to some extent in rural areas now have been formed over the centuries. Economic mentality of the Russian man has been formed in these very specific conditions [27].

Psychology of the Russian peasantry has not been finally formed historically as private ownership. Their customs, traditions and psychology are quite stable and cannot be changed overnight, they are to some extent continue to influence the modern development of market relations in agriculture.

Managing the sustainable development of agriculture in the North we should be aware that until recently there has been a most nationalization of agrarian relations. Historically, in the North there has developed a communal system of land tenure, and therefore, the psychological mood of people to team work and staying in the joint settlement is expressed here to a greater degree than in the southern regions of Russia.

Indicators of sustainable development of agriculture

For quantitative characterization of the stability of the agricultural sector it is advisable to use a system of indicators *(fig. 3)*.

It is also important to assess the degree of sustainability of agricultural production. For these purposes we use the stability coefficient, which measures the fluctuation measure of actual levels of dynamic range relative to theoretical levels, the coefficient of resistance changes, the coefficient of rank correlation [28].

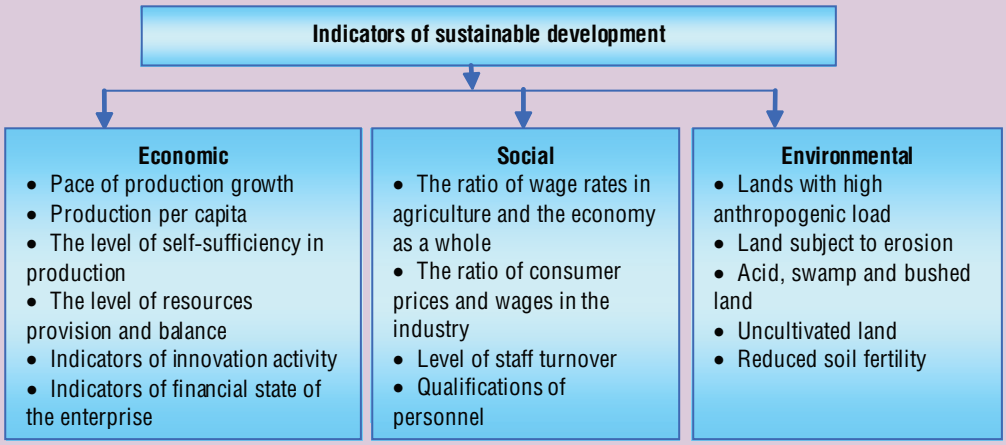
Depending on the sustainability assessment level (a particular type of product, industry, of agriculture as a whole) the indicators characterizing the essence of the concept will change.

Sustainability indicators should meet the following criteria: the ability for quantification and use within a country, region, industry, enterprise; basing on available statistical reporting; use of a limited number of key indicators.

Thus, the performed study allowed the following conclusions.

1. Analysis of scientific literature shows that there are many definitions of sustainable development. Most interpretations of this term are based on the definition given by the Commission G.H. Brundtland: "Sustainable development is a development that meets the needs of the present, but without compromising the ability of future generations to meet their needs."

Figure 3. The system of indicators for sustainable development of agriculture



2. Sustainable development of the agricultural sector is defined by three closely interrelated components – economic, social and environmental. Sustainable development is achieved if the reproduction of productive capacity, human resources and the environment is ensured for a long time in the unity and interaction.

3. The two groups of factors affecting the sustainability of agriculture are allocated: external and internal. Decisive role in the stability belongs to external factors and conditions. Agriculture as a complex production system will operate stably if all the factors of production are balanced, the socio-economic and agricultural policy is accompanied by legal and financial support. The system will be unstable if the factors of production are unbalanced and the utilization level of the resource potential is low.

4. To characterize the degree of economic, social and environmental sustainability of agricultural production quantitatively the system natural, cost and relative measures (indicators) is proposed.

References

1. Chepurnykh, N.V. Regional development: rural area / N.V. Chepurnykh, A.L. Novoselov, A.V. Merzlov. – Moscow: Nauka, 2006. – 384 p.

2. Pshihachev, S.M. The paradigm of sustainable development of the agrarian sector / S.M. Pshihachev // Economic bulletin of the Rostov State University. – 2005. – Vol. 3. – № 1. – Pp.114-127.

3. Our Common Future: Report of the International Commission on Environment and Development (ICED): transl. from English. – M.: Progress, 1989. – 376 p.

4. Reteyum, A.Yu. Development monitoring / A.Yu. Reteyum. – M.: Khorion, 2004. – 160 p.

5. Chepurnykh, N.V. Sustainable development of agriculture and the problem of sustainable development of rural areas [Electronic resource] // N.V. Chepurnykh. – Available at: http://www.icptacis.ru

6. Myths and reality of "sustainable development" / G.S. Rosenberg, S.A. Chernikova, G.P. Krasnoschekov and others // Problems of Forecasting. – 2009. – № 2. – 130-154 p.

7. Sdasyuk, G.V. Nature management and the concept of sustainable development: traditional and new approaches / G.V. Sdasyuk // Nature Management and Sustainable Development: the world ecosystems and the problems of Russia. – M.: Association of Scientific Publications KMK, 2006. – Pp. 22-47.

8. Glazovsky, N.F. Effective use of natural resources and possible thresholds for development / N.F. Glazovsky // Nature Management and Sustainable Development: the world systems and the problems of Russia. – M.: Association of Scientific Publications KMK, 2006. – Pp. 17-21.

9. The concept of sustainable development in the context of globalization // World Economy and International Relations. – 2007. – № 6. – Pp. 66-79.

10. Ursul, A.D. On the way to the right to sustainable development: conceptual and methodological aspects / A.D. Ursul // Theoretical and Applied Ecology. – 2008. – № 1. – Pp. 20-31.

11. Lvov, D.S. The path to the XXI century: strategy, problems and prospects of the Russian economy / D.S. Lvov. – M.: Economics. – 1999. – 168 p.

12. Classical economic thought: essays / B. Petit, A. Smith, D. Ricardo, M.D. Keynes, M. Friedman. – M.: EKSMO-Press, 2000. – 896 p.

13. Ryazanov, V.T. Economic development of Russia: Reforms and Russian economy in XIX – XX centuries. / V.T. Ryazanov. – SPb. Nauka, 1998. – 357 p.

14. Zhelaeva, S.E. Institutional aspects of sustainable development of socio-ecological and economic systems of various types / S.E. Zhelaeva, V.E. Saktaev, E.D. Tsyrenova. – Ulan-Ude, 2005. – 156 p.

15. Promoting Sustainable Agriculture and Rural Development: Agenda 21 Chapter 14. Rome: FAO, 1996.

16. Ushachev, I.G. Sustainable development of agro-food sector: key trends and issues. Reports of the plenary session of the Second All-Russian Congress of Agricultural Economists 13-15 February, 2006 / I.G. Ushachev. – M.: Rosinformagroteh, 2006. – Pp. 3-25.

17. Kurtsev, I.V. Sustainable development of agriculture in Siberia: preconditions, factors, ways / I.V. Kurtsev. – RAAS. Sib. Dept. SibRDIAE: Novosibirsk, 2005. – 374 p.

18. State regulation of the market economy: textbook for universities/ ed. by V.I. Kushlin N.A. Volgin; editorial board.: A.A. Vladimirova and others. – M.: OJSC "NPO "Economics", 2000. – 735 p.

19. Raizberg, B.A. Modern Dictionary of Economics / B.A. Raizberg, L.Sh. Lozovsky, E.B. Starodubtseva. – 2nd ed., rev. – M.: INFRA-M, 2005. – 479 p. Bendikov, M.A. The high-tech sector of Russian industry: status, trends and mechanisms of innovation development / M.A. Bendikov, I. Frolov. – M.: Nauka, 2007. – 583 p.

20. Strategic management of organizational and economic sustainability of the company: logistics oriented business projecting // A.D. Kanchaveli, A.A. Kolobov, I.N. Omelchenko and others; ed. by A.A. Kolobov. – M.: Publishing house of N.E. Bauman MSTU, 2001. – 600 p.

21. Oleynik, A.B. Economic sustainability as a dynamic, reproductive category / A.B. Oleinik // Interuniversity collection of scientific papers ed. by prof. G.S. Merzlikina. – Volgograd: Polytechnic, 2003. – Pp. 18-34.

22. Oksanich, N.I. Managing financial stability of enterprises / N.I. Oksanich. – M., 2004. – 236 p.

23. Kleiner, G.B. The company in a challenging economic environment: risks, strategies, safety / G.B. Kleiner, V.L. Tambovtsev, R.M. Kachalov; ed. by S.A. Popova. – M.: OJSC Publishing House "Economics", 1997. – 288 p.

24. Askarov, A.A. Sustainable development of agricultural economy (based on the materials of the Republic of Bashkortostan): abstract of Dis. Dr. Econ. / A.A. Askarov. – Orenburg, 2008. – 42 p.

25. Ozhegov, S.I. Dictionary of the Russian language. – 6th ed. / S.I. Ozhegov. – M.: Publishing house "Sovetskaya Encyclopedia", 1964. – 900 p.

26. Gorin, N. Features of the psychological mentality of the Russian people / N. Gorin // Problems of Economics. – 1998. – № 4. – Pp. 157-160.

27. Afanasyev, V.N. Statistical support of agricultural production stability problem / V.N. Afanasyev. – M.: Finances and Statistics, 1996. – 320 p.

UDC 332.142.6: 332.146.2

Estimation of the opportunity of the environmental load's decrease at the transition to the innovational way of development*

The article offers an approach for constituting various types of functions that tie economic and ecological indicators. The models based on such patterns should enable investigation of potential development scenarios in strategic planning and their comparative analysis. Calculation results based on Karelia data are presented for major types of functions offered.

Model, environment, investments, pollution function

Pavel V.
DRUZHININ
Doctor of Economics, Associate Professor, Head of the department at the Institute of Economics of the Karelian Scientific Center of the RAS
pdruzhinin@mail.ru

Galina T.
SHKIPEROVA
Ph.D. in Economics, Associate Professor, Senior Researcher of the Institute of Economics of the Karelian Scientific Center of the RAS
shkiperova@mail.ru

Economic development is connected with influencing the environment as the creation of new productions and the expansion of the existing ones lead to positive socio-economic results, but also have negative features, for instance, worsening of ecological conditions. In 1990s the recession in economy was accompanied by the reduction of influence on the environment.

In 1999 the economic growth, which began in the majority of regions, caused significant deterioration of the ecological situation. The high degree of the basic equipment's and environmental funds' deterioration was considered as a principal cause of the predicted negative influence' increase. In reality the growth of pollution appeared not to be so significant, and according to some parameters

* The research is financed by RFFI (grant № 11-06-00227a).

the economic growth was accompanied by the reduction of the environmental load [1, 2]. The analysis of the Russian Federation's and separate regions' data has shown, that the construction of models which will allow predicting ecological parameters' changes depending on the scenarios of the regional economic development is possible.

Within the framework of this research the environmental economic models are constructed on the basis of various functions' types connecting economic and ecological parameters of the territories' development, their features, the key parameters' characteristic, the conditions of aggregation and interrelation of the equations' parameters of different levels are considered. The mentioned models allow taking into account the environmental restrictions of the economic territories' development and can be used at developing various strategic documents.

The research's precondition is the developed situation with the regulation of the economy's negative influence on the environment which is based on the pollution valuation on the basis of the maximum permissible concentration, emissions and dumps, and also by means of realizing the principle "the polluter pays". In conditions when the economic growth operates as the basic priority, the valuation measures are a very weak tool of regulation of the pollution level.

In the Russian reality it works as follows: if the environmental contamination from the part of an enterprise meets the pollution valuation, it is considered, that the level of pollution does not exceed the opportunity of the assimilation potential of a territory and thus the ecological factor is taken into account. And if an enterprise doesn't follow the pollution valuation, another parameter (temporarily coordinated dumps and emissions) is used. Temporarily coordinated standards, as a rule, are close to the limits of pollution. They are operating for a long time and do not stimulate an enterprise to reduce pollution.

The existing principle of pollution valuation has also lost its urgency because it does not meet the requirements of the modern ecological ideology demanding the pollution prevention, instead of its consequences' liquidation. The modern approach to the environmental load regulation is based on the strategy of conformity to the parameters of the best existing accessible technologies [12]. This approach allows establishing unified technical standards and maximum permissible pollution levels, achievable at the use of some concrete technology.

A very important problem at the present stage is also the necessity of the ecological factor's account at forecasting the socio-economic development of a territory. According to a new edition of the Town-Planning Code, the basic ecological substantiations of economic activities should be carried out at the stage of planning of territories' development [3].

The strategic documents being developed now, as a rule, only formally take into account ecological restrictions of economic growth. It is caused by the absence of the necessary toolkit for the preliminary operative estimation of the negative influence of economic development on the environment. The majority of approaches realized both in our country and abroad is focused on complex models and demands big files of qualitative data that causes certain difficulties for their use [7, 8, 9, 11, 13]. In this connection the development of more simple models which do not demand big files of information is actual, that allows operative estimating the influence of certain authorities' and business' steps on ecological parameters.

Considering the economy's influence on the environment in Karelia Republic, it is possible to note, that it is determined by considerable volumes of emissions into atmosphere, of water consumption for the industrial purposes, wastewater discharge and so on *(tab. 1)*. The condition of the surrounding environment as a whole in the republic is characterized by a very weak intensity.

Table 1. Dynamics of the parameters of economic activities' negative influence on the environment in Karelia Republic from 1990 to 2009*

Parameters	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Emissions of harmful substances into atmosphere, it total, thousand t	301	191	150	139	138	132	136	129	126	122	122.3	105.8
Index by 1990, %	*100*	*63.5*	*49.8*	*45.8*	*45.8*	*43.9*	*45.2*	*42.9*	*41.9*	*40.5*	*40.6*	*35.2*
Including firm substances	87	34	33.4	30.3	27.6	27.5	29.9	27.7	26.5	27.7	28.2	20.7
Gaseous substances	214	157	116.7	111.2	107.8	105.3	106.7	101.5	100.1	94.2	94.0	85.2
Water intake, in total, million m^3	356.0	241.2	212.5	225.7	220.6	229	233	241	243	238	230	221
Index by 1990, %	*100*	*67.8*	*59.7*	*63.4*	*62.0*	*64.3*	*65.4*	*67.7*	*68.8*	*66.9*	*64.6*	*62.1*
Used water, in total, million m^3	336.4	226.9	198.8	218.3	214.4	222.0	225.5	236.6	235.6	226.3	220.7	213.5
Index by 1990, %	*100*	*67.5*	*59.1*	*64.9*	*63.7*	*66.0*	*67.0*	*70.3*	*70.0*	*67.3*	*65.6*	*63.5*
Including for the industrial needs	237.0	144.2	128.0	153.4	137.6	149.6	155.1	164.7	155.0	135.0	130.0	127.5
For household needs	77.7	70.3	56.8	53.9	55.8	52.8	52.7	53.0	52.2	48.3	47.0	45.1
Dump of sewage, in total, million m^3	273.3	234.3	215.0	226.0	220.4	224.4	242.4	240	243	241	233	223.6
Index by 1990, %	*100*	*85.7*	*78.7*	*82.7*	*80.6*	*82.1*	*88.7*	*87.8*	*88.6*	*88.2*	*85.3*	*81.8*
Including non-cleared		40.4	20.0	20.7	21.8	20.1	21.2	16.7	13.1	12.4	11.5	9.4
Insufficiently cleared		182.2	185.0	180.2	176.5	174.2	187.9	188.7	194.0	191.6	185.5	180.3
Normative cleared		11.7	9.8	25.2	22.1	30.1	33.3	35.1	35.2	34.7	34.4	34.0
Waste products, in total, million t	**	**	**	**	68.4	67.0	70.0	101.5	101.7	106.4	95.6	72.7
Index by 2002					*100*	*98.0*	*102.3*	*148.4*	*148.8*	*155.6*	*139.8*	*106.3*
Including 1st class of danger, thousand tons					0.03	0.04	0.07	0.04	0.05	0.04	0.08	0.36
2nd class of danger, thousand tons					5.09	0.28	0.24	0.18	0.13	0.09	0.06	0.04
3d class of danger, thousand tons					13.05	63.39	39.49	28.91	25.18	19.1	22.7	26.9
4th class of danger, million tons					0.25	0.547	0.554	0.573	2.014	0.694	0.671	0.560
5th class of danger, million tons					68.2	66.4	69.4	100.9	99.7	105.7	94.9	72.1

*Absolute parameters of pollution are resulted according to the state reports on the environmental condition in Karelia Republic in corresponding years.
** In connection with the change of classification the data are not comparable.

However in the areas where the enterprises of pulp and paper industry and metallurgy work, more intense ecological conditions can be found, as large enterprises' influence on reservoirs', atmospheric, grounds' condition is considerable. First of all, it is typical for industrial centers, such as Petrozavodsk, Segezha, Kostomuksha, Kondopoga, Pitkyaranta, etc.

Among the largest polluters of the environment we can name Public Corporations "Karelian Pellet", "Kondopoga", "Segezha Pulp and Paper Mill", "Pulp and Paper Plant "Pitkyaranta"", "Bumex", Closed Joint Stock Company "Petrozavodskmash", the branch of "NAZ-SUAL". The ecological enhancement at these enterprises basically passes under the economic scenario and is the consequence of the general enhancement. So, at the Public Corporations "Karelian Pellet" the roasting machines' enhancement has allowed to lower the total amount of emissions of nitrogen and sulfur, and the emissions of sulphur dioxide were reduced twice in comparison to the level of 1990.

The enhancement begun at the branch of "NAZ-SUAL" in 1994 allowed to reduce the total emissions of harmful substances from 9.6 to 7.2 thousand tons in 2000, of the especially polluting substances from 3.3 to 2.6 thousand tons, and the fluorine contamination of water was within the limits of norm. Since 1994 Public Corporation "Kondopoga" has invested 0.9 billion rubles for the actions on emissions' reduction in the atmosphere and 1.8 billion rubles for the decision of water purification's problems. The share of the repeated water use and recycled water has grown for one third and has made 86 %. Sulfur dioxide's emissions have decreased and have made 36 % in comparison to the level of the year of 1990. Since 1999 biological clearing constructions' enhancement has been carried out. The enhancement at the "Segezha Pulp and Paper Mill" has allowed to reduce the emissions by this Public Corporation into atmosphere and to improve water purification. Public Corporations "Pitkyaranta" carries out the equipment's enhancement which will allow reducing the influence on the environment [6, 12].

Ecological enhancement at the enterprises of Karelia was considerably promoted by such factor as the frontier arrangement of the region that favors to the development of trans-boundary contacts, facilitates the production's export. It can be explained by the fact that the Ministry of Environment of Finland which is interested in ecological conditions' improvement in the frontier region took part in investing to ecological programs of practically all the enterprises.

Investments are the basic economic parameter reflecting the enhancement processes. Therefore it is logical to assume, that for forecasting the economic development's influence on the environment it is necessary to establish the presence of quantitative interrelations of investments into the fixed capital and into environmental protection with ecological parameters (emissions of polluting substances into the atmosphere and effluents). And it is necessary to place investments both into new construction and into the production enhancement at which the influence on the environment can considerably decrease.

In figure 1 the data of Karelia Republic are considered. Two tendencies are evident, each of which can be approximately described by linear dependence. By 1998 at approximately tenfold recession of investments into the region's economy emissions into the atmosphere had decreased for 40 %, and then at fourfold growth of investments into the regional economy the considerable part of which went to the production enhancement and to the transition to more modern technologies, the emissions into the atmosphere decreased for one fifth, to 40 % in comparison to the level of the year of 1990.

Considering similar dependence on the effluent parameter *(fig. 2)*, it is possible to note its sharp decrease in the beginning of the considered period (till 1993) in connection with recession, but the volume of dump was stabilized, despite of the further reduction of investments till 1998 and their growth during the following period. It is possible to speak about the investments' influence on the effluent decrease only since 2005 (due to accrued growth, i.e. cumulative effect).

In spite of the fact that the investments into a fixed capital are connected to simultaneous improvement of general production and ecological factors, target investments on commissioning environment protection objects still keep the urgency. The analysis of the dependence of the levels of pollution from the environment protection investments shows, that fluctuation of the investments' volume into the environment protection in the republic rendered various influence on the change of emissions' volumes into the atmosphere from stationary sources and dumps of sewage into the surface waters. In the beginning of the 1990s the reduction of emissions and effluents occurred at constant investments, but afterwards the sharp falling of investments in the second part of the 1990s did not result in the change of the polluting parameters.

Figure 1. Dynamics of the emission of pollutants into the atmosphere depending on the dynamics of investment into fixed capital of Karelia Republic in 1990 – 2008, in % to 1990

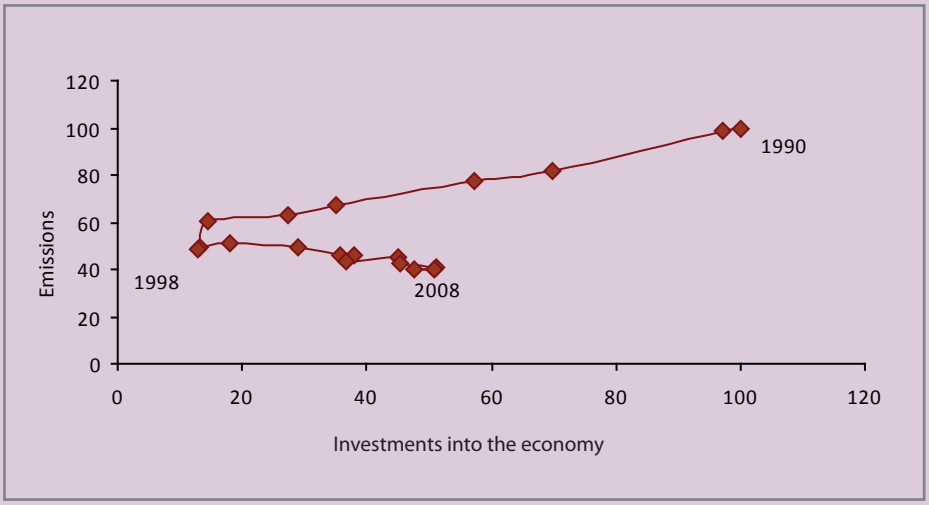
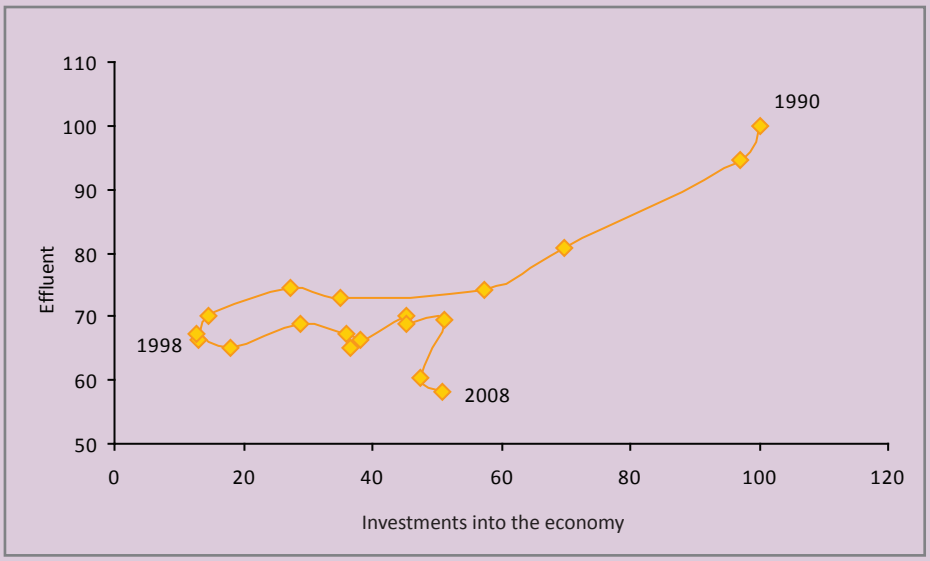


Figure 2. Dynamics of the effluent depending on the dynamics of investment into fixed capital of Karelia Republic in 1990 – 2008, in % to 1990



After the year of 2000 the growth of investments, apparently, promoted reduc-tion of harmful substances' emissions into the atmosphere at rather stable levels of effluents.

The revealed laws testify to the opportunity of construction of two- or three- factorial ecological investment functions (similar to the industrial ones) which should take into account the ambiguity of influence of various scenarios of the economic development on the region's environment depending on the investments' structure. The research is based on the information available in statistical collections of the region [10].

The ecological parameters describing the environment's condition and influence on its economy's development, such as polluting substances' emissions into the atmosphere from stationary sources, effluents into surface waters, water intakes from the natural water sources, waste products' appearance and others are studied.

For estimation of the economy's development the following parameters are chosen: gross regional product (GRP) and its structure, investments and their structure, etc. On the base of the mentioned parameters calculations are carried out for both complex and simple parameters. The branch parameters are used in the equations with simple parameters. Environment protection activity is reflected in the following parameters: investments into the fixed capital, directed on environment protection and the rational use of natural resources, current expenses for environmental protection, etc.

The basic advantage of the mentioned functions connecting both economic and ecological parameters, will be, that they allow considering the dynamics of ecological investments' efficiency, analyzing the influence of the dynamics of investments' economic structure and taking into account the opportunity of indemnification of one factor by another. They can be two- or three- factorial, be under construction on individual or complex ecological parameters:

$$Z(t) = F(U_1(t), U_2(t), U_3(t), t), \qquad (1)$$

where: $Z(t)$ is the researched environmental parameter;

$U_1(t)$ is the factor reflecting the economy's development and, as a rule, negatively influencing the environment (investments into economy, investments into new construction, etc.);

$U_2(t)$ is the factor reflecting environmental protection activity and positively influencing the environment (investments into the environment protection, etc.);

$U_3(t)$ is the factor reflecting the dynamics of production and, as a rule, positively influencing the environment (investments into production enhancement, etc.);

t is a year.

Similarly to the production functions the concept of the factorial flexibility, showed by logarithmic derivatives of function, under the factors is entered. The parameters ε_1, ε_2 and ε_3 are possible to define as pollution flexibility under the factor, determining its efficiency.

They characterize the degree of factors' influence: investments' increase into new construction causes a 1% growth of the considered ecological parameter for ε_1%, at investments' increase for the environment protection (or other nature protection parameter) for 1% the change is for ε_2%, or to be more precise, decreases, as flexibility ε_2 is negative, and at increasing the investments for enhancement for 1% the change is for ε_3%.

Also the concept of neutral ecological progress which is connected to the change of the pollution level, depending on time or other factors, is entered. The basic influence on the neutral ecological progress is rendered with the structural shifts [4].

During the first stage of the researches [6] which were carried out in three northern regions, the elementary functions were used:

$$Z(t) = A(t) \times U_1^{\mu}(t) \times U_2^{-\eta}(t) \times U_3^{\nu}(t), \qquad (2)$$

where μ, η and ν are constants.

The given function is very convenient for calculations while logarithm it becomes linear, has simple ecological sense, $\mu \geq 0$, $\eta \geq 0$. The parameters $\varepsilon_1 = \mu$, $\varepsilon_2 = -\eta$ and $\varepsilon_3 = \nu$ are flexibility factors.

Calculations carried out in Karelia Republic and other regions showed that the use of only the industrial functions is not absolutely justified. Environmental and economic processes are characterized by their peculiarities and it is necessary to build special functions. On the basis of the carried out calculations it is possible to assume, that the factorial flexibility should gradually vary, to decrease.

More and more modern technologies are led-in and their influence is less, than the influence of the existing ones, the replacement of clearing systems for more perfect gives smaller effect, than their first installation, the restrictions on influence on the environment become more and more rigid, but changes become less. Some kinds of functions with varying factorial flexibilities described in details are offered [4, 5, 6].

Thus, the submitted approach to the influence estimation of the economy's development on the environment included some stages. Originally for the approached estimation of interrelation of indexes and the key functions' parameters - factorial flexibilities and the rate of neutral ecological progress, the data analysis and the construction of various schedules of ecological and economic parameters and their ratio were carried out. In the result the periods with potentially different behavior of the basic characteristics of the researched process were allocated, assumptions of the functions' type were constructed, probable restrictions on their parameters were determined. Then the calculations were carried out, the analysis of the calculations results was carried out, and in view of the received statistical characteristics the functions, which more adequately described the analyzed process, were selected.

Calculations for Karelia were carried out for the whole period of reforms, for both sub-periods and sometimes excluding the beginning of 1990s. The data on polluting substances' emissions into the atmosphere from stationary sources, GRP, investments into the fixed capital and the investments into the fixed capital, directed on environment protection, were used. The peculiarity of the regional data is that the investments strongly change. In different years the investment into the environment protection d in 4 or 5 times or fall in 2 or 3 times, and in 2008 they exceeded the level of the year of 1990 in 352 times.

Also calculations were carried out according to the represented above even more complex functions [5, 6]. When GRP was taken as the first parameter, the corresponding parameter till 1999 made a bit less one unit, and the parameter reflecting the investments' influence into the environment protection, was close to zero. Since 1999 the situation has varied: the first parameter was close to zero, and the second varied from 0.3 to 0.2. It means that till 1998 the economy's influence on the environment was determined by falling GRP, and the investments did not practically influence the environment protection. After 1998 with the beginning of economic growth the change of GRP began poorly influence the ecological parameter, but the influence of the environment protection investments amplified.

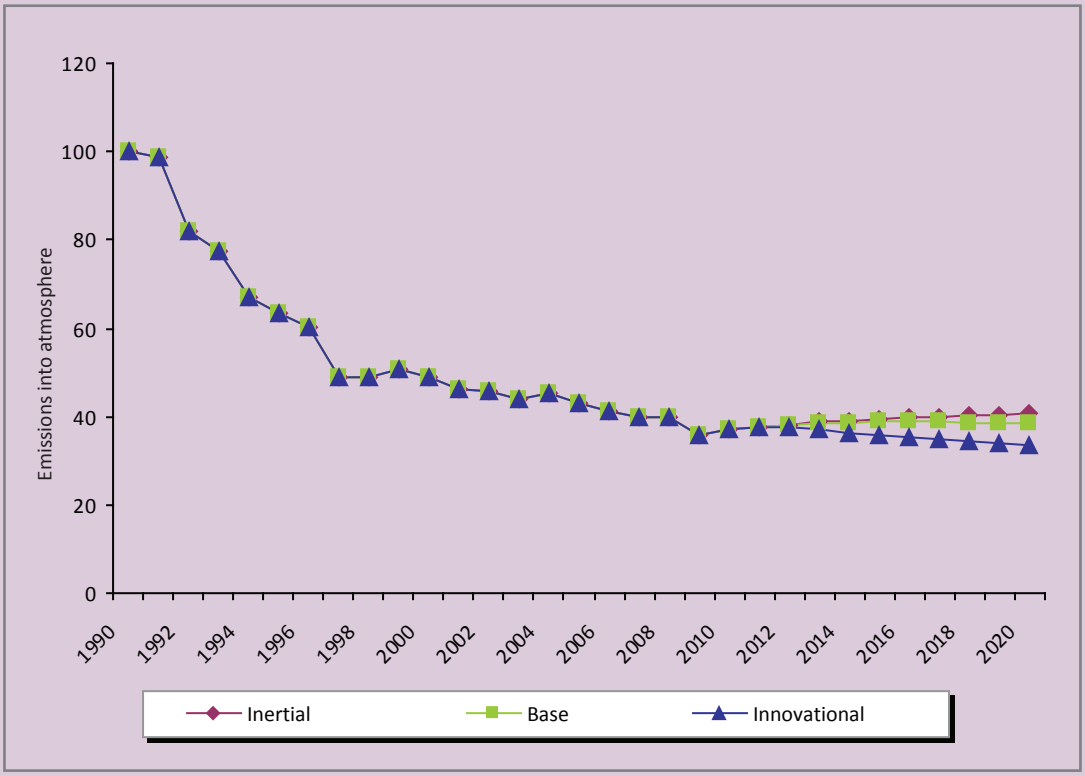
Calculations on the Karelian data with the use as the first parameter of investments into the economy's development confirmed the following conclusions: before the rouble devaluation the environment protection investments practically did not influence ecological characteristics.

The negative influence's change was greatly influenced by the investments rendered into economy. By the results of calculations it is possible to assume, that till 1998 the investments' reduction into the economy's development for 1% resulted in reduction of the ecological parameter approximately for 0.3%, and after 1998 the growth of cumulative environment protection investments for 1% reduced the ecological parameter approximately for 0.2%.

For checking the opportunities of the functions' use the calculations were carried out on the basis of the Strategy of Development of Karelia Republic developed in 2005. Forecasting was carried out according to the function (2) without taking into account neutral ecological progress at $\mu = 0.191$, $\eta = 0.033$, $\nu = -0.042$. Three scenarios represented in the Strategy, were supplemented with simple assumptions about the environment protection activity and the dynamics of the environment protection investments.

In the inertial scenario the investment were reduced to the level of the year of 2003 and then by 2020 reached the level of the year of 2008, in the base scenario they were reduced twice and returned to the level of the year of 2008 by 2018, in the innovational scenario after "falling" they in 1.5 times exceeded the level of the year of 2008 by 2020. The scenarios also include the dynamics of the factorial flexibilities according to the change in the economy's structure.

Figure 3. Forecast of the emissions' volumes into the atmosphere from the stationary sources according to three scenarios of Karelian economic development



Apparently from *figure 3* the innovational scenario (the development of the sectors very weakly influencing the environment and the investments' growth into the environment protection activity) gives the continuation of the developed tendencies of the pollution level's decrease, the others give emissions' growth into the atmosphere.

The offered technique allows operatively estimate ecological consequences the of prospective scenarios of economic development at the stage of planning territories' development.

References

1. The State Report "About the condition and the environment protection in the Russian Federation in 2009". – M., 2010. – 523 p.

2. The State Report on the condition of the environment in Karelia Republic in 2009. – Petrozavodsk, 2010. – 296 p.

3. The Town-Planning Code of the Russian Federation from 29.12.2004 №190-FL [Electronic resource]. – Available at: http://www.consultant.ru/popular/gskrf/

4. Druzhinin, P.V. About estimation of influence of economic development on the environment / P.V. Druzhinin // Economics and mathematical methods. – 2010. – № 4. – Pp. 3-11.

5. Druzhinin, P.V. Influence of economic development on the environment: modelling and calculations' analysis / P.V. Druzhinin, G.T. Shkiperova, M.V. Moroshkina. – Petrozavodsk, 2010. – 119 p.

6. Druzhinin, P.V. Modelling of influence of economic development on the environment / P.V. Druzhinin, M.V. Moroshkina, G.T. Shkiperova. – Petrozavodsk, 2009. – 96 p.

7. Ivanov, P.M. Steady regional development: concept and model of management / P.M. Ivanov // Economics and mathematical methods. – 2006. – № 2. – Pp. 51-59.

8. Kuklin, A.A. Socio-economic substantiation of ecological safety of a region / A.A. Kuklin, I.S. Belik, N.L. Nikulina. – Ekaterinburg, 2005.

9. Modelling of the socio-ecological-economic systems of a region / ed. by V.I. Gurmana, E.V. Ryumina. – M., 2001.

10. Karelia Republic in figures for 2008: stati. coll. / KareliaStat. – Petrozavodsk, 2009. – 253 p.

11. Ryumin, E.V. Modelling of interrelations of the national economy's development and the environmental protection activity / E.V. Ryumin // Economics and mathematical methods. – 1995. – Vol. 3.

12. Shkiperova, G.T. Environmental protection providing at production as a component of technical enhancement process / G.T. Shkiperova, G.B. Melentyev // Ecology of the industrial production. – 2010. – № 4. – Pp. 15-24.

13. Proops, J. Modeling in Ecological Economics / J. Proops, P. Safonov. – Cheltenham: Edward Elgar, 2004.

UDC 004(470.12)

Representation of subjects' capacities in an architectural model of the information system

The article presents the results of modeling characteristics of subjects of the information system on the basis of the architecture framework of J. Zachman. We discuss a set of attributes of a subject role, the results of the analysis of sources of requirements for the IT capacities of subjects, including management practices for the information technology infrastructure ITIL, ITSM, CobiT, MOF and others, and justify their relevance to specification of requirements for particular knowledge, skills and experience of specialists in relation to a particular item of control.

As an example for the role of technical support specialist there is description of its architectural model look at the system that allows to define the required competence. Problems of correlating of identified requirements to professional competence level provided by the industry professional standards, and range of training directions and specialties of professional education.

Thus the architectural model of the information system can justify the structure and staff list of IT services, formulate professional qualification and experience requirements. The results of the study are used in the learning process in a number of universities of Vologda.

Information system architecture, system life cycle, information technology infrastructure management, national qualifications framework, range of IT professions, educational standards, professional competence, professional standards.

Andrey M.
POLYANSKY
Ph.D. in Technics, Associate Professor of Automation and Computer Engineering Department Vologda State Technical University
ampol@yandex.ru

In recent years, attention of the developers of information systems (hereinafter – IS) was riveted on the development of architectural models of systems. Architecture of IS usually refers to a visual representation of the most important for different members of the system life cycle properties and relations between its relatively independent entities: subjects and objects within the system and the external environment, as well as processes occurring in the system. Architectural model of a specific IP shows in respect of which actors, objects and processes and by whom an activity is implemented, allows to visualize key linkages in the system and coordinate between the parties of the system life cycle the most significant

aspects of its structure and relationships between elements. Moreover, coordination is important in the stage of requirements specification or design of the system and in later stages of its life cycle as well.

A significant impetus to the development of works on designing architectural models of information systems in the budget sector of the Russian Federation was the Concept of using information technology in activities of the federal bodies of the state power until 2010, approved by the Federal Government on September 27, 2004, № 1244-p [1]; the Concept of regional information until 2010, approved by the Federal Government on July 17, 2006, № 1024-p [2]; the Concept of building e-government in the Russian Federation until 2010, approved by the Federal Government on May, 6, 2008, № 632-p [3]. For example, in [2] there is a "stratified" architecture of e-government in the region, which can be summarized as follows:

- models of efficiency;
- architecture of activity:
  a) state functions and services,
  b) administrative processes;
- component architecture of application systems:
  a) architecture of application subsystems,
  b) architecture of software components (services);
- information architecture:
  a) subject ontologies,
  b) hierarchy of information objects,
  c) state metadata;
- technology Architecture:
  a) system environment,
  b) network environment (infrastructure),
  c) profiles of standards;
- security restrictions.

The paper notes that for each of layers a family of hierarchical directories must be developed and maintained state-wide. Architectural model of e-government in the region also includes four types of software: methodological, regulatory, organizational, personnel and technological. Each of the above layers and, in particular, their relations should be analyzed in terms of these types of software.

The most appropriate for describing structured architectural aspects of IS and the subsequent detailed requirements for capacities of various subjects of the system is a scheme of development of IS architecture, proposed by John Zahman [4]. In this model, at the top, the most general level of views of various participants in the life cycle of the system there is an interconnected set of views and the most significant aspects of its implementation, allowing a consistent decomposition of both by detailed elaboration of aspects of consideration and by detailed elaboration of points of view on the system as a whole.

According to Zachman's ideas, six aspects of architectural representation are commonly used that describe: objects and their accounting data; subjects of interaction; motives and goals of participation of subjects in the system in conjunction with goals of the system and results of its operations; spatial distribution and relationship of subjects and objects of interaction; actual function description of actors and processes in the system; events, their logical and temporal relationship (operating time). The latter aspect allows us to show dynamics reflecting on the path goals of the system in its functioning over time. Along with operating characteristics it is useful to consider the fact that characteristics of the system change over time, and for different elements in different ways (different duration and stages of life cycles).

The ideas, contained in [4], influenced the development of projects of foreign and domestic standards [5, 6], have been reflected in the work of many scientists, including Russian. Thus, in the writings of E.Z. Zinder [7] the idea of an architectural approach spreads on the model of an enterprise as a whole, not only on its IT infrastructure, and there is the emphasis on the need to display the development of the system in a model over time.

The work of E. Zabegalin [8] proposes to reflect structural, functional, logical and chronological aspects of the creation and operation of the company and its IS in construction of architectural models.

In [6] it is noted that: "Standard enterprise architecture and methodology must be able to represent human aspects such as organizational and operational roles, abilities, skills, know-how, competence, responsibilities, authority and relevance to an organization ... There is also the need for models that establish the responsibilities for staff in decision-making, opportunities, in socio-technical models (motivation, interest, incentives, etc.), in models that set skills and abilities of employees, organizational models". At the same time, in famous architectural models (e.g. in ARIS) less attention is paid to such an important aspect, as a subjective, human factor, including motives and abilities of people to benefit activities in the interests of the system. This publication contains a summary of the results of research conducted by the author to fill the above gap.

A set of characteristics of the subject model in the architectural representation of IS, or attributes of the subject, largely depends on whose point of view a model reflects: for different observers one or another attribute will be important depending on the role played by the observer in the system life cycle.

Status of the subject has essential importance: an individual or legal person. The most common attributes of the subject include: interests, motives and goals for participating in the system; powers and obligations; the cost of keeping or budget, which the subject has in relationship with the system; life cycle stage in which the subject is. For an individual person, in addition, its position, role and status in the system are important; education specialty; occupation; work experience; competence; ability to perform his functions and interaction within the framework of the project and so on; for a legal person - legal entity registration details; names of executives and senior representatives of the subject, points of contact with them, and so on.

Of all the possible set of attributes of the subject – an individual person we will consider his professional characteristics and competence on how he uses IS in accordance with his official duties. Under the competence we mean the amount of knowledge and skills of the subject and the level of his ability to independently and/or in concert with others to apply them according with the objectives of his activities.

Sources of requirements for the competence of subjects of IS are very diverse: it can be regulations of units, systems or their components, orders of activities, official regulations and instructions, models of business processes, operational and technical documentation on the system and so on, that allows you to specify requirements for specific tool knowledge and skills, but also determines complexity and scale of the tasks in relation to a particular area or facility management.

There are internationally accepted management practices of information technology (hereinafter – IT) infrastructure: ITIL – Information Technology Infrastructure Library [9], ITSM – Information Technology Service Management [10], CobiT – Control Objectives for Information and related Technology [11] MOF – Microsoft Operations Framework [12] and others). They contain detailed descriptions of support processes and development of IS in all stages of their life cycle and can build a fairly detailed descriptions of activities that IT professionals have to perform within a particular role, to determine the levels of responsibility for the entrusted objects and solving problems. In addition, models of these processes allow to judge the appropriate level of competence of users who are recipients of a set of IT services.

Finally, private architectural representation of a system that forms in the view on a representative system of a particular role, involves displaying only those aspects (subjects, objects, events and processes) that lie within the competence and interests of the observer [13].

The representative of the role should have competence resulting from this architectural presentation, i.e. the ability to apply their knowledge, skills and personal qualities for successful activity in the system according to current events and the development strategy for IS.

For example, for the point of view on the system, which is characteristic for the role of a specialist of equipment IS support the architectural model contains:

1. The list of instances of classes of the system subjects and its environment: suppliers of equipment, components, materials and service organizations; owners of equipment; users; regulators and others. Key attributes of the subject: details of a legal entity, full name of executives and senior representatives, the contact points, the role and status of the subjects in the system; their powers and obligations according to supported hardware; in addition to the characteristics of individuals the following attribute such as competence in the use of equipment is important; the ability to perform their job functions on the equipment (e.g. quality, productivity); the ability to interact with the technical support expert and so on.

2. The list of instances of object classes of specialist's activity with their professional attributes such as the name and brand (model) of the equipment, its technical and other characteristics that are important for a specialist to perform its role; destination indicators in the system; the volume of guarantees by the object supplier; peculiarities of the acceptance, commissioning, maintenance, diagnosis and repairing; a person responsible for the object and users (for this attribute in the model there is communication with the list of classes of subjects); performance standards; life cycle stage in which the object is, and so on. When using automated IT management data about the objects are collected in a database of configuration items of the system.

Just as for the actors, the description of the properties of objects can be accomplished with varying degrees of details depending on the responsibilities and duties of a specialist, in addition, material (equipment) and information (software and information resources) objects are characterized by significantly different sets of attributes description.

3. Description of elements of professional relationships "seen" by the specialist that are in the area of his responsibility: the scheme and topology of information networks, supporting infrastructure; placement diagram of software and information resources in the workplace and server systems; layout of equipment in rooms, closets and desks; wiring diagrams of the equipment; automation scheme (for industrial systems); distribution of access rights of subjects to objects, such as access label system; a list of support services for systems with service areas and so on.

4. Description of processes involving a specialist, including processes of IT infrastructure management, with the necessary degree of detail (down to the steps for diagnosing and repairing some equipment samples). This description also presents resources, results, management impacts, legal and technical rules governing the process; norms of resources consumption and cost characteristics; operating time and events that require decisions and/or documentation; strategic points and process parameter values in them, including final results; the role of stakeholders in the process; reached values of efficiency and collaboration and so on. An example of software implementation of the management system of IT services based on the standard model of business processes, performed with the participation of the author, is given in [14].

5. Relationship of processes and events in time is usually represented with schedule for routine procedures, participation in developing and establishing the system, implementation of application and control activities, reporting and so on.

6. The objectives of the system, support services and specialist's own goals related to labor relations, professional career and so on. This aspect of the model allows to objectively

correlate the vectors of goals of different stakeholders and interpret the result as recommended forms and methods of interaction between them to achieve the goals of the system be the least contentious way to build potential career paths within the specialist system and, consequently, provide his rational motivation to engage constructively in the system.

By all those aspects groups the system architecture and the other sources discussed above can quite clearly and in detail determine and record the required volumes of knowledge and skills of a specialist, and an appropriate level of ability to independently and/or in concert with others to apply them according to the objectives of his activities .

Another important property of an architectural model of IS is using as a tool for modeling future requirements according to the organization's development strategy of the system. Thus, we can get a detailed set of requirements for the competence of specialists, which is in demand not only at the moment, but also in the foreseeable future.

The practical applicability of the detailed requirements can be used, for example, during the qualifying examinations, appraisals and other evaluations of professional abilities and suitability for purpose of existing staff. However, when there is a need to involve personnel from the external environment it is not lawfully to require knowledge of specific aspects of the structure and functioning of the system with which they have not worked. There is an inverse to previously considered problem of generalizations of qualifications to the level determined by professional standards, as well as model programs and standards of professional education.

When describing more general requirements for the qualification of the expert, which are also to be displayed in the architectural model of the subject, there are problems relating them to certain levels of professional competence provided by industry professional standards, as well as determining the range of training areas and disciplines of professional education, providing basic training for the successful implementation of the considered role and formulation of requirements to the scope and specifics of the job, knowledge and experience gained by the specialist, usually expressed in the requirements for length of service in the specialty.

The base of defining the range of training areas and specialities, corresponding to the requirements for performing a specific role, is the National Classification of specialties in Education (OK 009-2003) [15], and existing educational standards and standards of the new generation, which higher school goes over now, contain detailed list of knowledge and skills required to a graduate student. If the requirements for the role are set out in the same paradigm as the educational standards it is not difficult to define the range of occupations that are suitable for it. However, in practice in program, technical and operational documentation of IS conceptual apparatus is often used, which differs from the apparatus of educational standards and programs (such as English loans in a free translation or a non-academic jargon terms), and this is often a significant problem in the identification of specific professions.

Current qualifications for IT professionals in organizations rely usually on Qualifying directory for managers, professionals and other employees, approved by Ministry of Labor on August 21, 1998, № 37 [16]. Titles of employees, which qualifying features are included in the Directory, are set in accordance with the national classification of occupations of workers, employees and job wage categories of OK-016-94, enforced on 1 January 1996 and can serve to describe requirements to the entity as the value of the attribute "occupation". Qualification characteristic of each job in accordance with this document has three sections.

In the "Duties" section there is a set of basic labor standards which may be assigned in whole or in part to the employee occupying this position, taking into account technological homogeneity and interdependence of work, and ensuring optimal specialization.

The "Must Know" section contains the basic requirements for an employee with respect to expertise and knowledge of legislative and regulatory acts, regulations, instructions and other guidance materials, methods and means that the employee must apply in the performance of official duties.

The "Requirements for qualifications" section defines the level of employee training needed to perform specified duties and requirements for the length of service. Levels of required training are given in accordance with Law of the Russian Federation "On Education".

Along with detailed study of position qualifications within these sections, the Directory focuses largely on the scope of activities related to systems design and development and much lesser – on their operation, although with the growth of the use of IS and technologies in the economy correlation of amounts of development and maintenance of systems has been steadily changing in favor of the latter.

If special knowledge is created and fixed during the base specialty training, retraining and the raising of the level of skill and supported by relevant documents, the requirements for work experience should be specified depending on the duration of the cycle of works carried out by the specialist, and the degree of success of their result, which is extremely difficult to objectively confirm, for example, when changing employer.

For example, for a developer of IT solutions two or three consecutive cycles of successful projects can be the evidence of the adequacy of previous qualifying experience "step", at the same time for a service engineer, system administrator or programmer accompanying system intensity of repetitive processes can be quite different, and for one "step" skills of 2 – 3 years accumulated amount and stability of skill can be significantly different depending on the intensity of system events. Moreover, the higher quality of designed and built information system, more stable business system that supports it, the less experience for a certain period of time the staff serving it gets. For the category of "managers" an objective measure of expertise may be in the design of work organization the positive result of the same two or three time successive projects, while functional – two or three years of successful development and implementation of IT budgets. Thus, the attribute value of "experience" in describing a class instance of a system subject is better to give not in calendar but system time, in accordance with the duration of the cycle of works which are character for the role.

The above issues should be resolved in the development of professional standards in the field of information technologies. The urgency of development of professional standards in engineering has been repeatedly emphasized by the country's leadership. So, this year in April the Russian President D. Medvedev approved the list of instructions after a meeting of the Commission on the Modernization and Technological Development of the Russian economy, which took place March 30, 2011, in which he entrusted the Government of the Russian Federation together with employers' associations, self-regulatory and commercial organizations, including the dominant state participation, and involving representatives of the expert community until 1 December 2011 with development on the basis of the national qualification framework sectoral qualification framework containing a set of requirements for engineering and technical specialists, corresponding to the priority directions of modernization and technological development of the economy of Russia.

In recent years, the IT community has already done quite a lot of work to develop a new range of IT professions, which more accurately mirrors the realities of the support processes of modern information systems [17]. A number of occupations in this range are directly related to the IS service support and can act as the values of the attribute "profession" to describe the model of the subject.

These are profession such as:

- programmer;
- system architect;
- system administrator;
- technical support specialist;
- systems analyst;
- database administrator;
- manager of information technologies;
- specialist in repairing digital technology products;
- specialist in information resources;
- specialist in information systems.

For each of the above professions in accordance with a specific qualification level in the project of professional standards lists of duties were developed, requirements for basic knowledge, skills needed to perform them were given. Qualification levels provided by the projects of professional standards, in general correspond to the draft of the National Qualifications Framework of the Russian Federation and education levels as defined by the Law of the Russian Federation "On Education".

For example, given in [17] the draft of profession standard "Specialist in Information Systems" describes the profession of specialists involved in the creation and operation of information systems that automate the tasks of organizational management (accounting, analysis, monitoring, planning, implementation, etc.) of commercial companies and public institutions and involves five skill levels, for each of which detailed description of the main duties is given with a list of knowledge and skills required to perform any such duty.

Among the duties of the specialist of the first qualifying level, requiring only a secondary vocational education or vocational training (retraining) include:

- programming in the development of IS;
- conducting internal testing of IS;
- formation of internal documents on the results of the job;
- participation in the creation of documentation for use of IS;
- setting IS;
- conducting training for users of IS;
- participation in expert testing of IS during the pilot operation;
- elimination of user feedback on the results of expert testing of IS during the pilot operation;
- technical support of information system during its operation;
- self-development.

The second and third qualifying levels already require minimum high school preparation of bachelor of science, and the fourth and fifth – of graduate, and contain much more voluminous list of duties, particularly in the field of IT management. All levels, except the first, suggest the passing of a voluntary professional certification, although such a unified system of certification in the country has not been yet and there is only a "branded" certification to possess certain IT products and technologies.

The project of a new range of IT professions has caused lively discussion, not all of its ideas are uncertain, especially in terms of ensuring human resources for the future of the IT industry, but other alternatives for the court of public opinion are not represented. Comparing materials of draft standards to the requirements of competence derived from the architectural model of the system, we can quite accurately determine the necessary professional identity and level of qualification of candidates for the respective job.

The next step in determining the values of the role attributes of IT service professionals is defining titles, which requires the drafting of staff list. Because the range of professions and qualification levels for each of the roles are already installed, on the base of the same architectural model of IS and the recommendations of the above-mentioned methods of organization of IT infrastructure we need to determine the amount of responsibility, authority and additional administrative functions, as well as the necessary schema of matching occupations and positions for each profession.

The essential difficulty in the formation of the staff list can be the industry membership of an organization and the presence in it of special categories of posts, different from the existing range of IT professions. Thus, in the IT civil service specialists are mostly in the category of providing specialists, who are characterized by gradation of posts, differing substantially from both the Qualifying directory for managers, professionals and other employees [16] and the recommendations of the project of professional standards in the field of information technologies [17]. Subject of determining compliance with qualification levels, groups of civil service positions and places of Qualifying directory (ETKS) requires separate development.

Beyond the roles of IT service professionals the system of requirements for the competence of users based on the architecture of information systems and other design may be build. Just as for the roles of IT professionals from the finished architectural model by increasing specialization of roles the amount of views about the system and processes occurring in it is selected, which is required for the representative to perform the role of his duties and powers.

The only difference – the requirements for IT competence will not help in forming such attributes of the subject as "profession" and "specialty" to support that it is necessary to develop an architectural model of the entire organization, not just the IS.

Thus, the mapping and specification of requirements for the competence of representatives of different roles of participants of the life cycle of IS on the base of its architectural model can justify the structure and staffing of IT services, to formulate professional, qualification and experience requirements for personnel, and as a consequence more rational use of the organization human resources and facilities for their training and skills development.

The materials of the present study are used by the author in the preparation of students of specialties 220201 – "Management and Information in Engineering Systems", in the directions of baccalaureate 220200 – "Automation and Control" and 230100 – "Computer Science" in the "Vologda State Technical University" and specialty 080801 – "Applied Computer Science in Economics" at the branch of St. Petersburg State Engineering and Economic University in Vologda.

References

1. The concept of using information technology in the federal bodies of state power until 2010, approved by the Federal Government on September 27, 2004 № 1244-p. – M., 2004.

2. The concept of regional information until 2010, approved by the Federal Government on July 17, 2006 № 1024-p. – M., 2006.

3. The concept of building e-government in the Russian Federation until 2010, approved by the Federal Government on May 6, 2008, № 632-p. – M., 2008.

4. Sowa, J.F. Extending and Formalizing the Framework for Information System Architecture / J.F. Sowa, J.A. Zachman // IBM Systems Journal. – 1992. – Vol. 31. – № 3.

5. Federal Enterprise Architecture Consolidated Reference Model Document. Version 2.3. Posted on the website of the Presidential Administration of the United States [Electronic resource]. – Available at: http:// www.whitehouse.gov/omb/e-gov/fea/ (access date: 05/05/11)

6. GOST R ISO 15704-2008 "Industrial automation systems. Requirements for standard architectures and methodologies of an enterprise". – M., Standartinform, 2010. – 50 p.

7. Zinder, E.Z. "3-D enterprise" – a model of transformative system / E.Z. Zinder // Director of IS. – 2000. – № 4. – Pp. 16-18.

8. Zabegalin, E.V. Who and why needs "Enterprise Architecture" / E.V. Zabegalin // Journal of Air and Space. – 2009. – № 4. – Pp. 2-5.

9. Internet site of ITIL [Electronic resource]. – Available at: http://www.itil.org.uk (access date: 06/04/11)

10. Internet site of the company Hewlett-Packard [Electronic resource]. – Available at: http://www.hp.com (access date: 06/04/11)

11. Internet site of the Association of Audit and Management Information Systems (ISACA) [Electronic resource]. – Available at: http://www.isaca.org/cobit (access date: 06/04/11)

12. Internet site of the company Microsoft. [Electronic resource]. – Available at: http://www.microsoft.com/mof (access date: 04/06/11)

13. Polansky, A.M. Architectural models of e-government: system of "views" of participants of lifecycle // Proceedings of XIII All-Russian joint conference "Information Society Technologies – Internet and Modern Society" on October 27 – 29, 2010. – St. Petersburg: Publishing house of Faculty of Philology and Arts of St. Petersburg State University, 2010. – Pp. 225-227.

14. Artyugin, M.N. Software implementation of automatic control system of IT service of the company based on the standard model of business processes / M.N. Artyugin, A.M. Polyansky // Vestnik of VSU. Serie: Economics and Management. – Voronezh, 2006, № 2 – Pp. 256-260.

15. National Classification of Qualifications OK 009-2003: resolution of the State Committee of the Russian Federation for Standardization and Metrology September 30, 2003 № 276-st, with the changes. – M.: Publisher of standards, 2003.

16. Qualification directory of positions of managers, professionals and other employees. Decree of the Ministry of Labor of the Russian Federation on August, 21 1998 № 37. – M.: Ministry of Labor, 1998.

17. Professional standards in the field of information technologies. – M.: APKIT, 2008. – 616 p.

UDC 334.012.64(470.21)

Small-scale business subjects' activity intensification as a necessary condition of the regional development

One of the problematic issues of strengthening the positions of the small-scale and medium-scale entrepreneurship with the purpose of the regional socio-economic systems' development is the issue of their support and stimulation. The work evaluates the contribution of the small-scale and medium-scale business into the socio-economic processes in the region under the realization of the state support measures. One of the variants for the problem's solution is the legislation improvement in the fields of taxation and infrastructure support to entrepreneurship.

The information base is taken from the Federal statistic service's statistical data. Statistical and economic analysis' methods are used for the results' substantiation.

Small-scale and middle-scale business, regional measures for the small-scale business' support, tax regulation.

Tatyana I.
BARASHEVA
Ph. D. in Economics, Associate Professor of the G.P. Luzin Institute of Economic Problems of Kola SC RAS
barasheva@iep.kolasc.net.ru

During the post-crisis period the special value is acquired by more active attraction of the small-scale business' subjects to the decision of the regional socio-economic problems on the basis of realization of their diverse peculiar functions and carrying out active and weighed state policy on regulation and support of the small-scale and medium-scale business.

The state is interested in the consecutive business' carrying out such functions as: satisfaction of the solvent population's demand for goods and services, assistance to incomes' formation in the form of interest, rents and wages, increasing innovational activity, providing and strengthening the political and social stability in the society due to the creation of new workplaces and the expansion of proprietors' layer, financial filling of the profitable part of local budgets, providing the external economic representation of the country with business, etc. [6].

The labor market is considered to be the most significant sphere of influence from the part of the small-scale business' subjects. It is possible to say, that the small-scale business contribution to the regulation of process of the population's employment in the area is high enough.

In figure 1 the dynamics of the rate of unemployment and densities of the employees at the small-scale enterprises in the aggregate number of the employees in economy is represented. It is possible to notice, that the growth of the employees' number at the small-scale enterprises is accompanied by the reduction of the officially registered unemployment's level.

The mentioned tendency has begun to be traced since 1999 (a post-crisis year) and it proves that the small-scale business in the region confidently carries out its mission in deciding the employment problems not only within the economic preference, but also during the economic instability, putting on the employees' list unemployed and personnel fired from large city-forming enterprises. The small-scale business in the Murmansk Oblast becomes the shock-absorber of unemployment as the amount of employees at the small-scale business' enterprises 3 times exceeds the amount of unemployed.

Recently the state has set its hope on the small-scale and medium-scale business as the potential suppliers of tax incomes to the local budgets. The reform of the local self-management at which the local problems were reconsidered and concretized, demanded to realize the new approach to the tax incomes' redistribution among the budgetary levels. The budgetary code on the constant basis fixed the receipt from two local taxes - the federal tax on personal incomes and special tax modes which payers are directly the subjects of the small-scale and the middle-scale business as profitable sources for municipalities. The statistics available for the analysis allows estimating the small-scale business' participation in the incomes to the local budgets only on the basis of the receipts from special tax modes which densities still remain low, but in the dynamics tends to grow and to change from 2.5% in the incomes of the municipalities' budgets, where the level of the small-scale business' development is minimal, to 11.6% in the cities with the highest activity of the enterprise sector.

Figure 1. Dynamics of the unemployment rate of and densities of employees at small-scale enterprises of the Murmansk Oblast

The participation of the small-scale business' subjects becomes more significant in the regional economy. For the period from 2005 to 2008 production, works and services provided by the small-scale and the medium-scale enterprises increased more than in 1.5 times. The share of the shipped goods and services provided by the small-scale enterprises in gross national product of the area grows, having increased for four years from 10.9% to 13.3% [8]. The small-scale and the medium-scale enterprises in Murmansk area which operate in the sphere of wholesale and retail trade, of vehicles' repairing, household products and objects of personal use, and also processing production, show a higher level of labor productivity among the regions of the NWFD *(tab. 1)*.

The high parameters of the labor productivity are provided by the small-scale and the medium-scale enterprises against the background of the low level of their fixed capital's financing. The volume of investments into the small-scale enterprises' fixed capital in the area, falling for a worker, concedes to the average indices in Russia. Now the ratio among the investments and the labor productivity in the Murmansk Oblast makes 1 to 3. For the regions of the Southern Federal District this ratio makes 6 to 5, for Siberia this ratio makes 9 to 10.

Thus, it is possible to conclude, that the subjects of the small-scale and the medium-scale business in the area show their participation in the socio-economic processes, providing socio-economic effects in the region.

At the same time the received effects are not so significant, as they are in foreign countries. If the share of the small-scale business' subjects in the Murmansk Oblast in gross national product makes about 30%, in Great Britain, the USA, and Germany it changes from 50 to 54%, in Japan from 52 to 55%, in Italy and France it is about 60%. About 29 % of employees are involved in the small-scale business in the Murmansk Oblast (compare with Japan – over 79%) [1]. Into the budgets of economically advanced countries the small-scale and the medium-scale business brings more than 50% of the income, and in the Murmansk Oblast this parameter does not exceed 20%.

The low effect from the small-scale business' participation in the solution of the problems of the socio-economic development of the region is caused by the existing problems, as the results of interrogation of the small-scale business' subjects showed (it was carried out in the beginning of the year of 2008 under the decision of the Department of Economic Development) [3].

Table 1. Production, works, and services provided by the small-scale enterprises in the basic kinds of economic activities counting for 1 worker (in NWFD) in 2008, million rubles

Processing production	Construction	Wholesale and retail trade, vehicles' repairing, household products and objects of personal use	Transport and communication	Real estate operations
Murmansk Oblast				
1.4	1.12	4.84	1.1	0.52
Karelia Republic				
0.77	0.82	3.47	0.95	0.41
Komi Republic				
0.76	1.15	2.75	1.67	0.77
Arkhangelsk Oblast				
0.83	0.6	2.67	0.75	0.56
Vologda Oblast				
0.73	0.72	2.71	0.88	0.9
Russia				
1.07	1.03	3.71	1.06	0.77

There are common problems, universal for all businessmen of the micro-scale, small-scale and medium-scale business: high rent; high taxes; the raise in prices for energy carriers, raw material, tariffs; shortage of the qualified personnel; competition growth. Also the problems which are peculiar for exclusively for the micro- and the small-scale enterprises were revealed. They are: the lack of money resources for development and investment projects; lack of turnaround means; difficulties at certification, licensing, receiving other documents of permission; checks of various supervising bodies.

In the year of the financial crisis the existing problems aggravated and the new ones appeared, basically of the financial character, which were caused by the reduction of demand for goods and services, both from the part of the population and enterprises-partners; the reduction of the state orders' volumes, toughening of the conditions of credit resources' getting, etc.

Business' reaction towards the financial crisis' influence began to be seen from the first quarter of the year of 2009 and was expressed in insignificant falling of the resulting parameters of the small-scale enterprises' activity. According to the data of the Ministry of Economic Development of Murmansk area, the quantity of the small-scale enterprises decreased for 111 units, the volume of the goods sold by the small-scale enterprises in the sphere of wholesale and retail trade was reduced for 7%, in comparison with the similar period of the previous year, and also the enterprises' productivity in the sphere of the financial activity decreased.

Positive dynamics of the volume of production, works and services (1.6%) was shown by the small-scale and medium-scale enterprises in the sphere of processing production, agricultural production and rendering public services, and also the enterprises producing and distributing electric power. There was insignificant increase in the average number of workers in the list structure. It is necessary to pay attention to the fact, that at the gain reduction in the average employees' number at the small-scale enterprises, the dynamics of this parameter is kept positive: in the first quarter of 2007 it was 113%, in the first quarter of 2008 it was 104%, and in the first quarter of 2009 it was 101%.

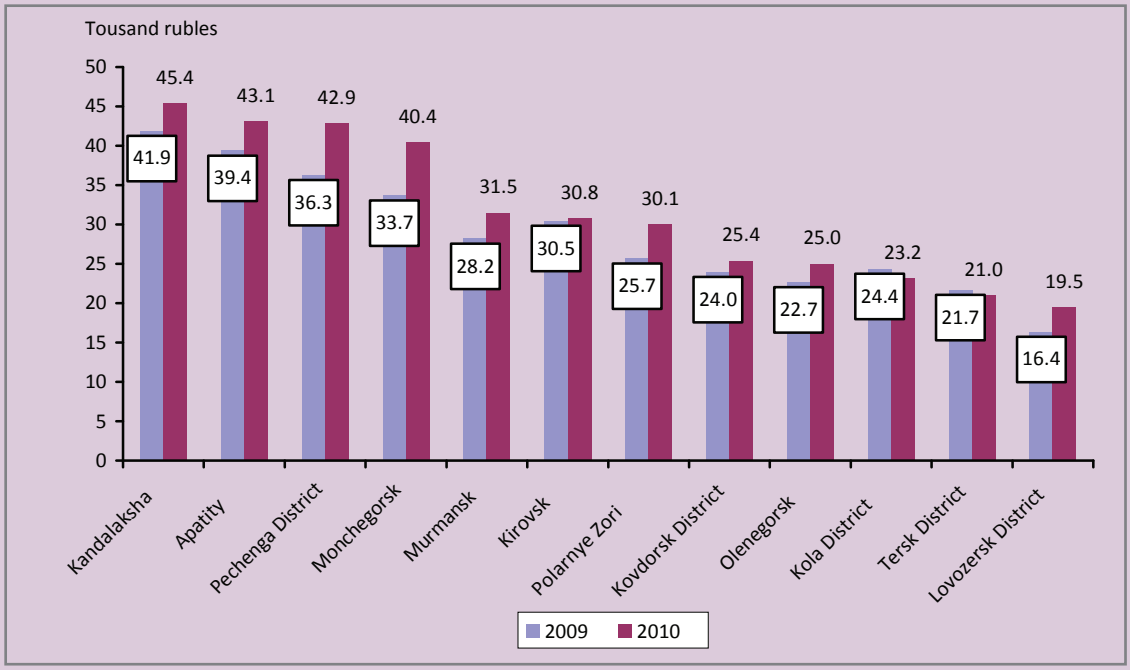
Being guided by the recommendations of the Government of the Russian Federation, for easing the consequences of the crisis phenomena and the creation of favorable conditions of managing, new approaches to the tax regulation directed on the decrease of the tax loading on the small-scale sector of managing were developed and introduced.

To realize the steps on the decrease of the tax burden became possible in the connection with the expansion of the rights of the Russian Federation subjects due to the special tax mode – the simplified system of taxation – on the basis of regulation by the rate of single tax.

The tax law of the Murmansk Oblast [2] determined the categories of tax bearers-exempts and the lowered rates of the unified tax corresponding to them. The basic categories of exempts became the small-scale business' subjects of the following prior fields of activity: education, public health services, fishery, fish culture, municipal services, and also agriculture and food production. For such categories of tax bearers the lowest rate of 5% is established. The lowered rate of 10% is stipulated for the organizations and the individual businessmen who carry out the activity in the sphere of processing production on the territory of the Murmansk Oblast.

In a result the realization of preferences within the simplified system of taxation has not lowered the effectiveness of the mentioned tax mode (the volume of receipts from the simplified system, falling for one subject of taxation, is 2.3 times higher, than from the unified tax on the imputed income), having provided the growth of tax base and tax incomes of local budgets *(fig. 2)*.

Figure 2. Cumulative income taxes (with the account of the average population's incomes) per 1 subject of the small-scale and medium-scale business, thousand rubles



With a view of the further easing of the crisis phenomenon's influence on the small-scale sector of the economy the Government had developed the additional measures of support on which realization it was stipulated 75.2 million rubles in the regional budget. As the Governor of the Murmansk Oblast D. Dmitrienko reported at the press conference, in 2009 the means of the regional budget were distributed in the following way: businessmen-beginners got more than 4 million rubles as grants, preferential micro loans made the sum of 15 million rubles, 100 million rubles were allocated for crediting contracts. According to the measures' plan of the Program of the businessmen-beginners' support "Step by step" 20 grants with the package cost of about 1 million rubles on the business development were given. With the purpose of access simplification for receiving the small-scale and medium-scale property its list including 65 objects was made, and in 2009 the basic part of property was transferred for using by the subjects of the small-scale and medium-scale business.

It is possible to notice, that the supporting measures are most actively applied towards legal persons and individuals who start the enterprise activity. However while carrying out separate actions the problems connected to the imperfection of the used support mechanisms come to light.

In particular, it concerns the grants' distribution among the businessmen-beginners which is carried out within the framework of the realization of the Program "Step by step" in the Murmansk Oblast. Estimation of the problems' and offers' condition submitted in the work, is formulated on the basis of studying the summary report SEE MRIBI "About the projects' realization in the sphere of the small-scale and medium-scale business" and on the results of interrogation of businessmen-beginners participating in the program of state subsidizing.

So, the business-incubator (SEE MRIBI), located in Apatity, together with the Ministry of Economic Development of the Murmansk Oblast carries out the competition among

business-plans, by which results the businessmen-beginners can apply for getting the starting grants for their own business' creation with the value of about 300 thousand rubles. Thus the persons who successfully passed the training "Businessman-beginner" have the right to take part in the competition and who don't have the status of the subject of the small-scale and medium-scale business, and also the persons who was already given this status and less than one year passed from the moment of registration. Such conditions of getting grants result to the thing that businessmen don't have enough time to pass the training course for one year, to issue all the necessary documents and to carry out the selection of the qualified personnel necessary for the project's realization. 22 projects of 156 received the money resources at the end of a year and were not realized completely for the set date. According to the law the unused means are the subject of the return to the state. In this connection, in businessmen's opinion, it is necessary to expand the time restriction of the status "a businessman- beginner" from 1 year to 2 years.

Besides, the businessmen's interest touched the question on reconsideration of the position of the regional law establishing the restriction by the enterprise activity's kinds, giving the right on the status' reception of SEE MRIBI resident and getting grants [4]. Their offer consisted in including into the list of the residents who had the right to apply for the grant's getting, prior for the region and perspective for the development of the kinds of activity which were ascertained in the Program of the socio-economic development of Apatity for the period from 2009 to 2011, such as construction, including repairing works, and public catering.

A very important direction of support, as businessmen consider, is also the support of the existing business. The majority of the project's participants plan to expand their business after end of the project's term. In this connection, and also owing to numerous applications for help to the business-incubator of the small-scale enterprises' heads, it is offered to consider the problem at the regional level on getting the grant's right by the existing producing enterprises, basing on the principle co-financing with the purpose of the business' development and expansion, and also with the purpose of the increase of the small-scale enterprises' stability at the post-crisis period.

Thus, it is possible to conclude, that the activity of the SEE MRIBI is a significant support for the development of the beginning business. However, the absence of the system approach, the lack of information, the low level of scrutiny of the incubation's questions seriously interfere the further use of business-incubators. To reveal "the problematic" places and to provide high productivity of the support measures can be achieved by interaction between business-incubator personnel and the participants of the state subsidizing program.

Anti-recessionary measures' realization continued in 2010. 361 enterprises concerning the small-scale and medium-scale business addressed for the financial support. The Committee of fish industry in the Murmansk Oblast gave grants of the sum more than 8 million rubles. The Ministry of economic development provided the financial support in the following forms: grants of more than 54 million rubles, subsidies of 11.78 million rubles, micro loans of about 25.96 million rubles, guarantees of about 93.9 million rubles. The Ministry privities transferred property to 26 small-scale and medium-scale enterprises under the contract of rent [5].

Alongside with granting the means from the regional budget the Murmansk Oblast by the results of competition received the grants from the federal budget within the framework of rendering the state support of the small-scale and medium-scale business at the rate of 215 million rubles *(tab. 2)*. It is possible to notice, that by 2010 the means had increased more than three times, however their volume, falling for one small-scale enterprise, considerably concedes to the size of the grant which was

Table 2. Grants from the federal budget on co-financing the actions on support of the small-scale and medium-scale enterprises [3]

	2005	2006	2007	2008	2009	2010
Grant size, million rubles	3	7.4	21.8	46.6	59.7	215
Grants for 1 small-scale enterprise, rubles	995.7	2419	6883.5	8336.3	8609.7	31006.6

given to businessmen-beginners for the project realization (300 thousand rubles), and in view of all means (both the federal and the regional ones), stipulated for rendering support, a subject of the small-scale and medium-scale business can apply for the sum not exceeding 50 thousand rubles.

Thus, the policy of the Government of the Murmansk Oblast in the sphere of the small-scale business' support promoted the growth of the small-scale, medium-scale and micro-enterprises. By the results of the year of 2009 their quantity increased for 8.3% and reached 6934 units.

The volume of production, works and services grew for 14.2% and made 99.5 billion rubles [3]. The greatest share in the volume of profits (64%) was provided by the small-scale enterprises. The profits' densities from the micro-enterprises made 20%, from the medium-scale ones it was 16%.

As the global experience testifies, the major factor of the economic development is not the result which is equal to the difference between the number of the newly-created enterprises and their so-called "death rate", but the number of the annually registered enterprises [7]. In 2009 the number of the re-created enterprises made 124 units in the Murmansk Oblast.

One of the reasons of the existing tendency of the low growth of the number of re-created small-scale and medium-scale enterprises for the recent several years is the policy of the city-forming enterprises which is directed on their disaggregating. From the structure of the basic enterprise the non-profile divisions equipped with property and personnel, with getting the status of the small-scale business' subjects, are allocated in independent units.

They continue to carry out their activity, providing both the specific services for the city-forming enterprises, and other services, in particular, solving the problems of the city's vital functions.

While realizing the mentioned process actually the filling the market niches by more competitive enterprise structures occurs, that limits the opportunities of the small-scale enterprises' creation by natural market mechanisms.

At the same time, the small-scale enterprises created in such a way get under the influence of the "founder" who rigidly supervises the prices of labor and labor services. The developed situation, probably, is one of the reasons of the low enterprise activity and non-unified distribution of the small-scale business' subjects in the area.

Another obstacle for the business' development became the federal center's legislative innovations. The setting of the raised tariffs on the insurance payments resulted in the growth of the level of all managing subjects' loading, but differently. For the enterprises functioning in the conditions of the general tax mode, the loading increased in 1.3 times, and in the conditions of the special tax modes it increased in 2.4 times.

Thus the Federal Law №212-FL referred to the preferential category those ones which carry out the activity in the following directions: foodstuff production, textile and sewing production, machines' and equipment production, construction, public health services and social services, education, etc., also provided them the lowered level of the insurance tariffs, having increased the loading of their payers in 1.8 times.

In a result the new order of the insurance payments' calculation caused mass downsizing at enterprises and the return to the use of "grey schemes" in paying wages. According to the researches carried out by the all-Russian public organization of the small-scale and medium-scale business "SUPPORT of RUSSIA, on the average about 20% of the companies of the small-scale business, carried out downsizing. About 30% of employees were fired. However in many firms the reduction was formal: employees were not on the list of the staff, but they continued to work, receiving the salary "in envelopes", non-officially. For instance, in December, 2010 the salary "in envelopes" was paid by 21% of businessmen. In March, 2011, after the setting of the raised insurance payments, this figure grew twice and made 41% [9].

In connection with the fact that to the greatest degree the subjects of the small-scale and medium-scale business using special tax modes, and which initially assume sparing conditions of the taxation, suffered from innovations, it is necessary to consider the problem, if it is not planned in the future to return to the old circuit, about stage-by-stage increase of the insurance payments – it is similar to the order accepted towards the payers of the unified agricultural tax (in 2011 – 2012 – the rate of 20.2%, in 2013 – 2014 – 27.1%).

At the same time, for achieving high socio-economic effect in the region by the small-scale and medium-scale business' subjects it is necessary to raise the efficiency of application of the tax regulation's mechanism. In particular, the transfer of the tax to profit of the enterprises, which payers are exclusively the subjects both of the small-scale and the medium-scale business, to the local level can be considered expedient and granting the right on managing the tax rate is given to the local authorities. It logically coordinates with points 15 and 16 of the Law (October, 6, 2003, № 131-FL) in which it is established, that the local problems include assistance to the small-scale and medium-scale business' development which should be carried out due to own profitable sources of the local budget.

The resulted directions of tax regulation, certainly, do not cover all the spectrum of the problems of the regional socio-economic policy. But, nevertheless, such tax mechanism as fixation the profit tax from the micro-, the small-scale and medium-scale enterprises to the local budgets of the municipal formations of the Murmansk Oblast and managing the tax at the rate of 100 % fixed to the regional budget, will raise the interest of the local government in creating the conditions for the development of the small-scale and medium-scale business that will promote the growth of taxable base and tax receipts to the local budgets, and also, in turn, will allow to create the financial base of the enterprise sector subjects' support.

Besides, the mentioned mechanism's realization will allow to designate the special conditions of the small-scale business subjects' taxation within the borders of the general system of the taxation, having separated them from the tax conditions of the large-scale economic subjects.

References

1. Dzboyeva, D.P. Urgent problems of the development of the small-scale and medium-scale forms of business / D.P. Dzboyeva // International Accounting. – 2010. – № 11. – Pp. 15-21.

2. Law of the Murmansk Oblast (03.03.2009, № 1075-01-MAL "About the setting of the differentiated tax rates depending on tax bearers' categories under the tax raised in connection with application of the simplified taxation system" (Accepted by the Murmansk Regional Duma, 19.02.2009).

3. Resolution of the Murmansk Oblast Government (15.09.2010, № 420-PP/13) "About the long-term target program "Competitiveness' development in the Murmansk Oblast" for the period from 2011 to 2013". Subprogram "Development of the small-scale and medium-scale business in Murmansk area".

4. Resolution of the Murmansk Oblast Government (01.07.2010, № 289-PP) "About the state support of businessmen beginners" (along with "Program of supporting actions for businessmen-beginners "Step by step", "Order of granting to businessmen-beginners on own business' founding"). Available at: http://www.gov-murman.ru

5. The register of the small-scale and medium-scale business' subjects in Murmansk area (support addressees for 01.01.2011, the data is given by the Ministry of Economic Development of the Murmansk Oblast).

6. Shahmalov, F.I. The state and the economy: bases of interaction / F.I. Shahmalov. – M.: Publishing House "Economics", 2000. – 382 p.

7. Shironin, V.M. The small-scale and medium-scale business as the subjects of the public dialogue and the state policy / V.M. Shironin [Electronic resource]. – Available at: http://lab.obninsk.ru/public/anh-sem-2004/sh02.gif.192

8. Federal Service of State Statistics [Electronic resource]. – Available at: http: // www.gks.ru/

9. [Electronic resource]. – Available at: http://opora.ru/.php

UDC 334.012.64(470.5)

Actual problems of small business development in the Khantia-Mansia Autonomous Okrug – Ugra

The article examines the dynamics of the main indicators characterizing the activity of the small-scale enterprises in the Khantia-Mansia Autonomous Okrug. The article identifies the main problems of small-scale business in Ugra and determines the trends of the small businesses development in the okrug.

Small-scale business, small-scale enterprise, microenterprise, microfinance, subsidy, grant, credit.

Lubov L.
BOGOMOLOVA
Ph.D. in Economics, Associate Professor, the Head of the Economics Department of the Institute of Management and Economics of Ugra State University
L_Bogomolova@ugrasu.ru

Irina V.
TAKMASHEVA
Post-graduate student of the Ugra State University
TakmashevaIV@admhmao.ru

Today small-scale business in the territory of the Russian Federation is an important social, political and economic factor that determines the overall development of the Russian economy in total.

Small and medium-sized enterprises make the main stratum of economy in the developed countries. For example, more than 90% of registered businesses in Finland are small and medium-sized enterprises; their share in the production of the country's GDP is 50%. Only 1500 industrial enterprises produce 80% of GDP in the Russian Federation. It indicates the lack of development of small and medium-sized business.

Small-scale enterprises have a strong regional focus by virtue of their specific character.

Their activity is based primarily on the needs of the local market, volume and structure of local demand.

Small-scale business has the strongest influence over the Ugra local markets where it allows you to:

- use efficiently material, labor and financial resources and increase productivity;
- increase efficiency of commercial relations, intensify the production and displace inefficient production;

➢ diversify the local economy, develop the regional markets bringing goods and services nearer to consumers and equalize the living standards geographically;

➢ promote competitiveness;

➢ create additional jobs by lower cost than in large enterprises;

➢ increase the volume of products, expand the assortment and improve the quality of products;

➢ assimilate new technologies and promising markets;

➢ introduce new forms of industrial organization, financing and marketing.

Small-scale enterprises in the Khantia-Mansia Autonomous Okrug are concentrated in such socially important sectors as transport, communications, producing of building materials, construction, trade, services and domestic production.

Today some small enterprises which reflect the basic needs of consumers are developing. They are cafes, bakeries, restaurants, barber-shops and beauty salons.

The most priority economic activities in the sphere of small-scale business in the autonomous okrug in 2010 were the following ones:

➲ wholesale and retail trade, repair of motor vehicles, motorcycles, household goods and personal goods – 47.5%;

➲ construction – 16.5%;

➲ real estate, renting and business activities – 7.2%;

➲ transport and communications – 14.6% *(fig. 1)*.

For comparison, the highest priority types of economic activity in the small-scale business in the in the territory of the Yamalia-Nenetsia Autonomous Okrug in 2010 were the following ones (the share of small enterprises):

➲ construction – 34%;

➲ wholesale and retail trade, personal services – 19%;

➲ real estate – 13%;

➲ transport and communications – 10%;

➲ manufacturing activity – 8% *(fig. 2)*.

Figure 1. The highest priority types of economic activity in the small-scale business in the territory of the Khantia-Mansia Autonomous Okrug – Ugra in 2010 (the share of small enterprises)

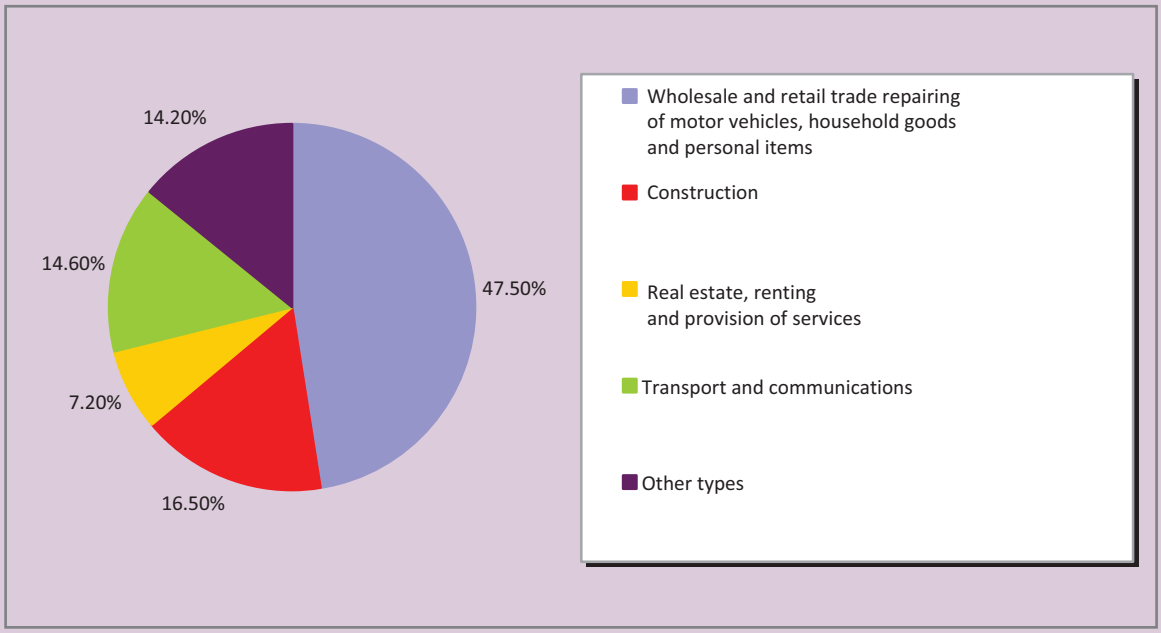
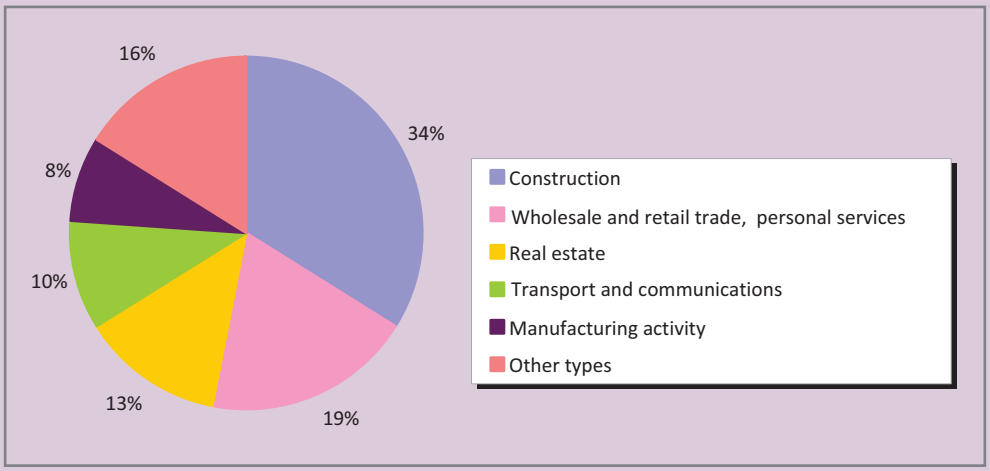


Figure 2. The highest priority types of economic activity in the small-scale business in the Yamalia-Nenetsia Autonomous Okrug in 2010 (the share of small enterprises)



It should be noted that most of the small-scale enterprises in the Khantia-Mansia Autonomous Okrug are engaged in trade and public services. Most of the small-scale enterprises in the Yamalia-Nenetsia Autonomous Okrug are occupied with the construction.

There is a positive dynamics of main indicators characterizing the activity of small-scale enterprises in the Khantia-Mansia Autonomous Okrug.

The most important indicator reflecting the size of small-scale business is a number of small-scale enterprises operating in the autonomous okrug. It increased from 4900 in 2005 to 11700 small-scale enterprises in 2010 (by 2.4 times) *(fig. 3)*.

Average number of employees in the small-scale enterprises including microenterprises was 90800 people in 2010. It increased by 86.1% as compared with 48800 people in 2005 *(fig. 4)*.

Figure 3. Dynamics of number of small-scale enterprises registered in the Khantia-Mansia Autonomous Okrug – Ugra

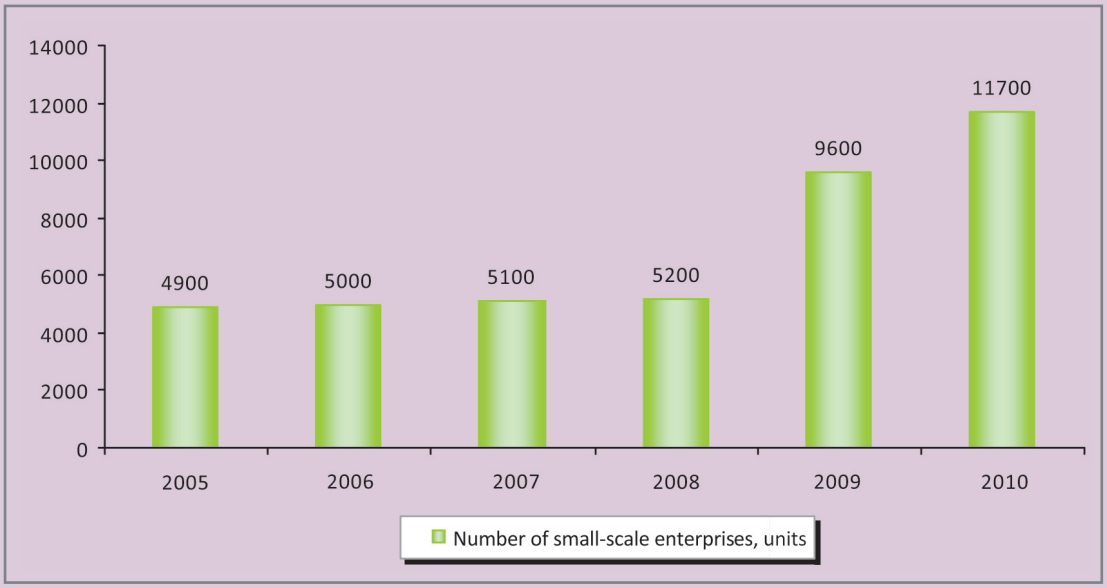


Figure 4. Average number of employees in the small-scale enterprises including microenterprises in the Khantia-Mansia Autonomous Okrug – Ugra

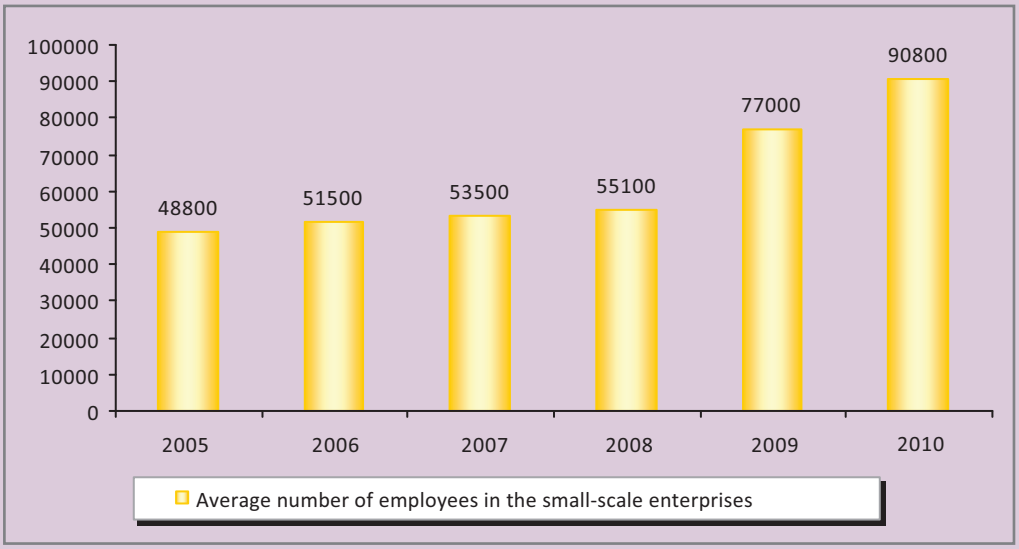
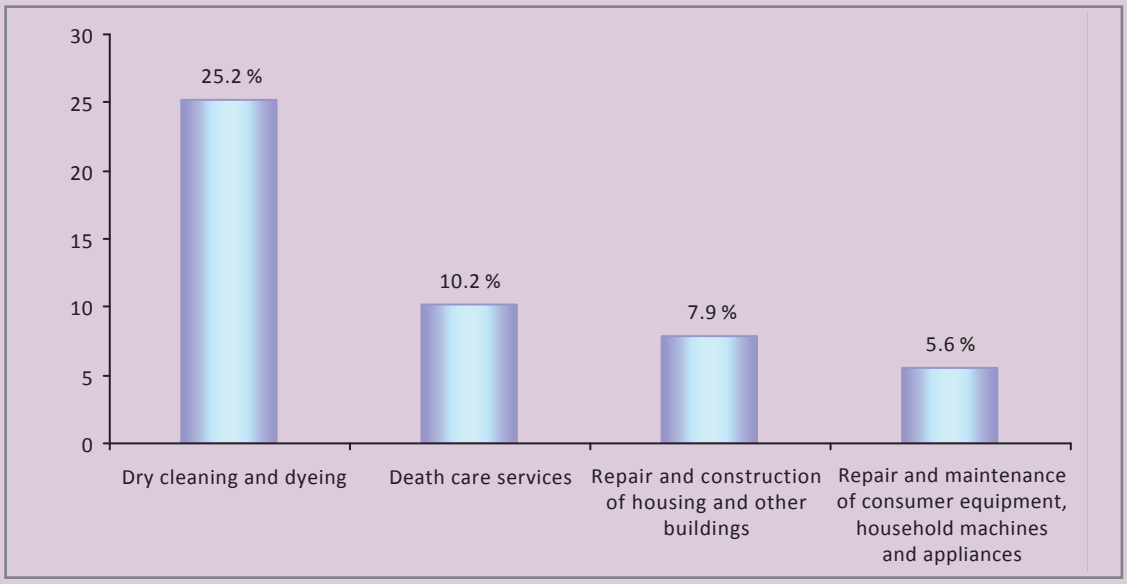


Figure 5. The growth of consumer demand in the personal services sector in the Khantia-Mansia Autonomous Okrug – Ugra in 2010 as compared with 2009



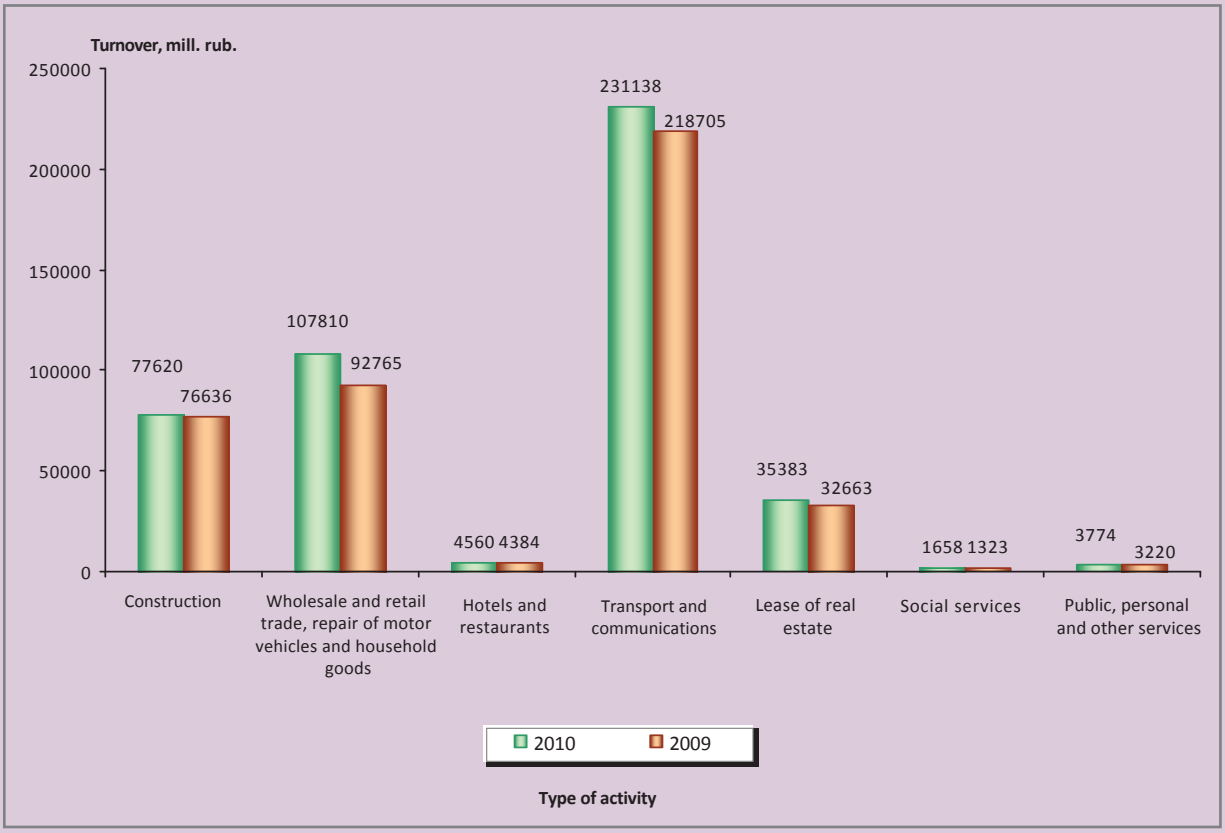
The number of registered sole traders in the territory of the autonomous okrug increased by 19.4% (from 41290 in 2005 to 49300 in 2010).

Cost of the personal services which were rendered to the population in this okrug in the period from January till July in 2010 was 2075.3 million rubles. At constant prices the volume of public services increased be 2.5% as compared with the same period in 2009.

In the sphere of public services the strongest growth of consumer demand was on the following services in 2010 as compared with 2009:

- dry cleaning and dyeing – 25.2%;
- death care services – 10.2%;
- repair and construction of housing and other buildings – 7.9%;
- repair and maintenance of consumer equipment, household machines and appliances – 5.6% *(fig. 5)*.

Figure 6. The volume of the small-scale enterprises' turnover by the types of economic activity in the Khantia-Mansia Autonomous Okrug – Ugra in 2009 – 2010 (million rubles)



In the structure of the small enterprises' turnover by the types of economic activity the bulk of turnover is the share of transport and communications (218705 million rubles – in 2009; 231138 – million rubles – in 2010), wholesale and retail trade, repair of motor vehicles and household goods (92765 million rubles – in 2009; 107810 million rubles – in 2010), as well as the construction (76636 million rubles – in 2009; 77620 million rubles – in 2010) *(fig.6)*.

In general, the turnover of small-scale enterprises increased by 2.6% in 2010. It was 246.2 billion rubles at the end of 2010 as compared with 240.0 billion rubles in 2009.

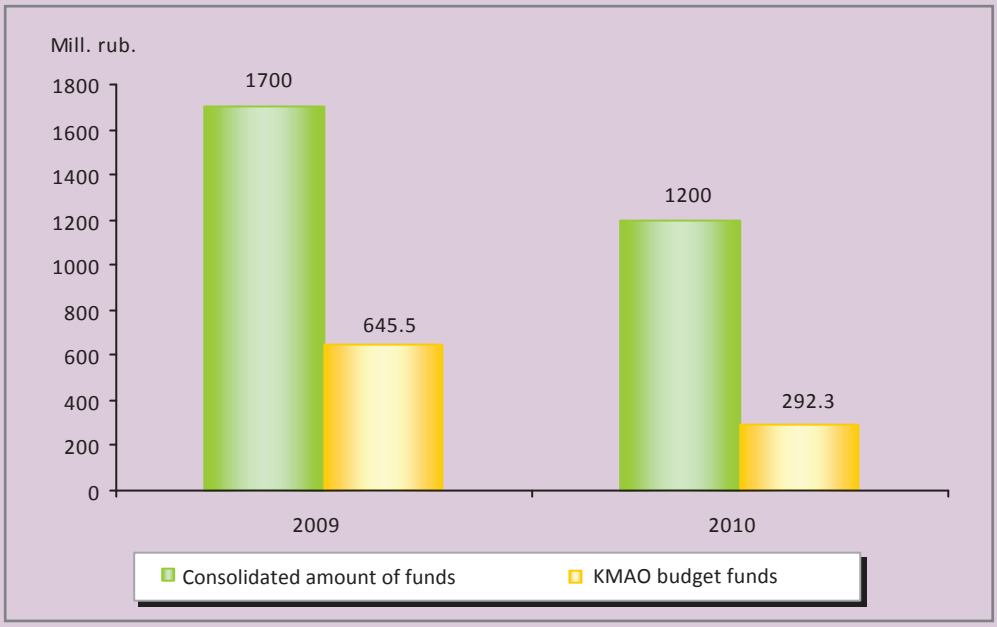
However, there was a significant decrease in consolidated funds aimed to support the small and medium-sized enterprises by 29.4% in 2010 as compared with 2009. Financing of business from the autonomous okrug's budget decreased by 54.7% in 2010 as compared with 2009.

The total funds aimed to support the small and medium-sized enterprises amounted to 1.2 billion rubles in 2010 including 292.3 million rubles from the funds of autonomous okrug. It amounted to 1.7 billion rubles in 2009 including 645.5 million rubles from the okrug's budget *(fig. 7)*.

The amount of subsidies to support the small-scale businesses in the autonomous okrug was set at the rate of 198.4 million rubles for the Khantia-Mansia Autonomous Okrug at the cost of the federal budget in January-December in 2009, including:

- implementation of the programs to support the nascent entrepreneurs in the form of grants to establish their own business – 5.0 million rubles (2.5%);
- supporting of the small-scale business by the guaranteeing funds – 131.6 million rubles (66.3%);
- supporting of the small-scale business by microfinance – 41.8 million rubles (21.1%);

Figure 7. Amount of financing aimed to support the small and medium-sized enterprises in the Khantia-Mansia Autonomous Okrug – Ugra in 2009 – 2010.



• compensation for the payment of the interest rates on credits by the subjects of the small-scale business – 20 million rubles (10.1%) *(fig. 8)*.

The amount of subsidies from the federal budget to support the small-scale business declined significantly in 2010; it accounted for 105.5 million rubles, including:

• implementation of the programs to support the nascent entrepreneurs in the form of grants to establish their own business – 20.0 million rubles (18.9%);

• supporting of the small-scale business by microfinance – 70.0 million rubles (66.4%);

• compensation for the staff's education expenditures of the company – 4 million rubles (3.8%);

• compensation for business incubation costs of the company – 1.5 million rubles (1.4%);

• compensation for the payment of the interest rates on credits by the subjects of the small-scale business – 10 million rubles (9.5%) *(fig. 9)*.

Analysis of the distribution of subsidies from the federal budget to the main areas of supporting of the small-scale business showed that in 2009 the bulk of subsidies were aimed to support the entrepreneurship from the guarantee funds as well as to support the small-scale business by microfinance. Supporting of the small-scale business by microfinance was priority in 2010. The largest part of subsidies was concentrated in that area. Compensation for the payment of the interest rates on credits by the subjects of the small-scale business was also in the forefront. In connection with the above analysis, in our opinion the main problems of the small-scale business development in the autonomous okrug are the following:

➢ concentration of the major share of small enterprises in wholesale and retail trade while the share of the construction sector accounts for a few small businesses, despite the fact that today regional demand for living accommodation exceeds the provision of the okrug with accommodation.

Figure 8. The distribution of subsidies from the federal budget to the main areas of supporting of the small-scale business in the Khantia-Mansia Autonomous Okrug – Ugra in 2009

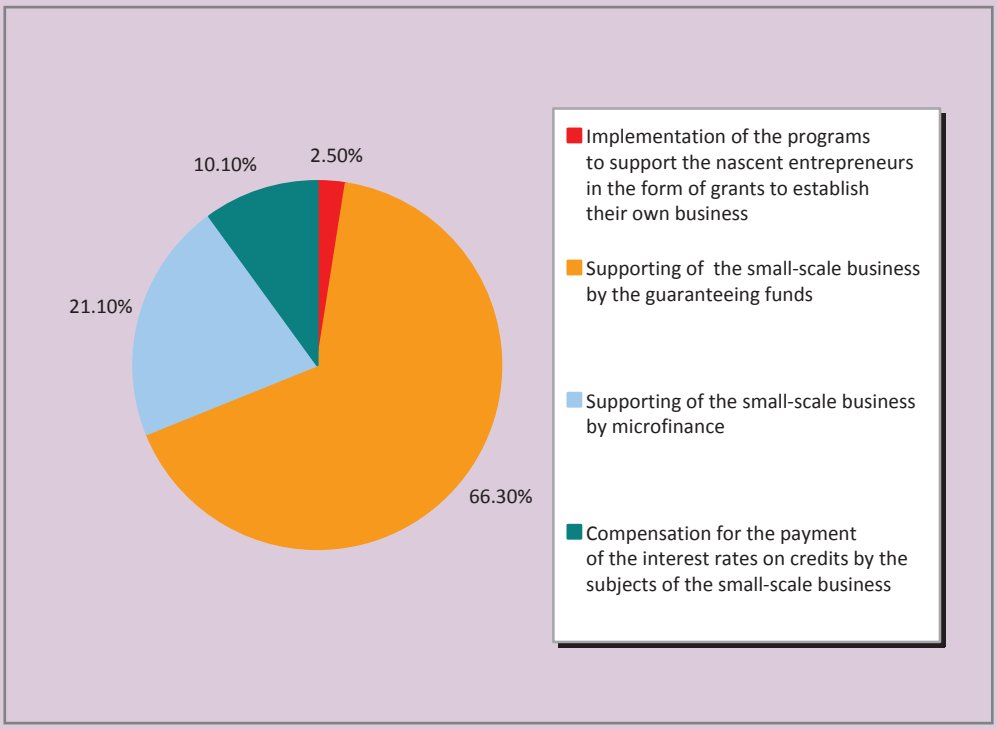
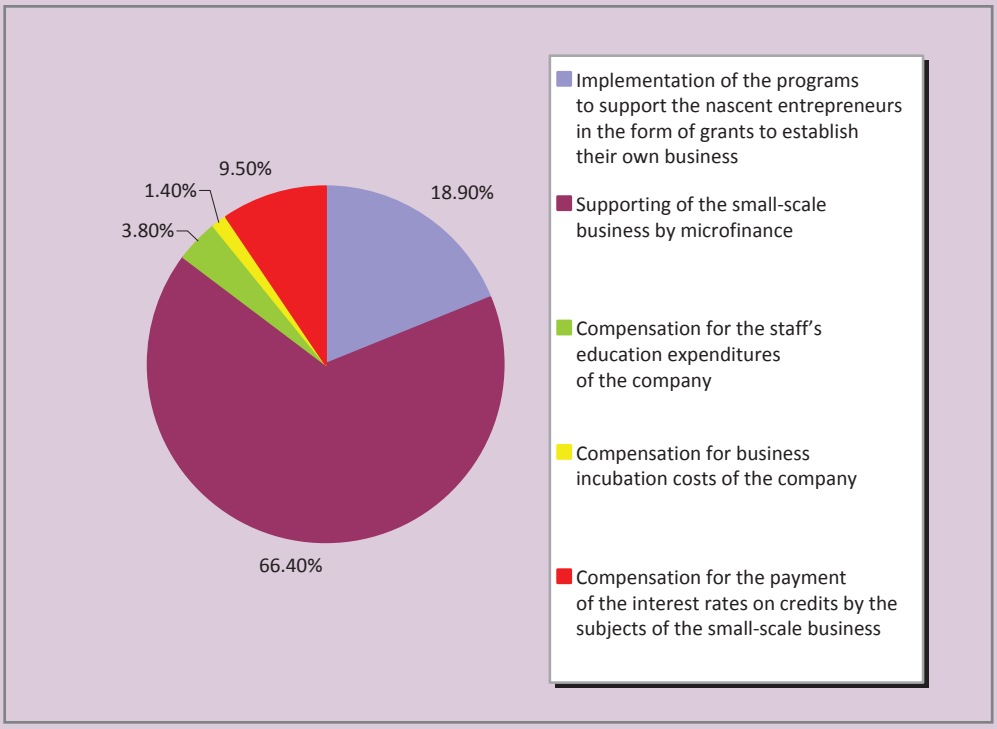


Figure 9. The distribution of subsidies from the federal budget to the main areas of supporting of the small-scale business in the Khantia-Mansia Autonomous Okrug – Ugra in 2010



- entrepreneurs invest only those industries that can operate with the minimum capital stock and that can produce quick returns;
- modern small-scale business in the okrug is timed to the construction, trade, real estate, service delivery while there is lack of small-scale enterprises in deep timber processing, productive services for oil, gas and timber companies and agrarian service;
- there are few companies providing such intelligent services for the enterprises of basic economic sectors as consulting service and design work;
- the regional small-scale enterprises are weakly involved in the foreign economic activity;
- a significant reduction in the amount of funds to support the small-scale enterprises: financing from the okrug's budget declined by 54.7% in 2010 as compared with 2009; the amount of subsidies from the federal budget to support the small-scale business also declined by 88%;
- lack of industrial and office premises for business;
- lack of own financial resources in the small-scale business.

The Government of the autonomous okrug has developed and adopted the target program "Development of small and medium-sized businesses in the Khantia-Mansia Autonomous Okrug – Ugra in 2011 – 2013 and for the period till 2015" to solve the existing problems of the small-scale business development as well as to enhance the role of small and medium enterprises in the economy of the okrug.

The major program activities offered by public authorities in the autonomous okrug are the following:

- improving of the normative legal base governing the business activity in the autonomous okrug;
- monitoring and information support of the small-scale business activities;
- modernization and arrangement of conditions for introduction of power efficient technologies in the small-scale enterprises;
- promotion of the development of young people's entrepreneurship;
- promotion of innovative activity of the small-scale enterprises;
- arrangement of conditions for the development of small-scale business in the field of ecology and traditional crafts;
- improving of mechanisms of financial and ownership support;
- arrangement of conditions for promotion of goods and services of local producers.

The largest part of the Program's funds will be spent to improve the mechanisms of financial and ownership support (1353430 thousand rubles), promotion of the development of young people's entrepreneurship (18850 thousand rubles), arrangement of conditions for the development of small-scale business in the field of ecology and traditional crafts (18270 thousand rubles).

In our opinion, the most promising areas of small business development are the following: the introduction of power efficient technologies in the small-scale enterprises, the development of small-scale business in the field of ecology and arrangement of conditions for promotion of goods and services of local producers.

We think that the support of the small-scale business by the Government of the autonomous okrug can't be across-the-board because of the limited budgetary resources; it should be fairly selective in accordance with clearly defined areas.

There are three main factors influencing over the development of small and medium-sized businesses and increasing of their share in the regional economy in the analytical report "The development of the small and medium-sized enterprises in the regions of Russia. Indexes of SUPPORT". It was prepared in 2008 by All-Russian public organization of the small and medium-sized businesses "Support of Russia". The factors are the following:

1. Demand conditions in the region.
2. Specificity of the sectoral structure of the regional economy.
3. Regional business climate as a set of conditions for the development of the small and medium-sized businesses in the region.

If we consider these factors in relation to the Khantia-Mansia Autonomous Okrug it should be noted that the okrug has a low level of demand for the products. The absence of large urban agglomerations is not conducive to the formation of a single large local consumer market for the full range of paid services, so the formation the services market in the autonomous okrug can't be as quickly as in the major cities of the country.

The specificity of the branch structure is characterized by a lack of the economic diversification, most of which falls on the share of the fuel and energy balance complex.

The first two factors are basic; they are difficult to change.

The third factor (the regional business climate) can be changed. The regional authorities should strive to create the most favorable conditions for the small-scale business development in the region through such means of support as: microfinance, reimbursement of the interest bank rate, commitment insurance arrangements, consulting if the organizations, seminars and exhibitions.

We think that the main areas of the small-scale business support should include:

- support of productive and innovative activity of the regional entrepreneurs;
- arrangement of conditions for the development of the small-scale business in the rural areas;
- involvement of non-state forms to support the small-scale business: mutual lending and mutual insurance which can compensate for the lack of financial resources of individual small businesses;
- support of the factories using resource-saving technologies and working on the base of the by-products and wastes;
- support of the development of financial leasing as a pillar of stability of the small-scale businesses;
- the procedure of business starting is notification;
- the development of public and private partnership.

Summarizing the study, it should be noted that the Khantia-Mansia Autonomous Okrug is characterized by the positive dynamics of the main economic indicators which reflect the state of the small-scale business. Created conditions for the development of the small-scale enterprises in the region have improved the business activity. However, the Government of the autonomous okrug should take into account the limited budgetary resources and support the small-scale business in accordance with clearly defined directions to maintain the existing positive trends in the development of the small-scale business in the territory of the autonomous okrug. Today there are the following important areas: diversification of the small-scale businesses, arrangement of conditions for the development of the small-scale business in the rural areas and involvement of non-state forms to support the small-scale business.

The development of the small-scale business in the Khantia-Mansia Autonomous Okrug is taking on political, social and economic value. The formation of middle-class owners is a base of stability. It promotes the creation of new jobs, expands the tax base and improves the quality of life.

References

1. Laws of the Khantia-Mansia Autonomous Okrug – Ugra "About the Program of the state support of the small-scale business in the the Khantia-Mansia Autonomous Okrug – Ugra in 2004 – 2010" dated 30.12.2003, № 82 (as amended on October 2, 2008).

2. Laws of the Yamalia-Nenetsia Autonomous Okrug "About the district target program "The development of the small and medium-sized businesses in the Yamalia-Nenetsia Autonomous Okrug in 2008 – 2010" .

3. The Resolution by the Government of the Khantia-Mansia Autonomous Okrug – Ugra "About the target program of the Khantia-Mansia Autonomous Okrug "The development of the small and medium-sized businesses in the Khantia-Mansia Autonomous Okrug in 2011 – 2013 and for the period till 2015" 10.09.2010, № 241-p.

4. State and municipal management of Ugra. – Vol. 2: Economics and business administration. – Khanty-Mansiysk, 2007.

5. Kurikov, V.M. Window to Ugra: Atlas-Travel Guide, 1930 – 2005 / V.M. Kurikov. – Khanty-Mansiysk: Zebra, 2005. – 447 p.

6. The small-scale business of Ugra-2005: Information Analysis yearbook. – Khanty-Mansiysk: LLC "The Ideal", 2006. – 84 p.

7. Rakutina, N.M. Modern Problems of the Russian small-scale business / N.M. Rakutina // Nat. projects. – 2010. – №12. – Pp. 83-90.

8. Sapunov, M.K. Great expectations of the small-scale business / M.K. Sapunov // Money and credit. – 2009. – №5. – Pp. 53-55.

9. Serga, L.K. Power and small-scale business: voluntary serfdom or contemporary problem-solving / L.K. Serga // Vestnik NSUEM. – 2009. – № 2. – Pp. 79-84.

10. Social and economic situation in the Khantia-Mansia Autonomous Okrug – Ugra in January – July, 2010: statistical report / Regional office of the Federal State Statistics Service of the the Khantia-Mansia Autonomous Okrug – Ugra – Khanty-Mansiysk, 2010. – 103 p.

11. Ugra: horizons of the present / Information-analytical anthology. – Khanty-Mansiysk: Socrates, 2005 – 2006.

Editor	L.N. Voronina
Make-up page	T.V. Popova, E.S. Nefedova
Proof-reader	A.A. Parnyakova
Translators	I.G. Kudryavtzeva, N.N. Paramokhina, O.V. Druzhininskaya, I.A. Rusinova, O.V. Tretyakova

Passed for printing 14.09.2011.
Format 60x84 1/8. Digital recording. Poster paper.
Printed sheet 17.75. Number of 100 copies. Order № 367.

Certificate of registration of mass media PI FS77-37798 dated October 12, 2009 in the Federal Service for Supervision of Telecom and Mass Communications (Roskomnadzor)

Institute of Socio-Economic Development of Territories of RAS

Add.: 160014, Vologda, 56a Gorkogo Str., ISEDT RAS

Founder: Institute of Socio-Economic Development of Territories of RAS
The make-up page is edited and printed in ISEDT RAS