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FROM THE CHIEF EDITOR

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Dear readers,

In the third issue of the journal in 2009 the editor-in-chief's article addressed some issues related to the first anniversary of the economic crisis. Influence of a "very liberal"[1] financial system conducted in the country on a depth of the Russian economy recession was the largest of all the industrialized countries and the BRIC countries[2]. RF President D.A. Medvedev, in his article "Russia, forward!" dated September 10, 2009 gave a more realistic assessment:

"<...> the global economic crisis has shown: our state of affairs is not in the best. <...> Hence we have the decline in production during the current crisis more than other economies and the outrageous stock market fluctuations. All this proves that we did not do what was necessary in previous years. And not everything was done properly"[3].

The directions of modernization of Russian society, the transfer of the country's economy on the innovation track put forward in this article, were supported by all segments of the population. Unfortunately, the President D.A. Medvedev did not say anything about the mechanism of making and implementing decisions that provide practical steps towards gradual modernization.

A year has passed, but a systematic, comprehensive approach to solving the most urgent issues of our state set in the "manifesto" has not been submitted to the public. This year is associated with a routine of operational decisions of acute local problems: March - the explosions in Moscow; May – the tragedy at the Raspadskaya mine; August – September – thousands of homeless fire victims in Russia and the irresistible rise of food prices; September – PR campaign "Khimki forest". Finally we never get around to the system implementation of the goals stated in the article "Russia, forward!" Participants of the International Discussion Club "Valday-2010" assessed the changes over the past year in the following way:

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[1] From V.V. Putin's speech at the meeting with participants of the VI session of the International Discussion Club "Valdai" held on 09/11/2009: "If we talk about the financial system, it is much more adapted to market realities than many of the financial systems of other countries. Say, if we compare it with the financial system of China, then, as you know, the Russian financial system operates under the Basel principles and is very liberal. We have virtually removed all restrictions on capital movements. We took the basic laws regarding private ownership of land, which has never taken place in Russia".

[2] BRIC countries – Brazil, Russia, India and China.

[3] Article "Russia, forward!" dated 10/09/2009 [Electronic resource]. – Access mode: http://www.kremlin.ru/transcripts/5413 (the official website of the President of the RF).

"<...> the modernization continues to be rather a slogan than a real political course. There is virtually no real modernization, restructuring and diversification. Oil and gas remain to be the main sources of income. Corruption is not restrained by anything, and innovation is inhibited. And we conclude that this trend can last for 10 – 15 years" [4].

It seems that the situation in the country is developing in this very way. State elite has already drawn into another political cycle – the election of the State Duma deputies and the Russian President. It is therefore likely that in the next 2–3 years the slow process of modernization imitation will go on.

One of the main indicators showing the direction of the state's course to economy modernization is the share of expenditure on research and development as a percentage of GDP *(tab. 1)*.

Level and dynamics of expenditures on R&D in the Russian Federation are disappointing against the background of the leading countries; it shows a clear imitation of the struggle for the Russian economy modernization.

One of the most important indicators of the state of Russian society is the dynamics of population estimates of the power vertical, the dynamics of social mood and the level of patience reserve. Measurement of public opinion in the region [6] show that the rate of approval of the power vertical has not reached the pre-crisis level and the level of disapproval is much higher than the factual figures in 2008 *(tab. 2)*.

Table 1. R&D spending as % of GDP [5]

Country	2000	2007	2008	2009.
Finland	3.35	3.48	3.73	3.91
USA	2.77	2.62	2.76	2.65*
Germany	2.47	2.58	2.63	N/d
France	2.05	2.11	2.02	N/d
Russia	**1.05**	**1.12**	**1.04**	**0.98**

* Data for the USA are designed for the I half of 2009.

Table 2. Evaluation of activities

Vertical of power	Approval, % of the total number of respondents		Changes rate	Disapproval % of the total number of respondents		Changes rate
	8 months 2008	8 months 2010		8 months 2008	8 months 2010	
RF President	75.0	65.2	**0.87**	9.3	17.7	**1.90**
RF Prime Minister	79.4	66.7	**0.84**	9.3	17.2	**1.85**
Vologda Region governor	57.8	48.7	**0.84**	19.9	26.9	**1.35**

[4] From D. Pete's speech, the head of the European edition of the journal "The Economist" [Electronic resource] // Transcript of the meeting between RF Prime Minister V.V. Putin with participants of the VII meeting of the International Discussion Club "Valdai". – Access mode: http://govERNMENT.RU/DOCS/12039 (the official website of the RF Government).

[5] Sources: Eurostat [Electronic resource]. – Access mode: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database; 2009 Global R&D Funding Forecast, R&D Magazine, December 2008, Data updated June 2009; Science and Innovation in Crisis: stat. analysis // The journal "Voprosy statistiki" – 2010. – № 8. – P. 5; Economic and social changes: facts, trends, forecast. – 2009. – № 3(7). – P. 8; Federal State Statistics Service [Electronic resource]. – Access mode: http://www.gks.ru/bgd/free/b04_03/Isswww.exe/Stg/d04/183vvp7.htm; Russian Business Paper. – 2010. – № 742(9) [Electronic resource]. – Access mode: http://www.rg.ru/2010/03/23/innovacii.html

[6] Institute of Territories' Socio-Economic Development of RAS has been holding bi-monthly polls on change the living conditions of the Vologda region since 1996. The polls are held in the cities of Vologda, Cherepovetz, and in eight districts of the region. The volume of a sample population is 1500 people. Representativeness of the sample is ensured by the observance of the proportions between the urban and rural populations, the proportions between the inhabitants of settlements of various types, age and sex structure of the adult population of the region. The method of the survey is questionnaire poll by place of residence of respondents. Sampling error does not exceed 3%. The results of the polls are available at www.vscc.ac.ru in the section "Publications" (Public Opinion).

A number of social indicators also have negative trends *(tab. 3)*.

Table 3. Evaluation of social state

Percentages to the total number of respondents		Changes rate	
8 months 2008	8 months 2010		
Normal state, good mood			
70.2	61.1	**0.87**	
Experiencing stress, anger, fear, anguis			
22.1	34.8		**1.52**
It's not so bad and you can live; it's hard to live, but you can tolerate			
81.0	70.7	**0.87**	
It's impossible to tolerate our plight			
10.9	17.6		**1.61**
Consumer sentiment index			
107.5	85.4	**0.79**	
The share who consider themselves poor and destitute			
39.8	46.2		**1.16**
The share who consider themselves middle class			
50.7	42.6	**0.84**	

Dynamics of the given figures shows that over the past two years these figures are considerably below the levels reached by mid-2008.

In the ensuing preparations for 2011 – 2012 elections the conflicts between the currents in the political elite are inevitable (as an example – the situation with the mayor of Moscow in September 2010). This struggle will obviously not contribute to the population confidence in the future, and hence will not contribute to and strengthen its confidence in the power hierarchy, the ruling party.

For the government to have a stable confidence of all sections of society, in our opinion, the Russian President, D.A. Medvedev and Prime Minister, the leader of the party "United Russia" V.V. Putin should abandon virtual economy modernization, *to move from words to the compulsion to modernization and start this process with the solution of the most acute problems of Russian society: with removing barriers that block technological innovation and intellectual development based on knowledge economy; with the elimination of a monstrous inequality of the population and the real fight against poverty; with significant reduction of corruption, primarily in federal structures*.

The effectiveness of the transition from virtual to real modernization in a year can be evaluated not only by experts of the Valdai Club, but first of all by Russian citizens. And the main criterion for this assessment will be positive or negative changes in the level of public confidence in the vertical of power and state institutions.

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Dear readers, by tradition, we inform you about the changes that have occurred in the journal during the past period. The editors took into account the wishes to expand the subjects and introduce new sections and expressed by V.V. Ivanter, S.V. Kuznetsov, P.G. Nikitenko, A.I. Shishkin. For example, previously declared theme of this issue "Social development of the European North" has expanded to "Modernization of the European North economy"; new sections are introduced – "Knowledge Economy", "Industrial economy", "Economic Theory"; the postgraduate section "Young researchers" is being filled with articles.

The scientific community is well aware that in today's world one of the main evaluation criteria of both a researcher, and scientific organization in general are indicators of citation, along with the publication activity. Therefore, our editorial staff pay special attention to the work related to the Russian Science Citation Index (RSCI)[7]. All issues of the journal in Russian and English[8] versions are placed in the Science Library. The editorial staff regularly monitors the number of citations of authors of the journal, so colleagues who have placed their articles on the pages of our publication, can get the information they are interested in (in addition to self-refer to data provided at eLIBRARY.RU).

In search of quantitative assessments that characterize the quality of our journal, the editors regularly review the edition website. Today we offer you a list of the first fifteen articles on the total duration of their viewing[9]. The editorial staff plans to publish such information in each issue and asks the authors and readers to make their suggestions about it.

In conclusion I wish to recall that the final issue of this calendar year will focus on the problems of development of foreign trade activities in the regions of North-West federal district. However, the stated theme should not limit our authors in the choice of study. The editorial staff will consider all interesting, original scripts, all articles, offering unconventional solutions to the problems facing Russia.

[7] RSCI is the database of Russian scientific periodicals "Russian Science Citation Index" created by "Scientific Electronic Library eLIBRARY.RU".

[8] Availability of full-text English version of the journal is, according to RSCI developers, one of the main quoting conditions of the domestic edition of an international scientific journals (see: The son of difficult errors // The journal "Poisk". – 2010. – № 37 (1111). – Sept.10).

[9] 117 articles have been published total for the lifetime of the journal. This material offers the top 15 rankings.

The first fifteen articles in the journal on the total duration of their viewing

№ p.p.	Total duration of viewing (minutes)	Number of viewings	Average viewing time	Title of the article	Issue of the journal	Authors
1.	5837	219	27	The development of regional cluster systems	№1 March 2008	Tamara V. Uskova
2.	5443	178	31	Spatial aspects of socio-economic differentiation of the region's population	№7 September 2009	Ludmila V. Kostyleva
3.	4558	270	17	Organizational and economical mechanisms for the implementation of strategic priorities for tourism and recreation in the North-West of Russia	№6 June 2009	David T. Akhobadze
4.	3711	141	26	Prospects for small innovative enterprises in the academic and university sectors of science in St. Petersburg	№6 June 2009	Alexey A. Rumyantsev Alexey G. Strelnikov
5.	3083	176	18	Methodological basis of innovative development of agro-industrial complex	№2 June 2008	Valentin A. Ivanov
6.	2978	111	27	The tourism sector: levels and approaches to its formation	№5 March 2009	Tamara E. Dmitrieva Vitaly A. Schenyavsky
7.	2938	182	16	State and prospects of development of tourism industry in the Vologda region	№5 March 2009	Svetlana A. Selyakova Lyudmila V. Dubinicheva Kirill V. Markov
8.	2773	131	21	Strategy to diversify the economy of the region	№1 March 2008	Leonid G. Iogman
9.	2171	104	21	Housing construction in the region: problems and solutions	№6 June 2009	Anna I. Povarova Olga N. Gordina Tamara V. Uskova Anna M. Cherevko
10.	2096	126	17	Technological innovations is a necessary condition for improving labour productivity in the Pechora coal basin	№4 December 2008	Albina A. Kalinina Vera P. Lukanicheva
11.	1922	92	21	The region's economy: from crisis to sustainable development	№7 September 2009	Leonid G. Iogman
12.	1905	99	19	Trends and prospects of socio-economic development of the Murmansk region	№1 March 2008	Vladimir V. Didyk
13.	1902	95	20	Regional aspects of food security	№7 September 2009	Valentin A. Ivanov Vitaly V. Terentyev
14.	1815	111	16	Problems of tourism development in the Arkhangelsk region	№5 March 2009	Vera E. Toskunina Natalia N. Shpanova
15.	1791	110	16	State of tourism sector in economic crisis	№5 March 2009	Yury N. Plekhanov Elena S. Ageyeva Yulia N. Bulatova

CONTENT

ECONOMY OF KNOWLEDGE

BRANCH ECONOMY

THE ECONOMIC THEORY

YOUNG RESEARCHERS

UDC 330.341(470.12)

Intellectual resources as innovation development factor

The article considers the conceptual approaches to the defining the economic category of "intellectual resources", as well as the methodology for their assessment, the ways of intellectual resources development in the regions which did not have the academic divisions previously.

Innovation development, intellectual resources, talents, knowledge, cognitive capacity, creativity, scientific personnel training, Scientific and Educational Center, innovative solutions Center.

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The current meaning of the term "intellectual resources" is the result of scientific understanding of the socio-economic practices of leading countries of the world. This concept accumulates critical propositions of many theories that have been strongly promoted from the middle of the twenti-eth century: human capital, labor capacity, knowledge economy, and other concepts of postindustrial society, a society in which the economic structure, people's motivation, product distribution mechanisms, attraction of investments, management technology undergo dramatic changes.

The condition of the Russian economy today, despite some positive results from anti-crisis measures taken by the authorities, clearly shows the futility of export-raw model of the country's development and the need of transition to an innovative model. In recent years, the country's leaders often declare that "in the coming decades, Russia should become a country whose prosperity is ensured not so much through commodity but through intellectual resources: "smart" economy, which creates a unique knowledge, export of the latest technology and products of innovation"[19].

With the formulation of the problem of the domestic economy transition to the innovation way of development the category of "intellectual resources" appeared to be in the center of the problems discussed on the pages of theoretical and practical scientific publications, conferences, symposia and other forums. Scientists identify the essential features, the composition and structure of intellectual resources; the methods of their level assessment and development mechanisms are being worked out. There are differing points of view on these issues. A new section of management science that meets the requirements of the knowledge economy has appeared – it is intellectual resources management. However, the category of "intellectual resources" has not yet received a clear scientific identification. There are both expansive and narrowed interpretations of this concept, as well as the definitions which are intermediate between them.

Within the expansive approach intellectual resources are considered very close to the category of "human potential". And there are strong arguments for this based on established methodologies for evaluating and calculating the human development index (HDI). This index as is known accounts the assessments of the level of education (literacy) of population, health (life expectancy), the impact of economy (per capita income) specially converted (for comparability) according to countries. According to recent data, computed under the auspices of the UN, Russia ranks 73 in the HDI *(tab. 1)*.

HDI can be an important indicator characterizing the degree of the country's economy development and intelligence of its people. But the HDI does not allow identifying clearly the internal factors of growth of intellectual resources of the country.

Within the narrowed approach the basis of the concept of "intellectual resources", as a rule, are indicators of the country's richness of scientific personnel, the unit cost of science in the whole country and per researcher, development of material base of science and its infrastructure. Such an approach when compared with that of leading countries makes it possible to determine not only the state but also targeted areas of intellectual resources. It has significant advantages in terms of practical determination of future goals and milestones for achieving them.

A striking manifestation of this approach was the report of the Director of the Institute of USA and Canada S.M. Rogov, "Russia should become a scientific superpower [22]. Unclaimedness of science as a threat to national security" at a meeting of the Presidium of RAS in April this year. The key findings of the report are so principled and capacious that we should distinguish them in a special frame.

Table 1. Components of HDI in Russia

Indicators	1992	1999	2000	2004	2006
Adult literacy rate (%)	98.7	99.6	99.6	99.4	99.4
Life expectancy (years)	70	66.6	66.1	65.2	65.2
GDP per capita (doll. USA)	6,930	7,100	8,377	9,902	13,205
HDI index	0.858	0.755	0.781	0.797	0.806
Place in the UN rating	34	55	60	65	73
Source: UN Reports on Human Development for 1994, 2001 – 2003, 2006 – 2008 (publication year of the index means that it applies to the data two years ago).					

From the report of corresponding member of RAS S.M. Rogov at a meeting of the Presidium of RAS April 16, 2010

1. ***On the state of funding of Russian science:***
   – The share of Russia accounts for less than 2% of world expenditure on R&D by purchasing power parity and the 1% by exchange rate...Russia lags behind the USA in expenditure on R&D 17 times, behind the European Union – 12 times, behind China – 6 times, behind India – 1,5 times...
   – On public expenditure on R&D per capita ($ 86) Russia lags 4 – 5 times behind the leaders and on private spending ($ 40) – 15 – 20 times...
2. ***On the stages of development of science in Russia:***
   – In the first phase the objective is to bring R&D spending to at least 2% of GDP (1% due to state funding and 1% from private expenditure) in the next few years. In 2012 Russia can and should come to the 50% of the level of leaders for the costs per a researcher – about $ 50 billion a year in the prices of 2010.
   – In the second phase (up to 2020) R&D spending should reach 3% of GDP – 75% of leaders for the costs per a researcher to provide access to the average level of 70 – 80 billion dollars a year.
   – In the third phase (mid-XXI century) R&D expenditures of Russia must keep up to 4 – 5% of GDP (100 – 120 billion per year in constant prices), which will allow entering a group of world leaders for the costs per a researcher.
   Only in this case Russia will be able to return to the number of scientific superpowers in the XXI century, to become one of the centers of power in a multipolar world.

However, the composition and valuation of intellectual resources cannot be limited only by the state of R&D parameters (in spite of their priority). The structure of organic intellectual resources should include such factor as education system, corresponding to an innovative type of society's development. It is thus not only on the organization of knowledge acquirement about in its classical form, but also knowledge in a wider sense which includes understanding, skills, behaviors, the relationship between people and collectives.

In the transition to a post-industrial innovation-based economy the significance of other intangible assets dramatically increases – the creative energy of staff, the spirit of entrepreneurship in business, economic institutions that foster innovation. We should note that this aspect of intellectual resources doesn't have standardized assessments yet. But, being a part of the challenges to innovation economy, it requires a search for appropriate methods of measurement.

We believe that significant progress towards the development of scientific methods of integrated assessment of intellectual resources has been made in the recent works carried out under the guidance of Academicians V.L. Makarov, P.A. Minakir, V.V. Ivanter, A.I. Tatarkin [7, 12, 18, 23]. An important contribution towards resolving this problem was made by Professors A.E. Varshavsky, S.D. Valentey, N.I. Ivanova [1, 6, 9, 13] and other famous domestic scholars and economists.

In principle, it is important to note that local researchers agree that the all-Russian economic and social processes are shaping the future of each region. Therefore, forecasting the development of intellectual resources of any region is impossible without a fairly tight linkage with expected performance in Russia as a whole.

However, for innovation mesoeconomics it is crucial to examine the levels of the current state of intellectual resources in the region and their ways out to the requirements of innovation paradigm of national development. In this regard we will focus more on what is done by our Institute of Territories' Socio-Economic Development of RAS (we should note that the status of the Institute had been received only a year ago, it was established on the basis of the Vologda Scientific Coordination Centre CEMI RAS).

Since the mid 1990's we began to study changes in the state and factors of development of the regional scientific, technical, and labor capacities, the functioning of health and

Table 2. Directions of research held by ITSED RAS run in the monitoring mode [21]

Direction, theme	The year of the research commencement	Research content
The functioning of enterprises and industries, agriculture, social environment, small business	1993	Study of economic and financial situation of enterprises, institutions and industries using the methods of statistical analysis and expert interviews
Investigation of the conditions of healthy generation formation	1995	A unique panel study examining the effect of different (economic, social, health, etc.) factors on health and development of children from their birth until the age of majority. Currently, there are four cohorts (the oldest children are 14-year-olds) are under supervision
Economic conditions and social well-being of the population in the region	1995	Regularly measurement (6 times per year) of public opinion in the territory of the Vologda region on the most important aspects of socio-political and economic life of the country and the region, life satisfaction, well-being of households. Single volume of sample is 1500 respondents
The quality of labor potential	1996	Qualitative-quantitative measurement of labor potential using the index of "social activity", covering such primary qualities as physical and mental health, knowledge and creativity, communication and social activity, cultural and moral level. Analysis of compliance with the requirements of the quality of labor potential of jobs
Research, educational and human resource capacity of the region	2003	Measuring the dynamics of a multistage scientific-educational structure for training and retraining of highly qualified specialists to create the conditions for the identification and development of the abilities of talented youth in the region, promoting the use of achievements of domestic and foreign science and practice in various fields of economy, management, information technology as applied to regional and local governance, to economic entities of the regional and municipal economy, creating conditions for the practical application of scientific research in the development of innovative small businesses
The development of information technology in the region	2003	Market research of software, assessment of status and monitoring trends in the development of telecommunication services in the region
Socio-economic development in the region	2004	Tracking the dynamics and assessment of the economic and social development of the region, identifying threats and challenges of the environment, adjustment of strategic goals, milestones and priorities for development in the region due to changes in external and internal environment
Economic conditions and social well-being of the population of regions in the North-West federal district	2005	Measurement of public opinion in 10 regions of Russia, located within the North-West Federal District on the most important aspects of socio-political and economic life of the country and the region, life satisfaction, well-being of households. Single volume of sample is about 6000 respondents (at least 400 people in each subject)
Innovative development of the economy	2005	Regularly measurement and tracking the dynamics of scientific and technical potential of the region and the competitiveness of regional economies, the study of innovation in the region (a survey of 200 large and medium-sized enterprises), revealing the problems of building a knowledge economy

education systems, as well as other socio-economic processes associated with the formation of intellectual resources *(tab. 2)*. A distinctive feature of these studies is that we try to run them in the monitoring mode.

Taken research approaches are currently promoted in other regions of the North-West federal district.

Let us put forward some key issues that become apparent as a result of works associated with the formation and use of intellectual potential of the Vologda region.

► *Low level of development of regional scientific and technical capacity, weak links of research institutions with the real sector of economy of the region.*

Scientific and technical capacity in the Vologda region has not received significant development by reason of the economic specialization of the region in the Soviet era. In the region there were no departments of academic science. Among the existing departmental research organizations there was no competitiveness, struggle for leadership, and in the years

Table 3. Number of personnel engaged in research and development among the economically active population [20]

Region	The number of economically active population, thousand pers.		The number of the staff engaged in research and development, thousand pers.		To reduce in the number of staff, engaged in research and development, in times	Proportion of researchers in the total number of economically active population, in %	
	1992	2007	1992	2007	2007 to 1992	1992	2007
Russia	74,946	75,158	1,533	807.1	1.9	2.05	1.07
NWFD	8,095	7,640	233	103.9	2.1	2.88	1.35
Vologda region	686	693	1.767	0.469	3.8	0.26	0.07

of market transformation the scientific and technical capacity of the region has repeatedly declined *(tab. 3)*.

The number of staff employed in R&D per 10,000 of economically active population in the region at present is four times lower than in the neighboring republic of Komi, three times lower than in Karelia, and almost five times lower than in the Murmansk region. The share of domestic expenditure on research and development in 2009 in the Vologda region has not reached 0.1% in relation to gross regional product, which is 12 times lower than the average for Russia.

Factory works on R&D are actually carried out only at the Cherepovetz metallurgical works JSC "Severstal" and chemical plants of Cherepovetz. The share of metallurgists and chemists now accounts for more than 2/3 of the region's industrial production and almost 85% (2 billion dollars) of the regional exports [8, 24]. In the region's industrial structure the share of manufactures of advanced technological modes reduced during "market" years *(tab. 4)*.

In 1990 the Vologda Bearing Plant employed 11 thousand people, and in 2009 it employed 3.5 thousand; in 1990 the Vologda Optical and Mechanical Plant employed 9 thousand people, and in 2009 it employed three times less. In many enterprises, until recently, there was a process of primitivization, deindustrialization, reducing automation.

Industrial production is not only changing slowly in the direction of more high-tech, labor-saving, science intensive industry, most important is that it is dramatically narrowing, squeezing the needs of highly skilled labor and, hence, depriving the region of a strategic prospective of development in production of technological structures of the XXI century, requiring a sharp increase of intellectual resources.

►*Stable trends of degradation in the level of professional knowledge and skills and their practical application are revealed.*

Monitoring measurement of the quality status of employment potential of the region's population conducted by ITSED RAS shows that the index of cognitive (knowledge) capacity for 12 years has a declining trend (the index includes the level of physical and mental health, need for achievement and sociability, cultural

Table 4. The share of branches of industry in industrial production in the Vologda region (in % of total)*

Branches of industry	1990	1995	2000	2005	2009
Ferrous metallurgy	43.9	58.2	66.3	72.0	54.3
Chemical industry	8.0	7.6	8.7	11.9	16.4
Total in first processing industry	*51.9*	*55.8*	*75.0*	*83.9*	*70.7*
Machinery	12.4	6.9	3.5	4.3	5.5
Timber, woodworking, pulp-and-paper industry	12.42	7.2	6.3	4.0	4.0
Food industry	9.6	6.0	6.1	6.4	8.9
Light industry	7.46	0.9	0.7	0.3	0.3
Total in second processing industries	*29.48*	*14.1*	*13.1*	*10.7*	*13.2*

* Author's calculations.

moral and creative level). However, seven of the 12 years of observations showed lower values than at the beginning of monitoring *(fig. 1)*.

Reduction of the base level of general education and violation of continuity in the development of professional knowledge and skills are the main reasons for lowering of the cognitive potential. The training quality of university graduates is assessed as "high" by only a minimal part of employers (1%).

Our research results show that almost half of the region's residents (47%) aren't active in their professions. And more than 57% people under 30 years don't work in their specialty.

▶ *Twelve-year study has also revealed a lasting decline in the creative potential index among the population of the region*.

Moreover, creativity index, which is based upon people creative activity in the professional and everyday life, is the lowest among the eight main indices. Its general trend is decreasing *(fig. 2)*.

The downward trend in creative potential is common to all socio-demographic groups *(tab. 5)*.

The lowest index of population creative potential is caused by the lack of a developed innovation infrastructure. As a result less than 10% of people always invent, write or create something, but 45% of people usually do nothing.

Figure 1. Dynamics of cognitive (knowledge) index potential in the Vologda region [16]

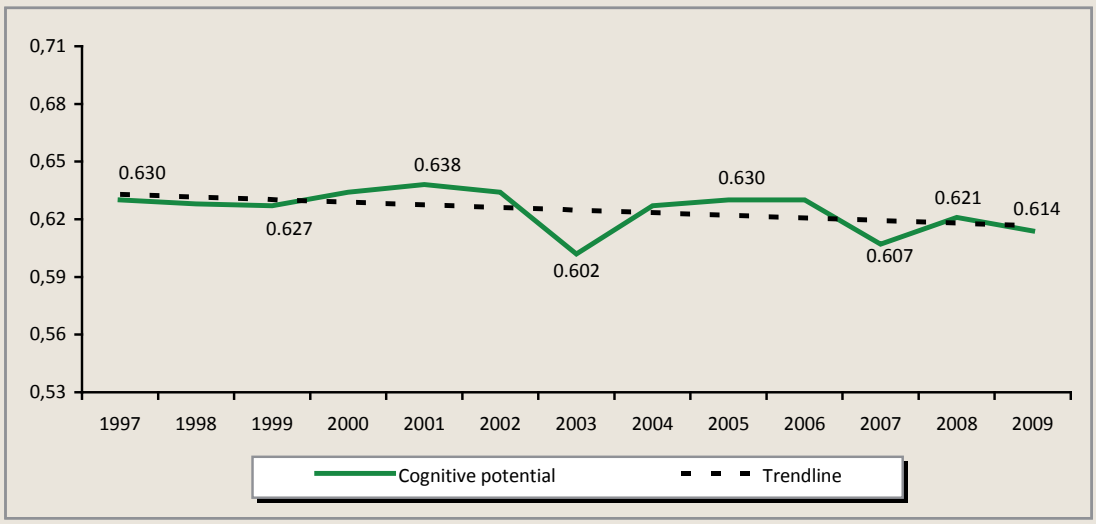

Figure 2. Creative potential index evolution in the Vologda region [16]

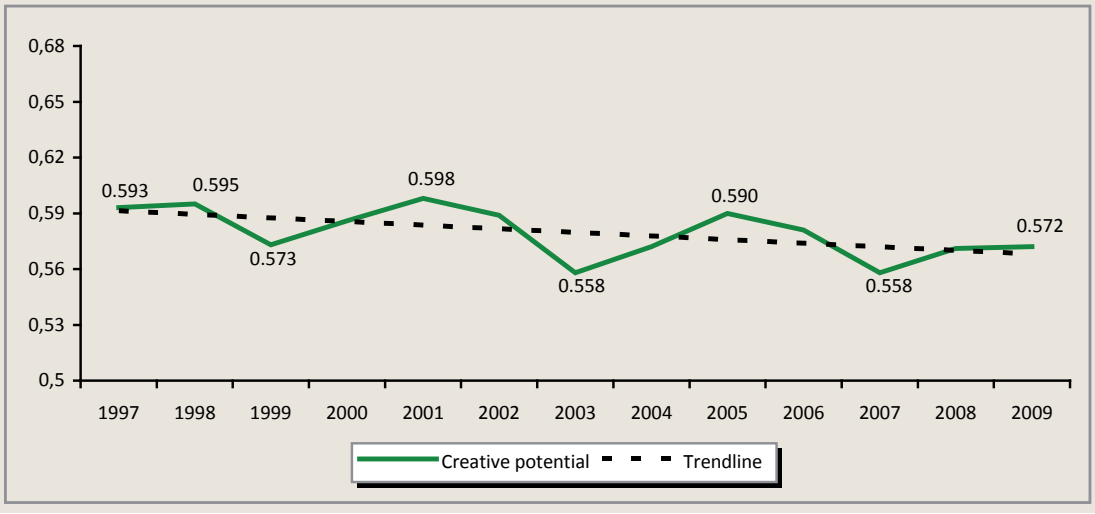

Table 5. Creative potential indices evolution in the Vologda region [16]

Criterion	Group	1997/99	2000/02	2003/05	2006	2007	2008	2009
Territory	Area	0.587	0.590	0.573	0.581	0.558	0.571	0.572
Sex	Male	0.593	0.585	0.567	0.576	0.549	0.567	0.567
	Female	0.580	0.593	0.578	0.585	0.565	0.576	0.578
Age	Under 35 years	0.600	0.606	0.585	0.591	0.571	0.570	0.576
	Over 35 years	0.572	0.573	0.559	0.570	0.542	0.573	0.569
Education	Secondary	0.550	0.555	0.544	0.544	0.527	0.523	0.539
	Specialized secondary	0.570	0.578	0.555	0.567	0.549	0.578	0.558
	Higher and undergraduate	0.653	0.662	0.616	0.635	0.597	0.614	0.621

Table 6. Some characteristics of innovation activity organization at the enterprises in the Vologda region (in %) [20]

Indicators	2005	2006	2007	2008	2009
The share of enterprises where a design office is responsible for development and implementation of new goods	30.8	41.4	32.9	37.8	30.7
The share of enterprises which have a promotional systems of inventive and rationalization employees' activity	42.9	33.3	36.5	37.8	36.4

We were carrying out the researches from 2007 – 2009. Their results showed that only a third of companies had its promotion system of inventive and innovation employees' activity *(tab. 6)*.

Our scientists proved the main aspects to move to smart, "moral economy". The conceptual ideas of R.I. Greenberg, S.S. Gubanov, S.S. Sulakshina [2 ,3, 4, 10, 26] and other authors seem to be the most interesting.

There are well-known official ways to start an innovative economy. But, unfortunately, there is no real, logical, systematic policy to move step by step from export-commodity model of economy to high-technology economy at the moment. S. Gubanov [3] considers that the production of machine tools is being regressed and we have a situation of deindustrialization in Russia nowadays because we continue to maintain high profitability of raw materials' production and export and low profitability of manufacturing sectors.

The last researches of the Institute of Socio-Economic Development of the RAS are devoted to contemporary challenges and risks.

One of them is a program-oriented approach to the development of intellectual capacity, research, technology and innovation environments.

A draft of the long-term target program "Development of scientific and technological capacity in Vologda oblast until 2025" has been created in ITSED RAS. The main indicators of general variants of this project are presented in *table 7*.

The calculation of the necessary expenses for the first stage of the Program has been done. The total cost should be doubled in 2012 as compared to 2009. It will depend not only on increasing of the budget financing, but also promoting of a private sector's spending on research and development.

According to our calculations the implementation of the Program activities will have increased the share of shipped innovative products from 8 to 35% by the end of the period and the proportion of organizations engaged in technological innovation – from 8 to 50%. The numbers of the personnel engaged in research and development would increase up to average rates for the North-West federal district, but, unfortunately, the regional government doesn't set such problems.

The development of integrated scientific and educational structures that ensure the using of modern scientific knowledge, teaching technologies and the continuity of the educational process at the each level of education.

It is important to create the conditions for consolidation of the highly skilled staff in the Russian regions and to reduce the outflow of the most talented young people not only overseas but also to the large urban areas. There is a form

Table 7. Target indices of scientific and technology development and innovation activity in the Vologda region in 2009 – 2025 [20]

Target index	Unit of measure	Scenarios	First stage		Second stage		
			2009	2012	2015	2020	2025
Numbers of personnel engaged in research and development activity	people	Inertial	590	650	710	850	1,000
		Active	640	870	1,150	2,100	3,500
Research and development costs, sum total	mill. rub.	Inertial	205	275	400	700	1,200
		Active	265	560	1,175	3,000	7,200
regarding to GRP	%	Inertial	0.08	0.1	0.12	0.15	0.2
		Active	0.09	0.15	0.25	0.4	0.65
Technological innovation costs, sum total	bill. rub.	Inertial	4.28	4.43	4.58	4.82	5.06
		Active	4.45	5.05	5.85	7.4	9.75
regarding to GRP	%	Inertial	1.75	1.81	1.87	1.97	2.07
		Active	1.8	2.04	2.36	2.98	3.95
The volume of shipped innovation production, sum total	bill. rub.	Inertial	23.9	35.7	54.4	106.5	208.3
		Active	29.1	52.7	99.8	186.3	364
Regarding to the total volume of shipped production	%	Inertial	9.8	12.3	14.8	18.9	23
		Active	11.2	15.6	22.8	27.6	35
A share of technological innovation organizations in the total amount of examined organizations	%	Inertial	10.7	14.3	17.9	24	30
		Active	12.9	19.9	26.8	38.4	50

of a regional scientific and educational center to achieve these goals.

The scientific and educational center has been opened in the Vologda region to create the conditions for personal and professional development of talented young people, to improve the training and retraining systems of new scientific, managerial and engineering personnel and also to use in the region the achievements of domestic and foreign science and practice in the different spheres of economy, management and innovative technologies [17].

We convinced the Governor of our region and the President of the RAS to ask the President of Russia for assisting in creating of the material-technical base of scientific and educational center. As a result the project has been realized. The Research and Education Center of Economics and Information Technology (REC) has been operating in the ITSED RAS since 2003. The Research and Education Center of Economics is an innovative structure, it concludes a multilevel system of training and retraining of highly qualified specialists for science, business entities and regional authorities *(fig. 3)*.

Table 8 presents evidence on how the SEC shall provide the continuity of the educational process in the chain of "school – college – graduate school".

The student groups for studying at the branch of St. Petersburg State University of Engineering and Economic in Vologda are formed from the pupils who were well in scientific disciplines. 40% of school leavers, who had trained in the Research and Educational Center, entered the economical universities last year. After graduating from the university young specialists begin to study a post-graduate course in economics and management in the ITSED RAS. After defending their PhD theses, Masters of Science can work in the scientific field and continue to improve their skills by studying in doctoral candidacy.

With the lapse of time the SEC can become a sort of the lyceum in Tsarskoye Selo. The gifted children not only from Vologda and our region but from the neighboring regions will be trained in the competitive environment here. In addition to the replenishment of scientific personnel the SEC can become one of the mechanisms and sources to form the modern managerial elite. We consider our region should have three or four "high schools" of this type.

Figure 3. Structure of the Scientific and Educational Center of the ITSED RAS [17]

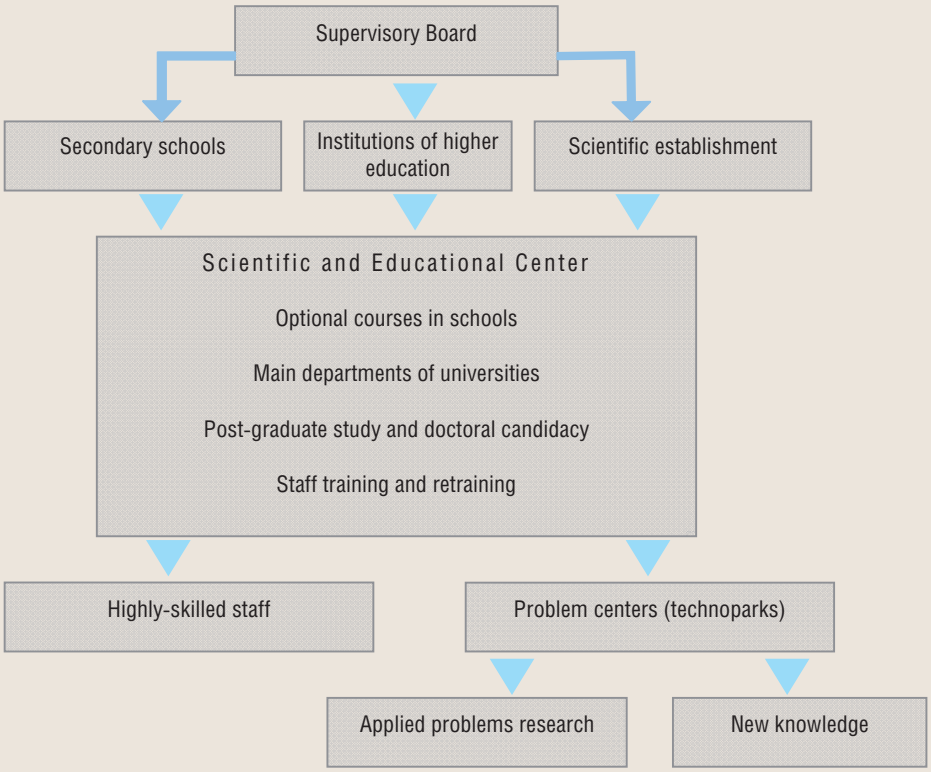

Table 8. Students changes in the Scientific and Educational Center, ITSED RAS

Indicator	2004	2005	2006	2007	2008	2009
Number of students	94	160	250	290	310	370
Number of students	97	194	390	542	557	800
Number of post-graduate students	34	32	36	39	46	46

Ensuring of "lifelong" continuity of professional knowledge using modern scientific approaches to training and retraining.

For this purpose it is necessary to open a public educational institution. That's why the Vologda branch of ENGECON is elaborating legal and organizational issues to open the Institute of Regional Development as a part of the Scientific and Educational Center. The Institute will be established by the regional government under the supervision of the Russian Academy of Sciences. The purpose of the Institute will be target training of highly qualified specialists for the regional and municipal governments and economic entities. So we will train the regional administrative elite.

The Vologda Corporate University has been running for two years on the basis of the Vologda branch of ENGECON. The main objective of the Institute is to provide ongoing training. First of all the best graduates should be brought up to the level of the high school MBA graduates (Master of Business Administration). Also the University must promote effective knowledge of management, transfer the best practices, make a system of personnel development at the enterprises, improve professional skills of the workers, technicians, managers and retrain them. The University is advising people on relevant issues.

Creation of integrated structures providing the link between economic needs and the level of the latest achievements of domestic and world science (a sort of "synergistic growth centers of innovation").

The Innovative Solutions Centre (ISC) which is being formed in the Innovative Economy Department of the ITSED RAS will present such a structure. It is planned to develop on the basis of the Centre for Technology Transfer (CTT), established in 2005. This organization is an associate member of the Russian Technology Transfer Network (RTTN). More than 12.5 million rubles were invested by CTT in the development of innovative projects of regional enterprises and organizations in 2008 – 2010.

The objectives of RIC are arrangement of conditions to increase the added cost of regional products, intensification of intellectual property in our region, increasing of the average personal income and consolidated budget receipts in the region.

The Centre should provide current and future needs of regional enterprises and organizations for innovation and stimulate them for innovative activity. It also should arrangement conditions for the commercialization of the intellectual products which are made in our region and increase the human resource of innovation sector through training and involvement the gifted young people.

The novelty of a proposal is contained in the practice of the Centre that won't use only the existing or emerging innovative proposals as basis but current and perspective needs of the economic entities and the whole region. Also it is necessary to use the best practice of the organizations leading in the sphere of technological transfer. Another advantage of the Centre will be the laboratory and pilot-production facilities. The modern equipment will allow to have a vicious cycle of innovative products' creating at the same place there.

Nowadays the project is supported by the regional government and leadership of the RAS. This fact is reflected in the joint agreement. It will be released at full capacity necessary to solve actual problems of innovative development of the territory next 4 or 5 years.

Thus the real experience of economics development in the regions, that hadn't academic departments before, proves that the systematic and comprehensive approach to perform the tasks makes it possible to create a certain scientific core. This core can become the basis of the regional innovative infrastructure that will ensure all the processes of modernization and elimination of backlog of the country in terms of competitiveness.

In conclusion we would like to return to the report of a Corresponding Member of the RAS S.M. Rogov. We consider it is possible to reduce the gap in scientific and technological capacity between Russia and the advanced countries and our country will have opportunity to become a scientific superpower if the task of phased development of Russian science become pivotal both on the federal and regional levels.

It is necessary to remake all the system of public life and civil society for the talented specialists and innovators. Slowly but steadily their values will become the values by the whole society. Then the modernization that is aimed at the transition of economy to innovation type of development will become a system process of social everyday life in all its multifaceted manifestations.

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Modernization of the economy of Karelia

The article briefly outlines the main directions of the modernization policies directed on maintenance stable sustainable development of economy of the Republic of Karelia. Measures taken by the authorities and business structures to effectively manage the processes that contribute to the socio-economic development of the region are considered.

Regional economy, economy modernization, investment activity.

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The crisis that gripped the socio-economic sphere in many countries, including the Russian Federation, has forced Russian regions to look for appropriate ways to counter their effects. In addition, the regions have to find not only the methods of survival, but also the ways of further development. Despite the situation caused by the crisis, by 2010 the Republic of Karelia has overcome the difficulties of socio-economic nature. Thanks to the measures taken by the government of the Republic to ensure sustainable development of economy of Karelia it was able to prevent a sharp decrease of production in industry. Mass reduction of the production staff and loss of wages were prevented, most of enterprises which have appeared on the verge of closure and bankruptcy were kept. Social protection of the population has been kept, the stability of the fiscal system was ensured, and state support for backbone enterprises of the republic was provided. [2] As a result of the authorities' emergency response a trend of reduction in the backlog growth of industrial production in comparison with 2008 has appeared.

At the same time, the crisis showed that the period of high commodity prices, rapid growth of companies' capitalization and the availability of credit resources came to an end. It became clear that the economy of the Republic of Karelia has reached that level when for its further rise it is not enough to have only activities for the restructuring of production, monopolists' price controls, tighten control over the collection of taxes, legal support of investments, lobbying Karelian enterprises, privatization of property, etc. It is necessary to walk on a fundamentally new way of development. In this

situation, upgrading, declared as a national idea by the President of the country, becomes very necessary thing [3].

In the Republic of Karelia the implementation of certain provisions of the development program is initiated taking into account the specific and regional characteristics. The state anti-crisis program of action of the Government of the Republic of Karelia in 2010 [4] is adopted and implemented which contains a large section of "Modernization measures". The Republic understands modernization as the process of implementation of measures, leading the economy into line with the latest modern requirements and standards. In other words this is a process, which is the fastest and possibly the full (taking into account the specific realities of the regional historical traditions and cultural and ethnic characteristics) promotion to target the basic model of modern social and economic relations. For the Republic of Karelia it is also the key to successful technology development and the way of the Republic on a new technological level in the strategic perspective. The main purpose of modernizing the economy of the Republic of Karelia is the creation of socio-effective model of the economy, which will ensure the progressive development of our republic.

For this purpose the Government of the Republic of Karelia supports modernization in industry sectors of the Republican economy and creating new industries through innovative resource-saving and highly efficient technologies that enhance the quality and competitiveness, reduce production costs. It assists in the creation of integrated business structures on the organization of high production in the form of innovative activity, stimulating the development of strategic plans and business plans for short and medium term taking into account the development priorities of the Republic.

Priority areas for economic and social policies are defined in the Strategy for socio-economic development of the Republic of Karelia up to 2020, in the Concept of socio-economic development of the Republic of Karelia for the period until 2012 and the Program for economic and social development of the Republic of Karelia up to 2010.

Building a system of interaction between society, government and business the Government will have to find ways to the positive development of the republic. Priorities declared for the republic previously remain unchanged: these are the improving the quality of life of the republic's population, stable economic growth, building capacity for future development.

The Government of the Republic is focusing the objectively limited capacity of on the priority development of industrial and financial, scientific, educational, information, transport and social infrastructure ensuring the fullest possible use of both the resource and territorial advantages of the republic and the creative potential of the population.

The Republic has planned and implements the following modernization measures:

- diversification of economy and export, domestic demand support, creation of new modern production (including the attraction of investments, the implementation of projects aimed at in-depth processing of raw materials, the use of information and communication technologies);
- promotion of innovative ways of development;
- development of high-tech and infrastructure sectors of the economy (including the development of communications, transport system, improving the energy complex including through energy efficiency);
- improving the efficiency of public sector and the use of public assets (reforming the budgetary network, improving the efficiency of government procurement and budget expenditures, improving bonded loan system of the Republic of Karelia, development of the state property insurance).

These measures are scattered among different programs and activities that are implemented in the republic.

The Government of the Republic of Karelia is consistently implementing its Guidelines for

investment policy for 2007 – 2010, thus expanding the investment potential of the region and developing energy and transport infrastructure, housing and social sphere. In the Republic the interaction of executive authorities of the republic with investors is ordered. Documents defining the procedure for passage of concord, registration and licensing procedures when considering projects are drawn up; a procedure for monitoring of investment projects on the territory of the Republic of Karelia is established. The Republican list of investment projects is being recorded.

Government of the Republic of Karelia signed a cooperation agreement with state-governmental corporation "Bank for development and foreign economic affairs (Vnesheconombank)", which provides for joint development of schemes of financing investment-scale projects, the implementation of which is planned in the territory of the republic. To offset the loss of cash flows caused by the crisis, and ensure the inflow of investment in the economy of the republic there is working to restore the full system of long-term loan with the optimization of interest rates and collateral threshold for investment credits. It is assumed that a close mutual cooperation with investors will increase the total investment in fixed capital of the Republic of Karelia in 2010 to 18.2 billion rubles.

As a result of the undertaken measures, it is planned to raise more than 3.4 billion rubles of federal investment through federal investment programs, federal subsidies and the Investment fund of the Russian Federation. Under the reached agreements with the State Corporation "Rosatom" the Government of the Republic of Karelia will assist Closed Joint Stock Company "Petrozavodskmash" to implement an innovative portfolio for the nuclear industry, mass production of modern logging equipment in Co. Ltd "Onega Tractor Plant". To enhance the interaction between the Government of the Republic and the leading enterprises of the republic an agreement on cooperation in overcoming the effects of the financial crisis and social partnership is signed. Measures for the state promotion of investment are taken. The Republic has 16 agreements for the regime-favored investment. Project investment amounts to 7.2 billion rubles.

The Government of the Republic of Karelia has conducted extensive work with federal agencies of the Executive authority on postponing the introduction in 2010 of increased rates of customs duties on round raw timber, especially from hardwood. The decision to maintain rates of export customs duties on raw materials in 2010 at the level of 2008 is made. This measure is very important and timely for the loggers of the republic. In this case the Government of the Republic of Karelia implements a consistent policy aimed at gradual reducing the volume of exports of unprocessed timber and modernization of production for its processing in the territory of the republic.

A deliberate and systematic work in providing state support to investors in implementing investment projects through the introduction of modern financial instruments is being done. The Government of the Republic represents guarantees and issues guarantees on loans borrowed for investment projects to small and medium enterprises. It also provides grants for reimbursement of expenses to pay interest on loans borrowed for investment projects. To solve the problem of increasing the availability of small businesses to credit resources established the Guarantee fund of the Republic of Karelia is established. To participate in the fund program to provide guarantees for the obligations of small and medium enterprises six banks were selected, 21 surety contracts totaling 18.7 million rubles were signed.

Much attention is paid to the promotion of innovation, creation of innovative thinking in students, academic and industrial spheres. The country has already created "IT-park" Petrozavodsk of the State University, Karelian center for technology and innovation transfer at the Karelian research centre of the Russian academy of sciences, Business incubator of the Republic of Karelia, several innovation-active enterprises are functioning.

Integration of science, industry and business based on market mechanisms of commercialization of intellectual property objects and transfer of advanced high technology developments and technology will be implemented through the site of innovation market, "research landing forces" to the enterprises, providing businesses with information through the organs of executive power in the republic.

In order to transition to innovation economy the Government of the Republic of Karelia plans to implement the following activities aimed at modernizing the economy and the development of innovative structure elements:

• development of guidelines for the investment and innovation policy up to 2020;

• government support for reconstruction and technological modernization of existing enterprises;

• creation of favorable conditions for the new industries based on modern resource-saving and high-performance technologies, providing improvement of quality and competitiveness of products;

• assistance in the preparation of professional personnel for innovation areas, including those from the developers of new competitive products and technologies;

• assistance in the promotion of production of innovative enterprises in other regions of the country;

• development of a mechanism for attracting domestic and foreign investors (including venture firms) in innovation projects;

• organization of joint scientific-practical and information-cognitive actions (conferences, seminars, round tables, business games) for employees of state and municipal agencies, developers of new products and technologies;

• development of long-term regional program for the development of innovative activity in the Republic of Karelia;

• development and participation in the work on priority areas for further development announced by the President of the country [1] (energy efficiency, new fuels, nuclear energy, information and space technology, health care and medicine production). For a number of them the republic has significant developments and achievements.

The republic has already developed and implemented the Regional Program on energy conservation for the period until 2012. The basis of the program is a system of energy saving measures that allow covering all the main spheres of the republic, as well as ensuring an integrated approach to improving energy efficiency in the economy and social sphere. A working group to develop a long-term development of the complex power grid of the Republic of Karelia for the period 2010 – 2015 years is created. The program will address issues about the reconstruction of distribution networks and substations in order to tackle these challenges. The implementation of energy saving projects and activities on energy-intensive industries of mining and processing, metallurgical and engineering industries is taking place.

The implementation of the anti-crisis program in 2009 showed that the increase in the effectiveness of public sector and the use of state property is required. This, in turn, means that it is due to implement the reform of fiscal expansion, improve efficiency of public procurement and budget expenditures, improving bonded loan system of the Republic of Karelia, development of insurance of public assets.

In 2010, while adapting the budget of the Republic of Karelia to the reduction of budget revenues the structure of budget expenditures has also changed. The main priorities of budget spending for 2010 the following are determined: the unconditional fulfillment of social obligations to citizens by the state, timely payment to workers of budgetary sphere, preparations for the 65-year anniversary of Victory in Great Patriotic War and the 90-year anniversary of education of the Republic of Karelia, payment for utility services provided by budgetary institutions, budgetary transfers to local budgets, implementation of measures which aim at stabilizing the situation on the labor market.

The projected reduction in revenues in 2010 would require the concentration of financial

resources to the most important events and sites, optimization of costs for the operation of public authorities and budgetary institutions, taking into account industry characteristics, improvement of funds efficiency to support the real sector of economy, refusal from the non-priority costs.

The active participation of the Government of the Republic of Karelia in the leading enterprises' activities caused a trend of economic recovery and the modernization process seeks to preserve all the positive trends and provide whatever state support, with the participation of financial institutions. To this end, the Government of the Republic of Karelia will enhance work with enterprises of key industries to increase the rates of production of major products, optimizing costs, preserving social stability in the workforce. About three hundred key enterprises for the national economy are included in the federal list of system companies. The Government of the Republic of Karelia, together with the owners of companies is monitoring the situation in these enterprises and rapidly eliminating the problems.

The republic also has a list of 1,148 enterprises of republican values, which are supported by the Government of the Republic of Karelia in obtaining assistance from the federal budget. One of such measures is the ability to obtain government contracts that allows the company to have secured funding and retain its activity. The republic will also take all possible measures to reduce the tax burden on the real economy sector. The total amount of tax relief for the real economy in 2010 will amount to 600 million rubles. In order to create the necessary conditions for the emergence of new participants in the commodity and service markets of the republic a program to promote competition in the Republic of Karelia will be finalized and approved.

An important role in attracting financial resources in the republic's economy is given to the banking sector of the republic. Currently, in the territory of the Republic of Karelia a program to support small and medium-sized businesses, implemented by JSC "Russian Bank for Development" jointly with the Ministry of Economic Development of the Russian Federation is executed. This program provides loans to organizations of infrastructure, supporting small and medium businesses. In 2010, the expansion of the number of program participants and increase the number of partner banks is planned.

Activation of the investment process in the republic also helps to attract resources of insurance companies through the establishment of the developed insurance system in the republic. In 2010, the Working Group will continue to work on the interaction of executive authorities of the Republic of Karelia and the insurance companies in the field of insurance, the Commission on the development of the financial services market in the Republic of Karelia.

Working in partnership with business owners, the government pays attention to and provides state support to all companies with development plans for the medium term, with the necessary expertise for the management of household assets, which are aware of the business' social responsibility.

With the support of the Government of RK in 2010 an investment project of the company Co. Ltd "AKS-Holding" "Construction of pig-breeding complex for 12 thousand heads per year" will be implemented which will produce 1.1 thousand tons of pork. In 2010 it is planned to begin construction of dairy farm for 800 heads with milking and dairy unit in Co. Ltd "Agrofirma "Tuksa" in the Olonetsky district. To support the agricultural sector 214 million rubles will be invested. They will focus on preservation and development of dairy farming, poultry farming and animal breeding in the Republic.

To stabilize the situation in the forest complex of Karelia, creation of prerequisites for sustainable operation and further development the Government of the Republic provides measures of state support to enterprises that have real plans for post-crisis development with the necessary expertise to manage forest industry assets and pursuing a conscious social responsibility in forest settlements.

The Government of the Republic of Karelia consistently solves the problem of increasing the volume of deep processing of timber in the republic, providing state support for investors and enterprises implementing investment projects in timber processing. At the present time the following major investment projects have already been implemented or are in the process of implementing: projects on reconstruction JSC "Kondopoga" and Co. Ltd "Medvezhegorsky logging enterprise", development projects JSC "Karelia DSP" and Closed Joint Stock Company "Solomensky timber mill", the project of construction of timber enterprise Co. Ltd "Setles" in Impilakhti settlement.

Simultaneously, the state orders for the products of deep processing of wood are formed and measures to ensure these industries with raw materials through the transfer of forest areas for rent are taken. Together with the Federal Forestry Agency system of public funding for forest roads construction in the republic is organized. Currently in cooperation with the tenants of forest plots (JSC "Segezhsky PPM", JSC "Karellesprom") the work on preparing the required documentation is being done.

Despite the difficult financial state of the enterprises the work on measures to attract investment in the forest sector, modernization and technical re-equipment of the enterprises, including the integration of projects of the Republic of Karelia in the list of priority investment projects in forest development is continued. Two investment projects – "The Polar Bear" of Segezhsky PPM and "The organization of logging and forest processing under long-term leases of forest of Ltd. "Kostomukshskaya construction company" – are included by the Ministry of industry and trade of the Russian Federation in the list of investment projects in forest development. The funding is received and the progress of these projects is monitored. The work with Co. Ltd "DOC "Kalevala", Co. Ltd "Swedwood Karelia" and other companies planning to realize their projects, which may be considered a priority in forest development and incorporated in the state list of priority projects is being done.

In the mining complex of the republic in 2010, three new modern enterprises for production of crushed stone will be put into operation, a stationary crushing and sorting complex of Co. Ltd "KarelTransNerud" in Pitkäranta region is built and the construction of the 2nd stage crushing and sorting plant and the wharf of Co. Ltd "Granite Mountain" is continued.

Further development of the republic depends on the level of development of small and medium enterprises in rural and urban settlements. The development of this sector can contribute to enhancing the economic growth in the region. Therefore, the Government of the Republic is pursuing a policy of creating the most favorable conditions for conducting business through the implementation of the activities of the republican program "Development of small and medium enterprises in the Republic of Karelia for the period until 2014". This program generally provides a quantitative increase of small and medium enterprises in the settlements.

Questions of support for small and medium-sized businesses become of particular importance in the Republic, since this very sector of the economy can quickly adapt to changing market conditions, is socially oriented, creates new jobs and is able to reduce the impact of various negative phenomena. In 2010, the cost of rents for small businesses has been reduced in the republic, interest subsidies on loans for investment have been introduced, and business incubator will receive 2.9 million rubles to support its activities.

Actions taken by both the Government of the Russian Federation and the Government of the Republic of Karelia allowed to smooth negative trends in the Republic's economy related with the influence of the effects of the global financial crisis. By the end of 2009 through the joint efforts there has been a positive trend for a number of indicators. Incipient economic recovery is accompanied by a slowdown in inflation and higher prices for exported

goods, the recovery of investment and consumer demand is expected. The increase in production and an increase in load of idle production capacity, in turn, have increased the level of employment in the Republic and reduced tension in the social sphere. But these positive trends are still fragile. An increase in production at some enterprises and decline at others is observed, delays in wages can take place.

The dependence of the republic's economy from the conjuncture of world prices for exported products, the restriction of domestic demand, the problems of long-term lending also significantly reduce the stability of the republic's economy. However, in the real existing conditions in 2010 the implementation of anti-crisis measures for keeping the economic recovery will continue. Particular attention will be paid to unemployment, social support, industry towns' problems solving.

The recovery of investment of previously suspended projects, the participation of the Republic in the implementation of federal target programs and the federal targeted investment program are expected. Increased investment and external demand will contribute to the restoration of industrial output. Compared with last year it is expected to increase the volume of mining, logging, wood products and pulp and paper production.

Easing of inflation will maintain the level of real disposable monetary incomes and stabilize the situation in the consumer market. Due to the restoration of production, a reduction in unemployment to 3.3% is expected. In view of the adverse factors in 2010 the gross regional product at constant prices will remain at the level of 2009.

The Government of the Republic considers 2010 as the year of arrangement of conditions for economic modernization and development of human capital [5]. To solve the problems of economic modernization raised by the country's president the changes in the strategy for socio-economic development of the Republic of Karelia until 2020 are made. A new medium-term program of socio-economic development of the Republic of Karelia, programs in the field of tourism, timber industry, education and health care development are developed.

Effective implementation of anti-crisis and modernization measures, the implementation of sectoral programs and innovative projects will monitor the situation and positively manage the socio-economic development of the republic.

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UDC 334.012.64(470.12)

Small business is an important reserve for development of a one company town

The small business development acquires strategic importance for sustained social and economic development of regions, especially for one company towns located on their territories. The composition of problems occurred in one company towns, the factors that create difficult situations in their economic and social and cultural life are considered in the article. The possibilities of using small business for sustainable growth of a one company towns and improving the quality of life of their people in times of crisis and during the post-crisis development are substantiated.

The Vologda oblast, a one company towns, social and economic environment, diversification of a one company town economy, the role of small and medium businesses.

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The problems of the small business development and assessment of the situation

The small business development is one of the most important activities of government bodies at all levels within the framework of deciding questions of the social and economic development of territories and mitigating social problems.

In recent years, the small business development has gained increasingly in political, social and economic importance. This sector of the economy creates new jobs and maintains the bulk of consumers, producing complex of goods and services in accordance with the rapidly changing market demands. Small business contributes to increase tax revenues, most rapidly developing new products and economic niches and areas which are unattractive to large businesses.

On the one hand small and medium enterprises is a specific sector of the economy that creates wealth with minimal involvement of the material, natural and other resources and maximum human capital, and on the other hand it is the sphere of self-realization and self-reliance of citizens within the rights granted by the Constitution of the Russian Federation (article 34).

Today small and medium business is characterized by high risk, low financial reserves, limited fixed assets, a significant amount of borrowed resources and other indicators that determine its "economic instability".

The experience in implementing programs of small business development shows that only measures of integrated support can be effective. The system of integrated support at the local government level should include the following mandatory elements:

- necessary legal and regulatory framework, including the development program for small and medium enterprises;
- developed support infrastructure for small and medium-sized businesses, providing scientific and methodological, informational, educational and consulting support for beginners and existing entrepreneurs;

- protection of rights and legitimate interests of entrepreneurs;
- interaction between the business (as represented by associations of entrepreneurs and authorities);
- creating a favorable business climate.

Particular importance has the implementation of these requirements at the level of a one company towns.

Ministry of Regional Development of Russia approved the list of a one company towns, which in the crisis were in the most difficult economic situation and will receive government support.

Sokol is a one company town in the Vologda oblast. The city has several enterprises of forestry, wood processing and pulp and paper industries which are forming a company town. In 2008 the proportion of enterprises forming a company town was as follows: in the volume of dispatch of industrial products – nearly 63%, in the average number of employed people in the town – 27%, in the volume of the profit before taxing – 53%, in the town wide level of investment – 57%.

Sokol enterprises were among the first enterprises which felt the impact of the global financial crisis, the decline in both domestic and external demand.

In this regard, the development of small and medium business is defined in the beginning of one of the priorities of social and economic development.

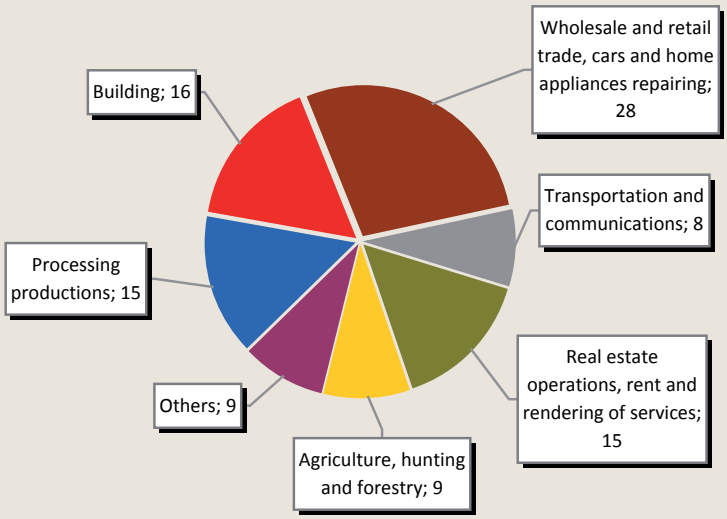
Priority directions for small and medium enterprises should be determined on the existing social and economic situation in the town, financial capacities, the achieved results and with the main priorities of social and economic development of the municipality.

In recent years the structure of small enterprises of the city by economic activities remains virtually unchanged *(fig. 1)*. The main part belongs to the trade and catering companies (28%), industry (15%), construction (16%) and 11 – 15% organizations are engaged in operations with real estate, rent and rendering of services.

More than half of entrepreneurs (53%) employ in the retail and wholesale trade, 13% – in the service sector in transport and communications, 9% – in the sphere of consumer services. The share of workers employed in small business to the number of employees in general in the city is about one-third.

Until mid-2008 small business of the city was developing quite rapidly: the total number of small businesses, individual entrepreneurs, the proportion of people employed in this sector

Figure 1. Distribution of the number of small businesses the Sokol by the main economic activities for 2009, %



was increasing, wages were raising; new objects of trade and catering were being opened.

To support small businesses in the city in 2009 the following measures were used:

1. The correction factor K2 of basic profitability K2 of a single tax on imputed income by all activities was not raised.

2. 5% tax rate under the simplified taxation system for socially important sectors (food and light industry, manufacturing of products of folk art crafts, housing and communal services, tourism) is run in.

3. A branch of the state institution "Business incubator" is created.

4. Nearly 4 million rubles of budgetary subsidies are sent on grants and compensation of the interest rate on loans. Due to this small businesses saved 398 work places and created 105 new ones, including in the manufacture of furniture – 46 places, in the wholesale and retail trade – 20, construction and production of building materials – 16, in food production – 8, in wood processing – 6, in the health services sector – 5, shoes production – 4.

5. A competitive placement of state orders for small businesses to produce products and render services for the public region and municipality needs was held.

Small and medium businesses of the city created in total 550 new jobs, including house building – 119, wood processing – 98, food production – 104, housing and communal services – 66, the sphere of transport services – 43, others (public services, environmental activities, IT-technologies, development of crafts, etc.) – 120.

However the negative consequences of the ongoing economic crisis significantly affect the activities of small businesses. The reduction in prices and demand for products, toughening of requirements by credit institutions, lack of liquidity led to late payment of wages, untimely tax payments and payments for delivered raw materials, materials and services.

Effect of crisis on the activities of small and medium-sized enterprises in various sectors has its own specifics.

Lumbering and wood processing. In 2009, the volume of products shipped by small businesses in forestry declined by 50%. Main problems of small enterprises in the industry related to "compression" of demand in export markets, a decline in demand in the building sector and, consequently, a significant reduction in production output, but with a sharp increase in competition. In addition, the industry lacks long-term price targets.

In food production the demand for food compared with other commodity groups declined slightly. However, in this sector, an increase of accounts receivable associated with the forced additional provision of delays of payments by manufacturers to wholesalers is observed. In addition, in food production sector small companies are extremely limited in the maneuver, as large players dominate the market who set the price limits, that is why smaller producers have to either work on the verge of profitability, or leave the market.

Wholesale trade in food products. A key problem for the wholesale companies is a violation of financial flows in the markets. An important factor in the existence of the wholesale level are the delays of major manufacturers and wholesale companies, formed, in particular, through bank loans, as well as own delays to retailers and other consumers. At the same time, many suppliers have increased direct sales and have access to end consumers, bypassing the wholesale level, what also contributed to the knock-out of the market for the weakest players.

Retail trade in manufactured goods. Demand remained in previous measure only for certain types of industrial consumer goods – clothing, textiles and footwear. Industrial goods are highly dependent on imports of finished products as well as of parts and separate elements. The devaluation caused a price increase that

goes against the falling incomes. In addition, violation of financial ties led to supply disruptions of imported goods.

Retail trade in food products. Retail trade experienced the impact of the crisis less than other sectors of the economy. The falling of the demand does not exceed 15 – 20%, although there is a decrease in the amount of an average check and a change in the demand structure in favor of cheaper products. As in other industries, companies are experiencing a certain lack of financial resources to upgrade the range and development. There is an increase of a turnover time.

Repairing and maintenance of vehicles. The decline in demand for repair services was 30 – 40%. The volume of orders from corporate clients most dramatically reduced, many of which have significantly reduced activity. On the part of private clients "compression" of demand is not so much: because of limited demand for new cars, car owners pay more attention to repairing vehicles.

Building. This is the most affected industry: problems in it began in the spring of 2008, and the crisis has worsened the negative trend. So, in typical many-storied building companies recorded decrease in demand by 50 – 90%, in low-rise wooden building – slightly less – by 30 – 60%, in the design and installation of utilities – by 40 – 60%. Although a gradual decline in property prices is observed, but it is not yet able to revive demand. Resumption of growth in the cost of building materials, induced by increase in overhead costs of market participants, prevents resolution of problems in the industry. There was also a sharp increase in the cost of imported materials.

Transportation. The drop in orders, according to different estimates, is 60 – 80%. Financial problems of carriers were worsened by seasonal factor – the volume of traffic is reduced in winter. Prices for transport services fell by 30 – 50%. The specific problem of transportation companies, which profits are significantly dependent on the proportion of empty mileage, is a sharp drop in turnover of vehicles (50 – 60%). In connection with the decrease in the density of orders vehicles have to wait for return freight from the point of destination for several days or to return without freight.

Specialized map for business development based on the assessment of the impact of crises at various sectors of the economy was developed, which reflects the expectations of entrepreneurs about the attractiveness and competitiveness of business in different economic activities *(fig. 2)*.

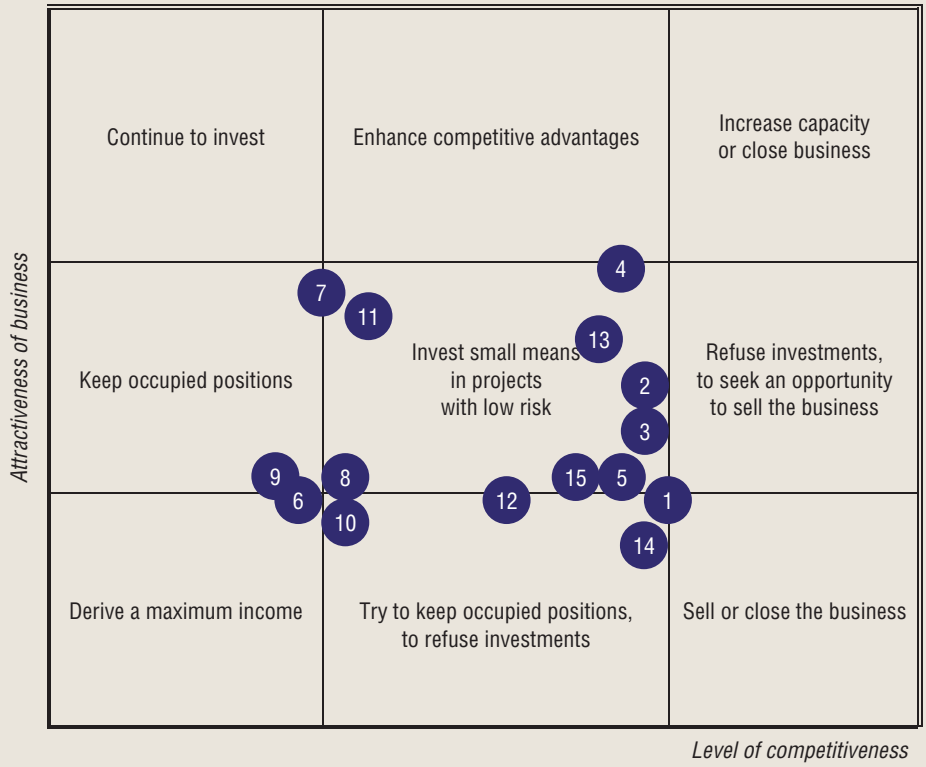
This map allows to evaluate the condition and identify priority directions of businesses.

The broader study showed that Sokol has the following main problems hindering the development of small and medium businesses:

- inadequate legal and regulatory framework in the field of small and medium enterprises, the need to simplify and optimize the system of taxation, reduce tax pressure;
- lack of integrated support of the beginners, which allows, on the one hand, to have free access to resources, and on the other – to get basic knowledge;
- low potential to use bank loans for replenishing circulating capital due to their high cost and inadequacy of collateral securities for banks;
- low level of training of many managers of small and medium-sized businesses and individual entrepreneurs in matters of legal, financial, tax laws;
- limited access of entrepreneurs to information about available resources, including the surplus of production space and production equipment in large enterprises, which may be involved in market turnover by small and medium-enterprises;
- a weak attraction of small and medium-sized businesses to solve social problems, and in the first place of employment.

Conducting of effective, coherent policies for the support and business development, active solution of its problems will allow to diversify

Figure 2. Industry map of the development of small businesses in the town of Sokol



1 – wholesale trade in manufactured products; 2 – wholesale trade in food; 3 – retail trade in manufactured products; 4 – food retailing; 5 – repair of motor vehicles; 6 – repair of household appliances; 7 – manufacturing of food products; 8 – publishing and printing; 9 – manufacturing of machinery and equipment; 10 – manufacturing of metal, rolling and metal products; 11 – wood processing; 12 – textile and clothing industry; 13 – building; 14 – real estate operations; 15 – transportation.

the economy, create a new driving force for economic growth of the one company town.

Priorities for development of small and medium enterprises in the one company town

In consideration of the socio-economic situation and the existing structure of the city's economy Sokol identifies priorities in the development of entrepreneurial activity:

• manufacture of food, industrial goods, consumer goods;

• building of housing, industrial and socio-cultural objects;

• wood processing and recycling of secondary raw materials;

• public and social services (health, education and social welfare);

• housing and communal services, transport activities and introduction of energy-saving technologies;

• innovation and environmental management;

• IT-technologies, development of traditional handicrafts and tourism.

The imbalance in the economy of Sokol, which is a one company town, can not be removed without the development of entrepreneurship.

The analysis showed that the development and support of small and medium businesses should be conducted in the following directions:

1. Improving the financial and credit support mechanisms to improve access to credit and investment resources (subsidization of a part of costs of small businesses in the payment of interest rate, the development of regional collateral mortgage-fund for small enterprises, promotion of the municipal district and the town to implement similar activities in the context of co-financing).

2. Creating a network of institutional infrastructure for small businesses (including a business incubator, marketing, subcontracting, information and consulting center, etc.). The solution of this problem will equalize the chances of small business with other groups of economic agents.

3. Promoting the competitiveness of local producers, supporting the export-oriented and innovative business (incentives to invest in modern equipment and training; incentives to implement quality management systems and develop cooperative ties with large enterprises).

4. Implementing measures to encourage the inflow of new labor force in small business (economic support for beginners, active promotion of small businesses, encouraging people, especially youth, to engage in business, training new entrepreneurs and personnel selection).

5. Enhancing the role of entrepreneurship in public life, its contribution to the solution of social problems of areas (promoting the establishment of business associations; attracting businessmen and their associations to develop regulatory legal acts in the sphere of economy and finance, development plans of the town and district, and various special programs, etc.).

Regulatory and legal support activities of small and medium-sized businesses and organizations that make up the infrastructure to support it, involves: a) examination of existing legal acts of local governments and legal act drafts within the scope of the interests of small and medium enterprises; b) the development and adoption of legal acts:

• defining a list of equipment intended for use by small and medium-sized businesses and organizations that make up the infrastructure to support it;

• regulating the provision of subsidies to compensate a part of expenses related to the payment of interest rate on loans obtained by small and medium-sized businesses and organizations that make up the infrastructure to support it in credit institutions of the city;

• establishing the procedure for transfer of property in the possession and use of small and medium businesses, organizations, forming the infrastructure to support it;

• other legal acts that determine the order of implementation of the Program.

Development of financial and credit support mechanism for small and medium-sized businesses includes the following measures:

a) subsidies for the payment of interest rates on loans obtained by small and medium enterprise from lending organizations, and the lease payments payable to leasing organizations;

b) provision of guarantees for the obligations of small and medium enterprises;

c) financing projects of small and medium entrepreneurship through the development of microcredit.

To support the new SME there is the assignment on the gratuitous and irrevocable basis of subsidies (grants) to establish their own business entities (except grants to state, municipal institutions, individual entrepreneurs, individuals-producers of goods, works and services for cost recovery in connection with the production of goods, works and services in part of the costs for state registration of legal entity or individual entrepreneur; acquisition of fixed assets and manufacturing equipment; rent).

Financial support for SMEs will also be maintained through the development of microfinance.

Microfinance is a non-profit organizations activity (foundations, consumer cooperatives, etc.) established to provide access of small and medium-sized enterprises and organizations of the support infrastructure to the financial resources through loans.

Target program "Development of small and medium businesses in Sokol in 2010 – 2012" provides support to about 50 investment projects of small and medium businesses:

- more than 10 projects in the manufacturing industry (tailoring shop and clothing factory, blacksmith and sewing workshops, workshops

for the production of corrugated sheets, building materials, furniture, window blocks, fuel briquettes) with the creation of 170 jobs;

- 8 projects in the field of production and distribution of electricity, gas and water with the creation of 390 jobs;

- 5 projects in the field of building (building of a tourist center, reconstruction of objects, building of economy class dwelling, country houses, the production of gypsum tiles) with the creation of 186 jobs;

- 4 projects in the trade and hotel services with the creation of 40 jobs;

- 4 companies to provide transportation services, of storage and processing of goods, leasing of logging equipment with the creation of 126 jobs;

- creation of ophthalmology center, wide-sports club, children's art center;

- 6 projects to provide community, social and personal services;

- 10 projects to develop public services (laundry, car wash, renovation and restoration of furniture, road service, etc.) with the creation of 100 jobs.

It is planned to transform Vologda "Business incubator" into an independent business-incubator in Sokol (including marketing center and the center of subcontracts). Business incubator will provide support in the form of various consultations, seminars, external incubation and business training to small businesses. Each year the incubator will contain on favourable terms 20 small businesses, which will create about 200 jobs.

Informational and methodological support for SMEs, and organizations engaged in its support, include:

– providing information and methodological support to entrepreneurs;

– promotion of best practices and business technologies (leasing, subcontracting);

– creation of a unified information management system capable to cover problems of small and medium enterprises in media;

– formation of the positive public opinion about business in general, organization of the experience sharing of doing business;

– organizing and conducting competitions, round tables, seminars and conferences on entrepreneurship, informing employers about the programs of insurance risks and responsibilities of small and medium-sized businesses to develop partnerships and mutual cooperation in the field of entrepreneurship;

– exchange of experience in business support for practical application of advanced and emerging forms and mechanisms to support small and medium businesses.

To resolve this issue the use of both traditional sources of media (radio and television programs, publications in the media on topical issues for small and medium enterprises) and interactive electronic resources and the Internet are provided for.

Advice and information support to SMEs is planned to be accomplished through an emergency legal and advice assistance to entrepreneurs, as well as consideration of their complaints on unauthorized checks conducted by law enforcement and regulatory agencies.

In this direction it is planned to establish hot lines in Sokol, the organization of mobile emergency legal assistance stations.

Preparation, training, skills development of small and medium enterprises and infrastructure to support it will be done through the implementation of such activities as:

• organization of seminars, conferences;

• organization and conducting training courses, retraining and skills;

• organization of "School for young entrepreneurs";

• creation of circles of interest to older students.

When implementing measures in the field of general business regulation by the federal and regional government, it is safe to say that

for the period 2010 – 2012 fairly high levels of development of small businesses will be reached in Sokol:

1) the number of small businesses and individual entrepreneurs will grow (2012 to 2009) half as much;

2) increase of the output volume of small enterprises (2012 to 2009) will be not less than 30% (or an average of 10% annually);

3) there will be a diversification of the structure of the urban economy, it will be less vulnerable to the emergence of new crises.

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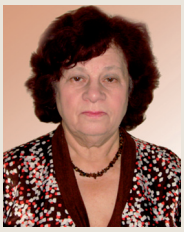
Development of small business in regions of the North-West federal district of the Russian Federation

The article represents the statistical data on the development of small business in subjects of North-West federal district for the period of 2003 – 2008. The results of the comparative analysis of the region's achievements on such indicators as quantity of the registered small enterprises per 100 thousand inhabitants, employment of workers on small enterprises, volumes of production output at small enterprises, investments in fixed capital at small enterprises are given.

Small business, small enterprises, North-West federal district of the Russian Federation, regions of the North-West federal district of the RF, development dynamics, monitoring.



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The processes of economic globalization and the global financial crisis force the Russian economy to follow the innovational way of development aimed at strengthening its competitiveness, providing high rates of economic growth, population living standards' rise. The main role in these problems' solution belongs to the diversity of the economic structures: the outstripping development of the processing sectors (first of all hi-tech ones) and of the services at the comparative decrease of the extractive industry's share. The production diversity means simultaneous development of many, not connected with each other, types of production, the expansion of the products' assortment produced by one enterprise, etc. The considerable contribution to the expansion of the consumer goods' and services' assortment can be brought by the small-scale business' development.

In this research the results of the comparative analysis, carried out for studying small-scale business' development in the regions of the North-West federal district of the Russian Federation for the period from 2003 to 2007, are represented. The analysis was based on the data of monitoring carried out by the National Institute of the System-Defined Researches of Business' Matters. This monitoring is based on the series of quarterly reports from the Federal state statistics' service and Federal fiscal service of Russia.

The results of the fulfilled comparative analysis represent the small-scale business' development in the regions of the North-West federal district according to the following parameters:

• the small-scale enterprises' quantity for 100 thousand inhabitants;

• the average number of employees at the small-scale enterprises;

• the share of employees at the small-scale enterprises in the total average employees' number;

• the small-scale enterprises' turnover;

• investments into the small-scale enterprises' fixed capital.

The small-scale enterprises' quantity in the regions of the NWFD of the RF. In *table 1* the data on the small-scale enterprises' quantity for 100 thousand inhabitants in the regions of the North-West federal district of the Russian Federation are represented. As these data are calculated for 100 thousand people it is possible to compare them in different regions, and also to compare the small-scale business' dynamics, and its development's intensity.

According to the table's data, the highest parameters on the small-scale enterprises' quantity are observed in Saint Petersburg (in 2003 the number of the small-scale enterprises made 1928.8 units; in 2004 it made

Table 1. The quantity of the small-scale enterprises for 100 thousand inhabitants in the North-West federal district of the Russian Federation

Territory	2003	2004	Increase/reduction for the period 2003 – 2004	2005	Increase/reduction for the period 2004 – 2005	2006	Increase/reduction for the period 2005 – 2006	2007	Increase/reduction for the period 2006 – 2007	Increase/reduction for the period 2003 – 2007
The Russian Federation	614.5	656.2	41.7	685.8	66.2	718.9	33.1	791.9	73.0	177.4
NWFD	962.2	1097.8	135.6	1187.1	89.3	1179.1	-8	1402.7	223.6	440.5
Archangelsk region*	344.3	381.7	37.4	*368.0*	-19.9	*406.3*	*38.3*	*505.7*	*99.6*	157.4
Vologda region	488.2	464.6	-23.6	*385.4*	-79.2	*377.4*	*-8.0*	*385.2*	*8.0*	-103.0
Kaliningrad region	586.4	680.6	94.2	*952.4*	271.8	*1142.9*	*190.5*	*1830.7*	*687.8*	1244.3
Leningrad region	731.0	749.0	18.0	*707.8*	-41.2	*659.4*	*-48.4*	*901.4*	*242.0*	170.4
Murmansk region	302.4	335.9	33.6	343.7	7.8	355.2	11.5	366.6	11.4	64.2
Nenets Autonomous district	238.1	238.1	0.0	238.1	0.0	238.1	0.0	238.1	0.0	0.0
Novgorod region	374.6	389.0	14.4	370.9	-18.1	400.5	29.6	445.1	44.6	70.5
Pskov region	604.5	499.3	-105.1	*515.8*	16.5	*502.2*	*-13.6*	*529.2*	*27*	- 75.3
Karelia Republic	558.7	600.6	41.9	654.2	53.6	654.2	*0.0*	583.2	-71.1	24.5
Komi Republic	471.5	373.3	-98.2	431.6	58.3	592.1	*160.5*	813.3	*221.2*	341.8
Saint Petersburg	1928.8	2267.8	339.0	2489.1	221.3	2397.8	-91.3	2756.5	358.7	827.7
Moscow	1829.9	1894.4	64.5	1923.8	29.4	1996.8	73.0	2060.2	63.4	230.3

* Including the parameters of the Nenets Autonomous district.

2267.8 units; in 2005 it made 2489 units, in 2006 it made 2397.8 units; and in 2007 it made 2756.5 units). These parameters almost twice exceed the average indices on the small-scale enterprises' quantity in the regions of the North-West federal district of the Russian Federation and are higher than the corresponding parameters in the city of Moscow.

In 2003 the highest parameters on the small-scale enterprises' quantity were recorded in Leningrad region (731.0 units). The parameters in the Pskov (604.5 units for 100 thousand people) and in the Kaliningrad (586.4 units for 100 thousand people) regions are also high. However by the year of 2007 the small-scale enterprises' quantity in the Kaliningrad region had sharply risen, and made 1830 units, that was 1244.3 units more than the level of the year of 2003 and was almost twice higher than the parameters in Leningrad region (901.4 units).

It is necessary to note the positive parameters' dynamics in Komi Republic which in 2007 ranked third in the District (813.3 units). The negative dynamics was observed in the Vologda and the Pskov regions.

The number of employees at the small-scale enterprises in the regions of the NWFD of the Russian Federation. The results of the fulfilled analysis are represented in *table 2.*

According to the parameters of the years 2003 and 2007, the number of employees in the District increased for 13.6% that is lower than the corresponding parameter in the Russian Federation as a whole (23.7%). The analysis of the number's dynamics in the NWFD regions in comparison with the dynamics in the NWFD as a whole shows the intensive increase (for 131.8%) of employees at the small-scale enterprises in the Kaliningrad region. We should note that the number of employees at the small-scale enterprises in the Kaliningrad region in comparison with the parameters in Leningrad region made 45% in 2003, and made 89% in 2007.

As to Leningrad region, the increase of the employees' number made 16.3% in 2007, in comparison with 2003, that exceeded the average indices in the NWFD.

The second high parameter of the increase of the employees' number was observed in the Archangelsk region (77.4%). The Archangelsk

Table 2. The average number of the employees at the small-scale enterprises in the NWFD of the Russian Federation

Territory	2003	2004	2004 to 2003, %	2005	2005 to 2004, %	2006	2006 to 2005, %	2007	2007 to 2006, %	2007 to 2003, %	January – September 2007 to January – September 2003, %
The Russian Federation	7384.2	7707.1	104.4	7980.9	103.6	8480.0	106.3	9133.4	107.7	123.7	123.7
NWFD	1070.3	1085.8	101.4	1148.3	105.8	1183.2	103	1215.6	102.7	113.6	113.6
Archangelsk region	36.9	32.0	86.7	31.1	97.2	54.9	176.5	65.4	119.1	177.4	177.2
Vologda region	61.6	63.0	102.3	61.8	98.1	63.1	102.1	64.9	102.9	105.4	105.4
Kaliningrad region	54.8	67.8	123.7	104.6	154.3	116.1	111.0	127.0	109.4	231.8	231.8
Leningrad region	122.7	128.7	104.9	138.1	107.3	139.0	100.7	142.7	102.7	116.3	116.3
Murmansk region	26.8	29.8	111.2	29.9	100.3	28.7	96.0	29.9	104.2	11.6	111.6
Novgorod region	34.9	30.4	87.1	37.2	122.4	27.7	74.5	26.3	94.9	75.4	75.4
Pskov region	36.6	33.9	92.6	34.8	102.7	37.6	108.0	39.3	104.5	107.4	106.8
Karelia Republic	29.8	32.5	109.1	31.8	97.8	33.2	104.4	32.5	97.9	111.3	109.1
Komi Republic	40.8	44.0	107.8	48.6	110.5	56.1	115.4	60.0	107.0	147.1	147.1
Saint Petersburg	625.5	623.8	99.7	630.4	101.1	626.9	99.4	627.5	100.1	100.3	100.3
Moscow	1695.2	1705.3	100.6	1748.8	102.6	1776.1	101.6	1833.7	103.2	108.2	108.2

region with the parameter of 36.9 thousand people, almost equal to the parameter in the Pskov region (36.6 thous. people) in 2003, in 2007 exceeded it in 1.66 times.

In Komi Republic the considerable growth of the employees' number (for 47.1%) is also observed. Its absolute parameters in 2007 were almost similar with the parameters in the Vologda region.

The increase of the employees' number in Vologda (5.4%), Murmansk (11.6%) and Pskov (7.4%) regions, and in Karelia Republic (11.3%) is lower than the average indices in the NWFD. In the Novgorod region the number's reduction was observed; the negative dynamics (-24.6%) took place in 2007, in comparison with the year of 2003.

Considering the parameters in Saint Petersburg, it is necessary to note that the employees' number at the small-scale enterprises in the city made 58% of the total number in the District in 2003. But at the number increase for 0.3% (13.6% in the NWFD) in 2007 the share of employees at the small-scale enterprises of the city in total number in the NWFD only made 51.6% that influenced the average indices and their dynamics in the District during the considered period. The data represented in table 2, allow to compare the absolute and the comparative parameters in Saint Petersburg and in Moscow and to draw the conclusion that the dynamics of the employees' number at the small-scale enterprises in Saint Petersburg is lower than the corresponding parameter in Moscow.

The share of employees at the small-scale enterprises in the total average employees' number. According to the data of *table 3*, there was the following situation in the NWFD regions in 2007.

The share of employees at the small-scale enterprises in the total average employees' number in the North-West federal district makes 13.3% that is lower than the corresponding parameter in the Russian Federation (18.8%). At the same time there exists the considerable difference among the parameters of the District's regions.

The highest parameter (36.4%) was recorded in the Kaliningrad region. The parameters

Table 3. The share of the employees at the small-scale enterprises of the NWFD in the general average employees' number, %

Territory	2003	2004	Increase/reduction for the period 2003 – 2004	2005	Increase/reduction for the period 2004 – 2005	2006	Increase/reduction for the period 2005 – 2006	2007	Increase/reduction for the period 2006 – 2007	Increase/reduction for the period 2003 – 2007
The Russian Federation	14.8	15.9	0.9	16.6	0.7	17.6	1.0	18.8	1.2	4.0
NWFD	14.5	14.1	-0.4	14.4	0.3	14.0	-0.4	13.3	-0.7	-1.2
Archangelsk region	7.7	6.8	-0.9	6.7	-0.1	11.8	5.1	13.9	2.1	6.2
Vologda region	12.6	13.0	0.4	13.1	-0.1	13.4	0.3	13.8	0.4	1.2
Kaliningrad region	18.8	22.8	4.0	32.9	10.1	32.5	-0.4	36.4	3.9	17.6
Leningrad region	22.1	23.4	1.3	24.9	1.5	25.2	0.3	26.1	0.9	4.0
Murmansk region	7.7	8.8	1.1	8.8	0	8.4	-0.4	9.1	0.7	1.4
Nenets Autonomous district	3.2	3.9	0.7	3.1	-0.8	3.6	0.5	3.6	0	0.4
Novgorod region	14.6	12.8	-1.8	15.7	2.9	11.8	-3.9	11.3	-0.5	-3.3
Pskov region	14.8	14.0	-0.8	14.6	0.6	16.1	1.5	17.5	1.4	2.7
Karelia Republic	10.8	12.3	1.5	12.5	0.2	13.1	0.6	12.9	-0.2	2.1
Komi Republic	10.1	11.3	1.2	12.5	1.3	14.3	1.8	15.2	0.9	5.1
Saint Petersburg	32.1	31.7	-0.4	31.9	0.2	31.5	-0.4	31.0	-0.5	-1.1
Moscow	35.7	36.0	-0.3	36.0	0	35.5	-0.5	35.5	0	-0.2

in Saint Petersburg (31%) and in Moscow (35.5%) are very close. These relative parameters' closeness somehow levels the considerable difference among the absolute parameters in Saint Petersburg and in Moscow (see tab. 2), that can be explained by a higher parameter of the total employment in Moscow.

The parameter in Leningrad region (26.1%) almost twice exceeds the average level in the NWFD. The parameters in Pskov (17.5%), Archangelsk (13.9%) and Vologda (13.8%) regions also exceed the total parameters in the District (13.3%).

We can conclude that the comparable parameters are the growth of the employees' number and the dynamics of the share of employment at the small-scale enterprises in the total number of employees (instead of their absolute value owing to the peculiarities of the compared regions).

The production volumes of the small-scale enterprises in the NWFD regions of the Russian Federation. The absolute data about the volumes of the small-scale enterprises' productions in million rubles characterize the situation in each subject, but it is difficult to judge directly about the advantages or disadvantages of each region in comparison with other regions according to them. They differ in population, small-scale enterprises' number and average employees' number. So for revealing a full picture of achievements in each subject it is necessary to take into account both the mentioned and other factors, promoting positive dynamics of the production volumes. Such analysis is expedient for carrying out at the concrete research task's solution.

In this work we have carried out the comparative analysis on the basis of the comparative parameters reflecting the dynamics of the production volumes in the regions during the considered period. This dynamics is represented in *table 4*.

The summarized data for 2007 in comparison with 2003 show that in the NWFD the parameter of the production volume in 2007 increased in 6.4 times in comparison with this parameter in 2003; in the Russian Federation it increased in 9.1 times.

As to this parameter in the NWFD regions of the Russian Federation, it is necessary to note, that the highest parameter of the production growth rate in 2007 in comparison with 2003 was in the Kaliningrad region where it made

Table 4. Small-scale enterprises' turnover in the NWFD regions of the Russian Federation

Territory	2003, million rubles	2004, million rubles	2004 to 2003, %.	2005, million rubles	2005 to 2004, %	2006, million rubles	2006 to 2005, %	2007, million rubles	2007 to 2006, %	2007 to 2003, %
The Russian Federation	1207148.5	2273878	188.3	6836943.1	300.7	8766159.8	128.2	10987506.1	125.3	910.2
NWFD	191232.5	290751.1	152	673856	231.7	887306.5	131.7	1227364.5	138.3	641.8
Archangelsk region	6898.7	6782.7	87.6	17 524.1	258.4	36330.6	190.0	31174.2	125.6	451.8
Vologda region	10808.5	13323.2	110.5	40 336.7	302.8	49640.7	111.3	58 22.3	106.8	540.5
Kaliningrad region	13433.5	27790.2	186.5	129 352.9	465.5	153344.3	110.4	197769.3	116.9	1472.2
Leningrad region	14220.2	17657.7	109.9	46514.1	263.4	61905.7	121.5	72907.4	107.4	512.7
Murmansk region	6541	9373.5	129.1	34018.2	362.9	40449.5	108.8	48860.7	110.3	747
Nenets Autonomous district	539.4	347.1	57.3	362.9	104.6	799.8	199.7	584.4	67.1	108.3
Novgorod region	7200.4	6409	79.2	13920.8	217.2	19569.0	126.7	23845.7	112.4	331.2
Pskov region	4983.5	6112	110.1	18118.3	296.4	19493.6	98.6	23141.5	108.7	464.3
Karelia Republic	5735.7	6163.7	96.8	28 224.5	457.9	37487.2	121.0	47813.6	115.2	833.6
Komi Republic	12832.5	15839.8	111.1	31 617.5	199.6	43597.4	125.0	58612.8	122.6	456.8
Saint Petersburg	108578.5	102892	84.8	314 228.9	305.4	425488.7	123.3	645000.4	137.2	594
Moscow	215919.6	408030	171.3	2323206.4	569.4	3000244.3	118.2	3403724.2	104.3	1576.4

1472.2% that exceeded the corresponding parameters in the Russian Federation (910.2%) and in the North-West federal district (641.8%).

Let's note, that the Kaliningrad region's "starting" parameters in 2003 were also high (13433.5 million rubles) and it ranked second after the Leningrad region (14220.2 million rubles). But in 2007 the Leningrad region ranked second after the Kaliningrad region both in turnover (72907.4 against 197769.3 million rubles) and in growth rate (512.7% against 1472.2%). The absolute parameter of the turnover in the Kaliningrad region(197769.3 million rubles) was also the highest among the other regions' parameters, having made 16% of the turnover in the NWFD of the Russian Federation and 34% of the turnover in 9 subjects (except Saint Petersburg).

Karelia Republic ranked second in the growth rates of production; in 2007 its volumes made 833.6% in comparison with the production volumes in 2003. Karelia Republic with the absolute turnover parameter of 5735.7 million rubles in 2003 followed the Novgorod (7200.4) and the Archangelsk (6898.7) regions, but in 2007 considerably left behind these regions (47813.6 million rubles against 23845.7 and 31174.2 accordingly).

The third region with the parameters exceeding the average indices in the NWFD of the Russian Federation is the Murmansk region. In 2007 the production volume in the Area in comparison with 2003 made 747% that is lower than the total parameter in the Russian Federation (910.2%), but it is higher than the parameter in the NWFD of the Russian Federation (641.8%). In 2003 the Murmansk region had the absolute turnover parameter (6541 million rubles), which followed the parameters in the Novgorod region (7200.4 million rubles) and in the Archangelsk region (6898.7 million rubles). But in 2007 the turnover results in the Murmansk region reached 48860.7 million rubles that considerably exceeded the parameters in the Novgorod (23845.7 million rubles) and in the Archangelsk (31174.2 million rubles) regions.

The second group of the regions with the close dynamics' parameters in 2007 compared with 2003 is made up by the following regions: Saint Petersburg (594%), Vologda (540.5%) and Leningrad (512.7%) regions. These parameters are lower than the parameters both in the Russian Federation and in the NWFD of the RF.

Saint Petersburg has more than half of the District's turnover: 56% in 2003 and 52.6% in 2007. At the same time Saint Petersburg essentially concedes to Moscow not only in the turnover volumes, but also in its dynamics during the considered period.

The third group was made by subjects with the lower, than in the second group, dynamics of volumes in 2003 – 2007: the Pskov region (464.3), Komi Republic (456.8), and the Novgorod region (331.2).

Investments into the small-scale enterprises' fixed capital in the NWFD regions of the RF. These data are represented in *table 5*. The data analysis of the investments' dynamics in 2003 – 2007 in the regions allows drawing a number of conclusions. So, the investments' growth in the Russian Federation makes 383.8%, in the NWFD of the RF it makes 315.1%.

According to these parameters it is possible to form the first group of the regions: the Kaliningrad region (609.6%), Komi Republic (580.1%), the Archangelsk region (565.2%), the Vologda region (357.2%) and Karelia Republic (301.1%). In the Kaliningrad region the parameter of the investments' dynamics in 2007 to 2003 is the highest (609.6%) in comparison to the parameters in the Russian Federation (383.8%), and in the NWFD of the Russian Federation (315.1%). It is necessary to note, that in 2003 the Kaliningrad region had a high absolute "starting" parameter (535.2 million rubles), only conceding to Komi Republic (669.3 million rubles) and Leningrad region (584.4 million rubles). But in 2007 it left behind Leningrad region in 3.16 times (3263.5 to 1034.2 million rubles), having conceded 16% to Komi Republic (3263.5 to 3882.4 million rubles), at a difference of 20% in 2003.

Komi Republic with the parameter of the investments into a fixed capital of 580.1% (2007 to 2003) shows high parameters in the investments' volume during the considered period. In 2003 its absolute "starting" parameter (669.3 million rubles) is higher, than in other regions of the NWFD of the Russian Federation. In 2007 the Republic has the highest parameter of 3882.4 million rubles, which exceeds the parameter in the Kalinin-

Table 5. Investments into the small-scale enterprises' fixed capital in the NWFD regions of the Russian Federation

Territory	2003, million rubles	2004, million rubles	2004 to 2003, %	2005, million rubles	2005 to 2004, %	2006, million rubles	2006 to 2005, %	2007, million rubles	2007 to 2006, %	2007 to 2003, %
The Russian Federation	40392.6	62160.8	138.2	77420.0	110.9	106703.8	125.9	155045.0	132.9	383.8
NWFD	4517.9	7233.0	160.1	9412.8	130.1	10529.3	111.9	14235.1	135.2	315.1
Archangelsk region	134.6	265.1	175.4	172.3	58.1	394.7	210.0	760.7	173.7	565.2
Vologda region	436.2	580	119.2	981.2	150.9	702.7	64.8	1558.2	201.2	357.2
Kaliningrad region	535.3	1254.2	211.3	2003.5	140.9	2556.9	118.9	3263.5	115.7	609.6
Leningrad region	584.4	754.5	114.3	669.8	76.8	626.2	85.3	1034.2	150.6	177
Murmansk region	98.0	92.9	85.4	192.5	185.5	57.0	264.8	225.2	36.9	229.8
Nenets Autonomous district	11.7	18.5	140.7	3.2	14.8	4.1	116.1	5.1	114.2	43.6
Novgorod region	146.9	285.8	173.2	243.8	75.7	198.3	73.3	252.2	117.3	171.7
Pskov region	110.4	303.7	247.0	411.9	121.4	275.3	61.2	200.3	66.6	181.4
Karelia Republic	110.7	106.2	86.4	214.5	182.6	271.9	115.5	333.3	110.7	301.1
Komi Republic	669.3	822.4	110.6	1 405.4	153.1	2019.1	130.3	3882.4	175.3	580.1
Saint Petersburg	1680.4	2749.7	146.4	3 114.7	99.8	2923.2	85.4	2720.0	84.2	161.9
Moscow	6029.6	5186.5	78.0	7037.5	122.0	6968.7	90.6	5264.7	69.4	87.3

Table 6. Volume of investments into the small-scale enterprises' fixed capital in view of the cost of the consumer goods and services for inter-regional comparisons of the population's purchasing capacity in the NWFD regions of the Russian Federation

Territory	January – September, 2003, in % of the average in the RF	January – September, 2004, in % of the average in the RF	January – September, 2005, in % of the average in the RF	January – September, 2006, in % of the average in the RF	January – September, 2007, in % of the average in the RF
The Russian Federation	100.0	100.0	100.0	100.0	100.0
Archangelsk region	32.6	45.0	23.5	39.1	49.5
Vologda region	40.0	115.9	153.7	76.6	124.4
Kaliningrad region	198.3	294.9	363.8	340.0	385.0
Leningrad region	127.5	106.6	74.4	50.4	69.8
Murmansk region	25.7	17.5	30.5	64.0	22.5
Nenets Autonomous district	58.7	65.5	9.1	8.6	8.7
Novgorod region	78.3	103.4	73.7	42.5	36.4
Pskov region	59.5	109.6	121.9	57.1	28.3
Karelia Republic	50.6	34.3	59.5	53.6	44.3
Komi Republic	180.9	158.5	227.3	234.9	313.7
Saint Petersburg	120.6	127.6	118.4	80.6	38.0
Moscow	162.4	76.2	84.7	61.3	48.8

grad region for 16% and the parameter in Saint Petersburg for 42.7%. It is possible to presume, that the mentioned dynamics positively affected such parameters, as the average number growth and the turnover dynamics (456.8%) in 2007 in comparison with 2003.

The second group of the regions includes the Murmansk region (the parameter of 229.8%), Pskov (181.4%), Leningrad (177%), and Novgorod (171.7%). The comparison of the investments' dynamics and other parameters can reveal their interdependence.

The data from *table 6* specifies the data analysis from *table 5* with mentioning the investments' volume to the small-scale enterprises' fixed capital in view of the cost of the consumer goods and services for inter-regional comparisons of the purchasing capacity. The comparative analysis of the relative parameters of the investments' volume to a fixed capital in the District's regions in comparison to the average indices in Russia which makes 100%, allows judging various achievements of the regions in this sphere. So, the average indices' excess is revealed in the Kaliningrad region in 3.85 times, in Komi Republic in 3.14 times, in the Vologda region in 1.24 times. In other regions these parameters are lower than the all-Russian level.

Small-scale business is an integral part of the innovational economy's development. Its advantage in comparison with the larger companies consists in its flexibility and mobility. Due to this small-scale business gives the opportunity for innovations' creation and introduction, which serve as the basis for the growth of the regions' and the country's economic competitiveness and for the increase of the Russian citizens' standard of well-being.

The analysis showed that different regions of the North-West federal district had different opportunities of the small-scale business' development during the considered period. To a greater or lesser extent the Districts' regions were differentiated in the second half of the year of 2008 in the conditions of the economic and financial crisis; it will take a lot of time to find the way out from it, and this way out should be combined with the movement to the innovational economy.

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The Vologda region: prospects of territory's demographic development

The article considers the demographic situation in the Vologda region. Based on the results of variable demographic prognosis an analysis of its development prospects is made.

Vologda region, demographics, population projections, the population of work-age work capacity, productivity.

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Since 1992 population of Russia has been annually declining. Region being the most adverse in terms of the demographic situation have lost time about 10 – 15% of their residents for this time[1]. The population of the whole country has decreased from 1992 to 2009 at 6.6 million (4.5%), where 4.9 million people is the share[2] of 2000 – 2009.

Population decline is an unfavorable process for the country as a whole and for each of its region in particular. First, poor population size poses a threat to geopolitical catastrophe in the country with a large area[3]. Population density is already less than one person per square kilometer at two-thirds of Russian territory. Further reduction of the population will be the destruction factor of the state's integrity, the national security of its citizens. Secondly, the reduction of the working age population will require significant effort to modernize production and improve productivity to maintain and increase the release of GDP.

The task of overcoming the demographic crisis is a priority for the country. Reducing the rate of attrition, population size stabilization and building environment for its growth are the

[1] The concept of demographic policy of the Russian Federation for the period up to 2025 [Electronic resource]: ratified by Decree of the Russian Federation President dated October 9, 2007 № 1351. – Access mode: http://mon.gov.ru/dok/ukaz/vosp/4202/

[2] The central statistical database of the Federal State Statistics Service [Electronic resource]. – Access mode: http://www.gks.ru

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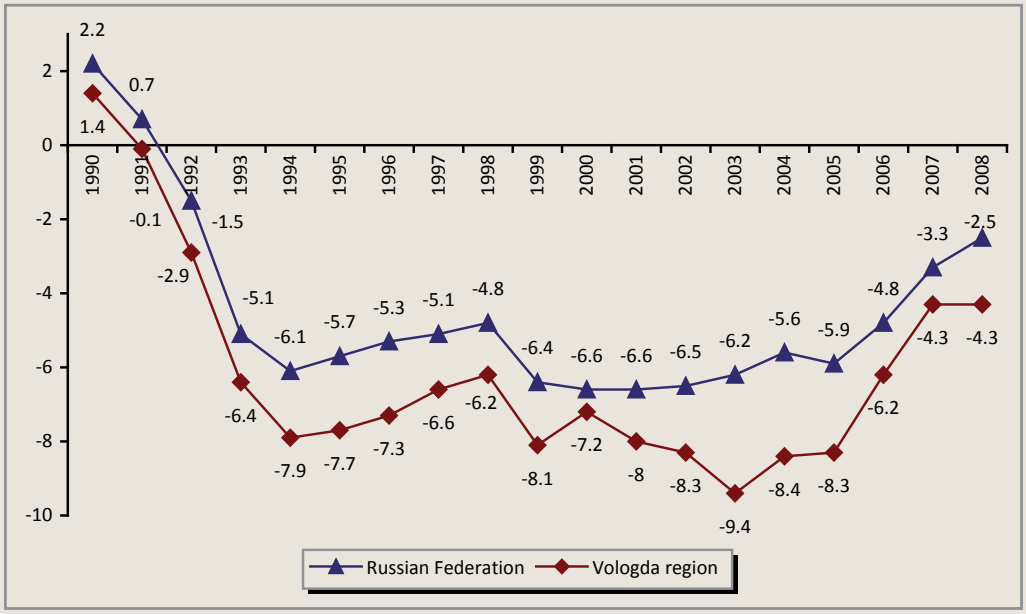
Figure 1. Natural increase (decrease) of population, per thousand



Source: Internet site of the Federal State Statistics Service.

main objectives of population policy, outlined in the "Concept of long-term socio-economic development of the Russian Federation until 2020"[4] and "Concept of Demographic Policy of the Russian Federation until 2025"[5]. According to these documents to enhance the effectiveness of taken measures, along with regional population programs since 2006 activities within the priority national projects in education, health and housing policies are implemented. However, current growth rates of fertility and mortality are low. It can be assumed that the annual population losses from natural attrition will take place in the near future.

The Vologda region is one of those regions, where demographic trends are similar to nationwide. Since early 2000's the annual number of births has been increasing in the region, since 2003 the annual number deaths has become fewer. Nevertheless, in the period from 2004 to 2009 the population decreased by 37 thousand people (2.9%), which is higher than the rate of population decline in the country over the same period (1.6%).

The current trend of population downsizing in the Vologda region originated in 1991. Its maximum value was recorded in 2003, after that the imbalance in the birth and death rates are gradually declining *(fig. 1)*.

The main reason for the conservation of natural attrition is high mortality rate of the population *(tab. 1)*. In 2007, this figure in the Vologda region has exceeded the birth rate 1.4 times. Based on the fact that in the period from 2002 to 2007 there was reduction of reproductive age women number from 346 to 336 thousand it can be assumed that in the medium term, the birth rate in the region will change slightly. Therefore, the basic steps to create a positive natural growth should be aimed at reducing overall mortality rate.

Low fertility and declining mortality would contribute to change the demographic structure – for example, reduce the proportion of orking-age population and an increase in the proportion of the population of retirement age.

[4] Concept of long-term socio-economic development of the Russian Federation for the period up to 2020 [Electronic resource]: ratified by Decree of the Russian Federation Government dated November 17, 2008 № 1662-p. Access mode: http://www.economy.gov.ru/minec/activity/sections/strategicPlanning/concept/

[5] The concept of demographic policy of the Russian Federation for the period up to 2025 [Electronic resource]: ratified by Decree of the Russian Federation President dated October 9, 2007 № 1351. – Access mode: http://mon.gov.ru/dok/ukaz/vosp/4202/

Table 1. Vital statistics

Territory	2002	2003	2004	2005	2006	2007	2008
The number of births per 1000 people							
Russian Federation	9.7	10.2	10.4	10.2	10.4	11.3	12.1
North-West federal district	8.9	9.4	9.6	9.3	9.4	10.2	10.7
Vologda region	10.1	10.4	10.7	10.5	10.9	11.6	12.0
Number of deaths per 1000 people							
Russian Federation	16.2	16.4	16	16.1	15.2	14.6	14.6
North-West federal district	17.7	18.4	17.8	17.7	16.6	15.6	15.7
Vologda region	18.4	19.8	19.1	18.8	17.1	15.9	16.3
Natural increase (decrease) per 1000 people							
Russian Federation	-6.5	-6.2	-5.6	-5.9	-4.8	-3.3	-2.5
North-West federal district	-8.8	-9.0	-8.2	-8.4	-7.2	-5.4	-5.0
Vologda region	-8.3	-9.4	-8.4	-8.3	-6.2	-4.3	-4.3

Source: Internet site of the Federal State Statistics Service.

A general idea of possible changes in the demographic situation gives a forecast of the population size and composition. The results of predictive studies can be used as an information base for regional policy, as well as an approximate estimate of its effectiveness. In addition, data on the number and composition of the population should be used in research on the socio-economic topics. The forecast identifies the most critical moments when additional government support is necessary for preventing demographic problems.

To study the demographic prospects of the Vologda region a predictive study of population size and composition for the period up to 2020 was held based on the advancing age method6. Reliability of the estimates got with the help of this approach is due to natural demographic feature: the near future of the population is embedded in its sex and age structure. I.e. for example in the construction of the medium-term forecast the majority of people is already known, the uncertainty lies only in the dynamics of individual demographic components (fertility, mortality, migration, etc.).

The forecast is made in four versions (inertial scenario, scenarios of management optimization, mortality reduction, fertility increase). Each of them takes into account possible changes in fertility, mortality and migration. Marriage and divorce rates of the population, as well as socio-economic factors (e.g., income, education, housing, etc.) were not explicitly considered. It can be assumed that their influence is reflected in the number of population births and deaths.

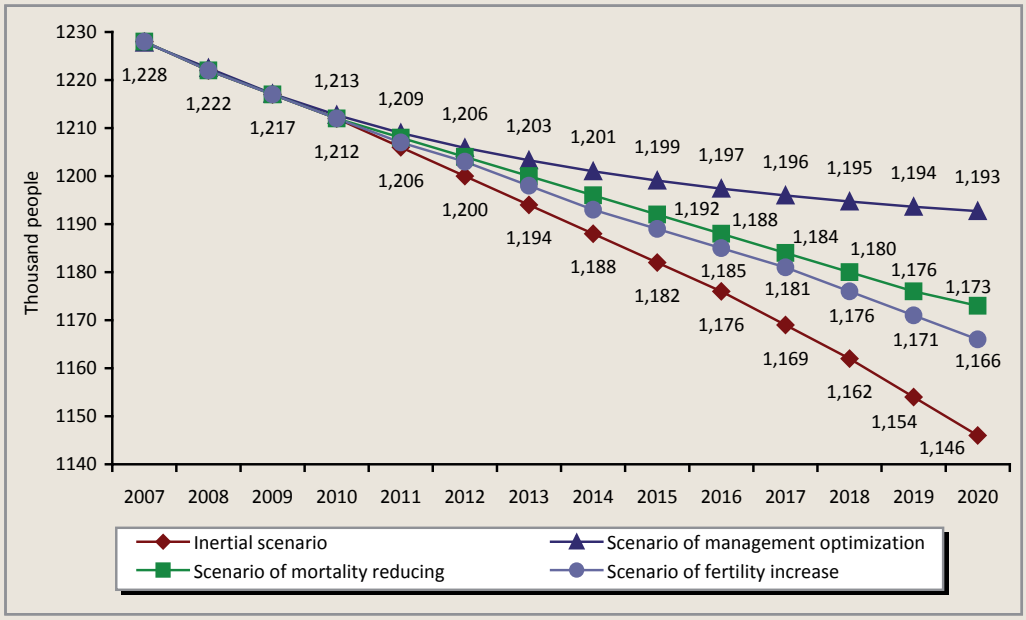
The inertial scenario assumes maintenance of the basic vital indicators – birth and death rates – in the period of forecasting (2008 – 2020) at the level of 2007 (forecast base year).

The scenario of management optimization is designed with a glance of target demographic policy presented in the program of the RF Government[7]. According to this document, the total fertility rate increased from 1.45 (2008) to 1.6 (2012), and the mortality reduction is planned

[6] The method consists in "tracking" the movement of individual cohorts over time in accordance with the set-governmental (forecast) parameters of fertility, mortality and migration. Data on the number of individual sex-age groups move every year into the next age, with the corresponding coefficient is the survival and the number of zero-age group is determined based on the forecast of the annual number of births and infant mortality. More information about the method can be found in the book Practical demography / ed. L.L. Rybakovsky. – M.: DSP, 2005. – 280 p.

[7] Concept of long-term socio-economic development of the Russian Federation for the period up to 2020 [Electronic resource]: ratified by Decree of the Russian Federation Government dated November 17, 2008 № 1662-p. Access mode: http://www.economy.gov.ru/minec/activity/sections/strategicPlanning/concept/

Figure 2. Population size forecast of the Vologda region according to four different scenarios, thous. people



Sources: Age and sex composition of the Vologda region in 2007: stat. newsletter / Vologdastat. – Vologda, 2008. – 79 p.; population forecast results.

in several areas, particularly among working-age population by 9% (2012 to 2008). On these grounds a uniform annual change in the values of indicators and the goal achievements by the deadline (2012) are used in the prediction. Moreover, it is expected that the decrease in overall mortality may be the same rate as the population of working age. Further dynamics – from 2012 to 2020 – is based on a similar principle, in the assumption of population policy. In such circumstances, by 2020 the total fertility rate will be 1.9 and total mortality will decline by about 31% compared with the level of the forecast base year.

Scenarios for mortality reducing and fertility increasing are "short" versions of the management optimization scenario. That is the demographic measures in policies are implemented in them only in one direction – either mortality reducing or fertility increase. The value of one of the indicators remains static during the entire projection period at the level of 2007, and another is equally changed by the same rates as in the "full" version of the forecast. This provides the quantitative assessment of selected demographic measures.

The migration increase in the years preceding the base year was negligible (less than 0.1%), so in all the calculations there was an assumption that there is no migration during the whole projection period.

Under any of the considered options of the demographic situation development the population size of the region in 2020 will decrease relative to the indicator in 2007 *(fig. 2, tab. 2)*. The "lower" assessment in this forecast is the value of 1,146 thousand people by 2020 (inertial scenario), and the "upper" is 1,193 thousand people (scenario of management optimization). Within the boundaries of this interval are the forecasted values of population size, obtained by the scenario of mortality reducing and the scenario of fertility increase. This confirms the predominant role of comprehensive measures to improve the situation rather than unidirectional ones.

Comparison of different scenarios shows that the structure of the region's population in the current base year (2007) is extremely unfavorable. Even with support from the state significant deviation for the better is possible

Table 2. Variable demographic forecast for the Vologda region

Forecast scenarios	Population size, thousands people			Share of able-bodied population, %			Economic burden, pers. of disabled age per 100 able-bodied persons		
	2007	2012	2020	2007	2012	2020	2007	2012	2020
Inertial	1,228	1,200	1,146	63	61	55	58	65	81
Management optimization		1,206	1,193		60	53		65	87
Mortality reducing		1,204	1,173		60	54		65	84
Fertility increasing		1,203	1,166		61	54		65	84

Sources: Age and sex composition of the Vologda region in 2007: stat. newsletter. – Vologda, 2008. – 79 p.; population forecast results; author's calculations.

only after several years of population policy measures (in the chart the gap in forecast values of scenarios begins since 2010).

Throughout the whole forecast period the decrease of working age population is expected. Various scenarios of events show roughly the same values for this indicator, due to the length of the forecasting period. The number of working age people will be 729 thous. in 2012 and 636 thous. people in 2020 (when there were 776 thous. people in 2007).

One of the consequences of demographic structure change in the years 2008 – 2020 will be the reduction of working-age population share in the total population – the number of working age people will not exceed the number of disabled. Due to this the economic burden on the working age population will increase to about 84 disabled people per 100 able-bodied people.

By 2020 on any of the scenarios the proportion of persons aged 60 years and older will rise from 17 to 23%. According to the UN scale of population aging[8], the population of the area is considered "old" if the share of this category of people exceeds 7% of the total. In other words, in the period from 2008 to 2020 the population aging of the region will continue. The consequences of this process will be meaningful to the demographic ("base" for low fertility and high mortality), economic (slowdown in labor substitution, increase of load for working age population) and social (increased spending on social welfare, increasing pressure on social infrastructure) components of society.

Age and sex pyramid based on the inertial scenario cases reflects the most likely changes in the population structure with preservation of natural reproduction regime of the current base year *(fig. 3)*. Asymmetrical forms of the pyramid in both cases show the uneven replacement of generations. The narrowed part of the pyramid in 2007 is the result of adverse demographic trends (low fertility, high mortality) in the past. For example, the "trough" in the age range from 5 to 10 years are people born in 1997 – 2002 (in this period there was a decrease in fertility and increasing mortality), from 60 to 65 years – generation of 1942 – 1947 (war and early postwar years).

In the years 2008 – 2020 further increases of gender imbalance is expected, according to which by the beginning of 2020, in the Vologda region there will be 100 women per 82 men (in 2007 – 85).The number of women of reproductive age in the region will be declining every year – an average of 17% for the entire period. In such circumstances, the birth rate can be raised only by revising the reproductive attitudes of the population to a greater number of children per family – two or three children or more[9] (currently the one-child family model dominates).

Economic potential of the Vologda region, as well as any other RF subjective depends, primarily, from human resources[10]. Additional research

[8] Demographical conceptual dictionary / ed. L.L. Rybakovsky. – M.: DSP, 2003. – 352 p.

[9] Population reproductive potential of the region: status, trends and prospects / team of authors led by V.A. Ilyin. – Vologda: VSCC CEMI RAS, 2005. – 208 p.

[10] Spatial aspects of the region's development / under the general ed. of V.A. Ilyin. – Vologda: VSCC CEMI RAS, 2008. – 298 p.

Figure 3. Age and sex composition of the Vologda region
(left – at the beginning of 2007, right – at the beginning of 2020, pers.)

Sources: Age and sex composition population Vologda 2007: stat. newsletter / Vologdastat. – Vologda, 2008. – 79 p.; population forecast results.

in the context of districts of Vologda region was performed with emphasis on the possible dynamics of the working age population. For each of the municipalities a separate population forecast by the advancing ages according to the inertial scenario of the situation was built. Thus, we have obtained approximate number of prospective residents of working age in the districts and their contribution to the total workforce of the region.

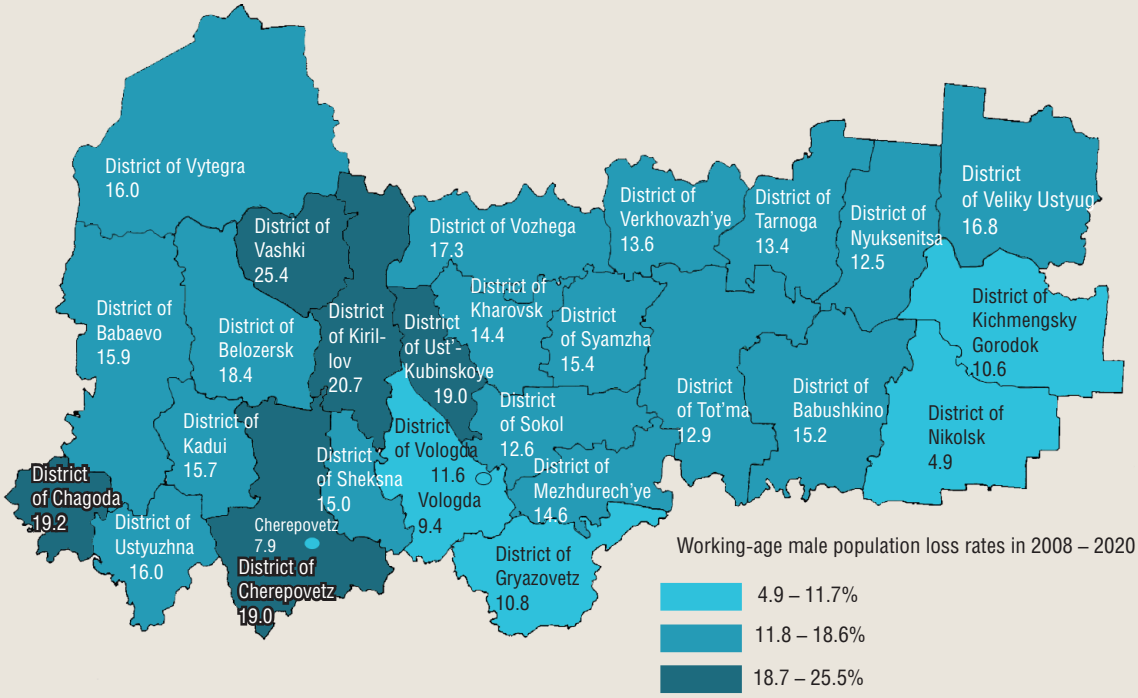
According to the forecast for the period from 2008 to 2020 in all municipalities of the region there will be reducing of working age population. The rates of decline in this category will differ both by the territorial and by gender basis *(fig. 4, 5)*. Changes in decline by the end of the forecasting period will make the following ranges: for male population – from 4.9% (Nikolsky district) to 25.4% (Vashkinsky region), the female population – from 8.4% (Nikolsky district) to 23.5% (Vashkinsky district).

By 2020, there will be no significant changes in the distribution of number of working age people in municipalities of the Vologda region. Much of the labor force will continue to be concentrated in the cities of Cherepovetz (175 thous. people), Vologda (163 thous. people) and in the districts of: Velikiy Ustyug (32 thous. people), Vologda (27 thous. people), Sokol (27 thous. people), Gryazovetz (21 thous. people), Sheksna (19 thous. people), Cherepovetz (18 thous. people) and Vytegra (15 thous. people).

However, within each of the municipalities from 2008 to 2020 the population structure change is expected. Reducing the proportion of working-age population in the total amount will be from15% (Nikolskiy district) to 20% (Ust-Kubinskiy district). By early 2020 this figure will remain relatively high in the districts of Velikiy Ustyug (55% of the total population), Sokol (55%), Vologda (51%), Nikolsk (51%), Sheksna (51%), Totma (50 %), Gryazovetz (49%), Kichmenskiy Gorodok (49%), Tarnoga (49%), Nyuksenitsa (48%), as well as in the city of Vologda (53%) and Cherepovetz (53%).

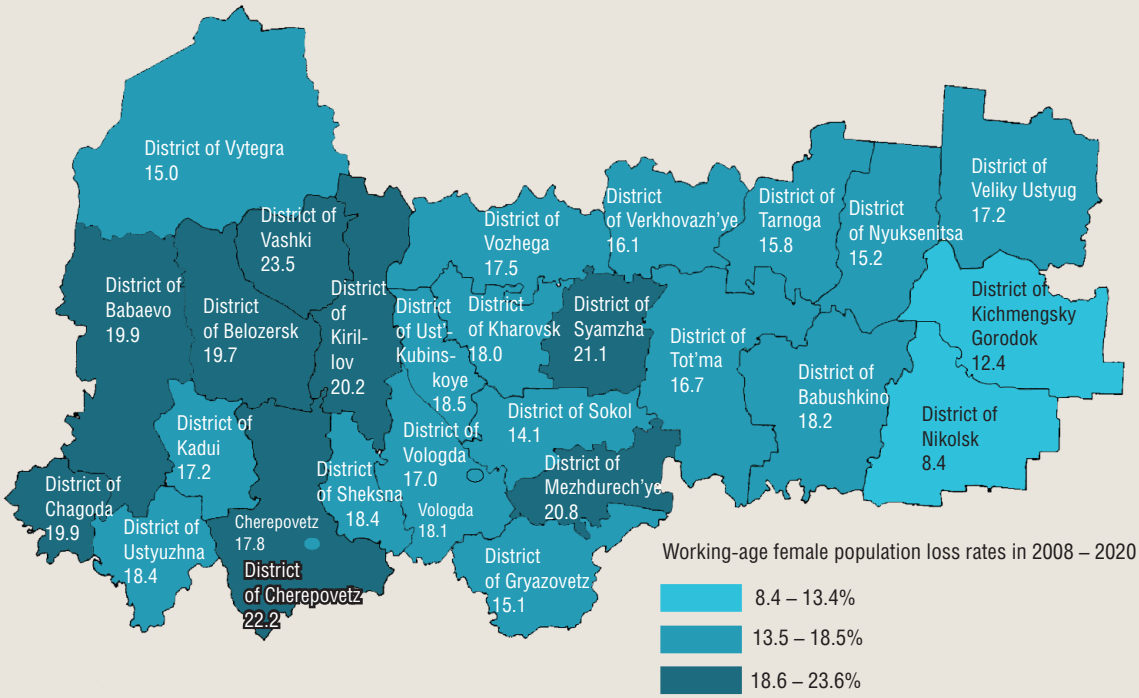
As a result of the decline in the proportion of working-age population in the districts of the Vologda region there will be increase in the economic burden on this category of people. In most

Figure 4. Comparison of working-age male population in 2007 and projected population in 2020



Source: population forecast results.

Figure 5. Comparison of working age female population in 2007 and projected population in 2020



Source: population forecast results.

municipalities the value of the index will exceed 100 disabled-age people per 100 working-age people. The most significant predominance of non-working age population will be in the districts of Vashkino (129 disabled-age people per 100 working-age people), Vozhega (123 pers.), Kirillov (123 pers.), Chagoda (124 pers.) and Cherepovetz (134 people not accounting the city of Cherepovetz).

It follows from the projection that in no districts the demographic situation is optimal for the preservation or enhancement of a major component of the labor force. Reducing the number of working age people can become significant obstacle to further economic growth. Labor force shortage, which is not so evident during the crisis of economic phenomena, in the long term, will require compensation by increasing productivity, attracting a workforce from other regions of Russia and from abroad. Typically, the first way involves raising the technological level of production and labor reallocation between sectors. Demographic projection gives a quantitative value of the required increase in productivity.

In the period from 2005 to 2007 GRP growth rate of the Vologda region was relatively stable and amounted to an annual average of about 5%. If we assume that the employment rate of working age population over the projection period (2008 – 2020 years) will not change and will be equal to about 76%, then to maintain GRP growth rates, with the declining population of working age there will be required increase in labor productivity among the employed residents of working age by 131% (2020 to 2007, an average 7% per year).

In accordance with the "Concept of long-term socio-economic development of the Russian Federation until 2020" the planned GDP increase should be done in two phases: from 2007 to 2012 – 37% and from 2012 to 2020 – 64%. In order to increase the rate of the Vologda region GRP was comparable to the GDP of Russia in the first phase there will be required an increase in productivity of the employed working-age population by 46% (2012 to 2007, an average of 8% annually), while in the second – by 88% (2020 to 2012, an average of 13% per year). For comparison: in the concept of the planned labor productivity increase in the first phase it is approximately equal to 40%, while in the second – 71%. In other words, under this approach higher rates of productivity growth would be required in the Vologda region than planned in the whole country.

Thus, in the medium term (13 years) the number of the population will reduce and its structure will deteriorate. In some municipalities in the effect of lowering the number may be: increased migration outflow, an increase in the number and percentage of empty settlements decrease in the density of population, increase in the radius of the remoteness of settlements and, in general, reducing the capacity of spatial development [11]. The deterioration of the population's structure will create additional obstacles for increasing the birth rate (reduction of the number of women of reproductive age, the growth of gender disparities) and mortality ("aging" of population, increasing population pressure on the working age population).

Currently, a chance of overcoming the demographic decline still remains. This will require comprehensive measures to improve the ideological and spiritual (socio-psychological state) of Russian society, the strengthening of a national (civilizational) identity of the Russian state, improving the quality of public policy (management of demographic processes) and social and material problems[12]. The question is, how timely would such actions be and what losses any delay threatens.

[11] Spatial aspects of the region's development / under the general ed. of V.A. Ilyin. – Vologda: VSCC CEMI RAS, 2008. – 298 p.

[12] Public policy of Russia's pullout from the demographic crisis / ed. S.S. Sulakshin. – M: Ekonomy, 2007. – 896 p.

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4. Concept of long-term socio-economic development of the Russian Federation for the period up to 2020 [Electronic resource]: ratified by the Decree of the Russian Federation Government dated November 17, 2008 № 1662-p. Access mode: http://www.economy.gov.ru/minec/activity/sections/strategicPlanning/concept/

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ENVIRONMENTAL ECONOMICS

UDC 553.98(470.21)

Economic features of projects on the hydrocarbon shelf deposits development

The article shows a spectrum of economic issues of hydrocarbon marine deposits projects' development. Basic risks at stages of projects development are analyzed and risks mitigation actions are provided. Analysis of investment expenses of marine oil and gas fields in various environmental conditions is provided; resource indicators of hydrocarbon raw materials of Russia and states of Caspian region are given. Considerable attention is paid to management of projects development taking into account foreign experience of natural resources development. The article also considers safety and environment issues at development of shelf deposits.

Oil and gas industry, risks, Arctic shelf, the Caspian Sea, project management, hydrocarbon recourses.

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Analysis of the situation regarding the status and projections of raw hydrocarbons both in Russia and abroad reveals the following threats to sustained and balanced development of oil and gas industry worldwide:

• annual production in most oil producing regions is not compensated by increases of stocks;

• exhaustion terms of active exploited reserves are imminent;

• the share of hard-produced and hard-developed deposits in reserves structure is rapidly growing;

• there are virtually no reserve facilities on land, on which it is possible to obtain significant reserves growth;

• the structure of new discoveries has sharply deteriorated: almost all of them belong to the category of small and very small accumulations of hydrocarbons.

In this regard, trends in the global oil and gas production are likely to be associated with an increased share of oil and gas from offshore fields. At present, according to experts, on the continental shelf there is 30% of world production of hydrocarbons (shelf – aligned area of the continental margin adjacent to the land having a common to it geological structure)[1].

Development and exploitation of offshore deposits by oil community is relatively recent. Since the XIX century it is California, XX Century – Mexican Gulf, North Sea, and Sakhalin Island.

The most favorable conditions for the formation of offshore oil and gas deposits are formed in shallow water, in the initial stage of formation of sedimentary rocks (the so-called sedimentation process). As an example one can give the North Sea the bottom of which is a series of huge oil-bearing provinces. Approximately 150 million years ago, in the waters of the sea percentage of oxygen was much lower than today, and it slowed the decomposition of organic substances. Organics gradually transformed into hydrocarbons under appropriate temperature, pressure, and also due to the bacteria.

Involvement of marine oil and gas resources of Russia in the industrial turnover is one of the alternative directions of development of oil and gas industry.

The area of Russia's continental shelf is 6.2 million km^2, which corresponds to 21% of the world's oceans. Total oil and gas potential of the Russian shelf, according to experts is comparable with the largest oil and gas provinces of the world. Approximately 4.3 million km^2 of this area and 0.4-0.5 million km^2 of deep water are promising for oil and gas. Of these, about 2.2 km^2 belong to the Western Arctic. According to experts' estimates, the geological oil and gas resources on the Russian shelf reach nearly 100 billion tons of standard fuel from which recoverable oil is around 12 billion tons[2]. In Russia the development of oil and gas deposits on the shelf is only beginning. More than 20 major oil and gas basins are revealed, 32 fields are discovered, including the giant ones – Shtokmanovskoye, Rusanovskoye, Leningradskoye. Analysis of the distribution of the initial aggregate resources according to water areas *(fig. 1)* shows that the largest proportion (about 67%) is in the Western Arctic seas – the Barents, the Pechora and the Kara Seas[3].

Several authors have advanced the development of offshore fields in one line with space exploration, nanotechnology and electronics – the implementation of future projects on the shelf would require from science and industry the development and production of large quantities of complex technical equipment: from ships and drilling platforms to the geophysical equipment and devices, navigational and other destination. The process of oil and gas offshore fields developing is notable for large capital intensive projects, the need to use the advanced marine technology, high-risk investments. Apart from the purely technological difficulties the professionals have to solve a number of problems associated with the stringent requirements for environmental protection.

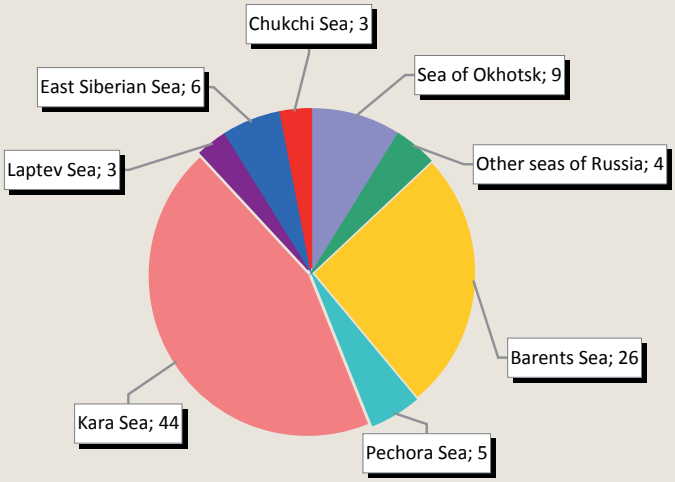
To create the competitive conditions of shelf deposits' development it is necessary to identify the main risks associated with oil and gas projects, and assess their impact on the economic efficiency of the projects.

[1] From Wikipedia – free encyclopedia.

[2] Offshore mirages: oil and gas of Russia's continental shelf // Oil and gas vertical. – 2002. – № 9. – P. 85.

[3] Grigorenko Yu.N., Mirchink I.M. Hydrocarbon potential of the continental shelf of Russia: state and problems of development // Mineral Resources of the Russian shelf. Special Issue. – 2006. – P. 15.

Figure 1. Distribution of the initial aggregate resources according to water areas of Russia, %



Thus, the geological risks associated with geological surveys are due to insufficient study of the shelf, as well as the high cost of drilling. These risks are manifested in oil and gas absence and reserves being unconfirmed.

To align these geological risks a number of economic tools can be applied. These tools include a reallocation of financial costs of subsoil users on the economic benefits from other activities, reducing the tax burden on the entire amount of costs incurred in carrying out geological exploration work (GEW). In addition, a consortium of several investors can be created, which significantly reduces costs and risks of GRW phase for each individual investor. Along with these instruments, in some cases, the state may assume a greater part of geological risks by funding GEW.

It must be pointed out that in modern Russian conditions such mechanisms of reduction geological risks are either absent altogether or their use is difficult. Thus, the Tax Code allows carrying the costs of GEW for other activities of the organization, but the transfer of losses is limited to the volume and terms and is not possible between juridical entities within the holding structure.[4]

If the state assumes a part of geological risks by funding GEW, the main problem becomes the task of determining the optimal level of costs. So, while implementing the works of regional geological study before drilling exploratory wells in the localized structures the geological risks are reducing, but the costs are increasing. The sooner the state gives the license to the subsoil user, the less money it costs. However, to compensate for higher risks it is necessary to create a more flexible tax environment. Conversely, if a license is issued for the already explored deposits, the geological risks will be largely removed, and tax environment can be quite harsh, but that the state would have to go to considerable expense. Determining the degree of state participation in GEW is a task that is complicated by the low offshore exploration.

The development phase is also characterized by high economic risks associated with high capital intensity and duration of the shelf development projects. Thus, even a slight increase in costs may lead to a substantial increase in payback periods and lower returns on invested capital. In order to reduce economic risks the contractual relationship between the investor and the state are applied in international practice, which excludes the impact of changing the current tax system on economic

[4] Donskoy S. and others. Shelf, money and risk. It is due to create conditions for the development of shelf deposits In Russia // Oil and Capital. – 2005. – № 10.

results of the project. In addition, rental taxes tied to the over profit and efficiency indexes are applied which reduce the tax burden in the period of falling prices and contribute to achieving the desired return on invested capital. For the purposes of risk sharing between investors in the initial development consortiums are also created.

The use of rent taxes in Russia is complicated due to problems with their administration.

Under the current tax system one can offer tax differentiation according to the stages of development (tax holidays for start-up and tax incentives for developed fields), the kind of the extracted raw material (oil / gas), shelf depth, etc.

In addition, to enhance the attractiveness of shelf projects, it is possible to set reduction coefficients to the rates of export duties, the use of accelerated depreciation.

Technology and transportation risks of the development phase, characteristic for the shelf of northern seas, are linked to the complexity (and sometimes with a lack of) technology, high probability of equipment failure (especially in arctic conditions), lack of experience in transportation of hydrocarbons in significant amounts, lack of tankers and icebreakers, etc. The choice of technology and technical means for the transportation of resources is determined by the influence of several factors: the geographical position of water, the depth of the sea, the volume of transported goods, the transportation distance, etc.

Prospects for development of the resources of deep-water areas with mild and moderate ice conditions (most areas of the Barents Sea) are associated primarily with the giant deep-water gas deposits, such as the Shtokmanovskoye and Ledovoye. Transportation of production from the deposits of this size can be achieved through pipelines. The big problem is that of the control and maintenance of the pipeline, located in waters which are covered with ice within six months. Here are three possible technical solutions: the first – the creation of icebreaking-class service ships which are capable to provide a year-round access to the pipe; the second – the construction of autonomous underwater technologies; and the third – duplication of the pipeline part, located in the ice part of the water area, which will provide an opportunity to maintain and repair in the most favorable period of the year.

Considering the problem of creating a transport system for these areas, it is necessary to take into account that the value of a thoroughfare is not confined to one particular object, it can serve as a basis for creating the infrastructure for the development of a number of other fields.

The areas with relatively shallow depth of seas, heavy and very heavy ice conditions (the shelves of the Okhotsk, Pechora, Kara, and East-Arctic Seas), are characterized by specific problems of pipelines laying, associated mainly with overcoming rather long, freezing shallow zone and the pipelines output on land in permafrost conditions. The complexity of this problem is aggravated by the fact that at small depths there is ice "plow-out" of the bottom5. This phenomenon can be observed on the bathymetric elevations up to 40 – 50 m. It is the most intensive at depths less than 20 – 30 m where the depth of "plow-out" may exceed 5.5 m. As a result, there is a need for substantial penetration of the pipeline and the installation of additional automatic valves in case of its damage.

The pipelines' output to the shore is complicated in permafrost areas, where it is necessary to take special measures to protect the environment. Such measures include the excavation of trenches and the creation of a gravel berm, into which the pipeline is laid or the construction of pile-trestle bridge.

Very topical is the issue of year-round monitoring and maintenance of pipelines on the shallowest areas of ice water-areas.

[5] Grigorenko Yu.N., Mirchink I.M. Hydrocarbon potential of the continental shelf of Russia: state and problems of development // Mineral Resources of the Russian shelf. Special issue. – 2006. – P. 15.

Prospects for development of shelf deposits in Russia are also associated with areas that are characterized by severe and very severe ice conditions and the relatively shallow seas. These include the Pechora Sea, the Sakhalin shelf, the Kara Sea and the Eastern Arctic waters. Between these areas there are significant differences in the conditions for the establishment of transport infrastructure. The Sakhalin shelf is particularly marked out because of a short distance of production transportation to the shore. In addition, on the coast of Sakhalin, adjacent to the offshore fields, there is a developed infrastructure for oil and gas production. In such conditions, it seems appropriate for the deposits of the Sakhalin shelf to focus on the laying of pipelines from each deposit to the shore, followed by joining them to shore pipelines. In this case there appears a full range of technical and technological problems, applicable to shallow pipelines. The only fundamental difference is the absence of permafrost in Sakhalin.

In other parts of the Arctic the situation is fundamentally different. Here there is either no communication with coastal zone, or it is underdeveloped. To solve the problem of oil transporting in these conditions it is necessary to construct loading terminals for oil tankers. At the same time to ensure year-round transportation of oil, for example, from the fields of Eastern Arctic seas, where the duration of ice-free period is limited with 1.5 – 2.0 months it will be necessary to use such non-traditional vehicles such as tankers-icebreakers.

In order to reduce the technological and transportation risks a system of insurance, the mechanism of special economic zones, concessions, reduction or exemption of the investor from import duties on imported equipment are widely used in the world practice.

Thus, the magnitude of transportation costs is mainly influenced by natural climatic and geographical and economic factors, i.e. availability of infrastructure, distance to consumers. The maximum value of transportation costs from 20 – 60 USD / t for oil and 40 – 50 USD per thousand m^3 for gas is observed in the Arctic seas, which are in heavy ice conditions and in a considerable distance from potential markets. The minimum unit costs for the Baltic and Black seas are 10 – 15 USD / t for oil.

The development phase is also characterized by environmental risks associated with the possibility of causing serious harm to the environment and the subsequent costs of its liquidation and compensation.

Environmental concerns are that the Arctic region has a fragile ecosystem, and even a slight leakage of the extracted hydrocarbons, especially on the shelf which is covered by ice of considerable thickness most of the year, lead to irreparable environmental damage and will require huge penalty payments. For example, in Alaska in 1989 sinking of the tanker Exxon Valdez filled with oil led to the largest environmental disaster at sea. The spill caused a sharp decrease in populations of fish, including salmon, and the restoration of some habitats of sensitive nature of the Arctic will require at least 30 years. The court ordered the company Exxon to pay a compensation of 4.5 billion doll.

Even a more large-scale environmental catastrophe on the shelf occurred in 2010 in the Gulf of Mexico. Controlled by British Petroleum (BP) platform Deepwater Horizon sank at the coast of Louisiana on April 22 after a 36-hour fire, which followed after a powerful explosion. Oil spill, which started after it, had caused damage in Louisiana, Alabama, and Mississippi. Actual economic damages is yet to be determined, since the methods used to eliminate the releases of oil from wells have not yet led to any positive result. The possibility of building discharging wells by August 2010 remains questionable because of the upcoming season of storms in the region. The costs of BP at eliminating the consequences of the oil platform in the Gulf of Mexico are threatening to make the amount of 37 billion doll., as predicted by Swiss bank Credit Suisse Group AS (03.06.2010).

Thus, the ecological disaster in the Gulf of Mexico dealt a severe blow to the economic

system and the company's reputation and led to the fact that in the near future, British Petroleum may be absorbed by a stronger competitor. Among the corporations that are able to acquire BP, the British company Royal Dutch Shell and the U.S. Exxon are called[6].

To reduce environmental risks the liability for damage and compensation to the investor in insurance costs of production sharing are used in the world. In Russia, the practice of environmental liability insurance is not in widespread use, largely because of the underdeveloped Russian insurance market. In general insurance risks in the development of shelves, perhaps, there would have been created a transnational pool of insurance companies, which would secure insurance cover for high-cost offshore projects[7].

When approaching the completion of deposits operations there appear the risks associated with deterioration of equipment and infrastructure. On the one hand, this leads to increased environmental risk of the investor, as there increases the probability of equipment failure and serious harm to the environment. On the other hand, after the completion of the project the state remains with the objects which are either not suitable for further use, or require substantial funds to maintain them in working condition.

There are liquidation risks, manifested in the possible lack of subsoil users and state funds for the implementation of works on liquidation. The United Kingdom and Norway which have been for a long time engaged in oil and gas production, in particular, have already faced this problem. To reduce this risk liquidation funds are created, and there is a deduction of cost of funds for the elimination of the tax base. Under Russian law the formation of a liquidation fund, the most reliable mechanism for reducing the risk of liquidation, is only possible when using the regime of production sharing.

In world practice of shelves development the principle of "one window" is often used to reduce the risks, which is implemented through a special government agency or company. Its involvement in the shelf development allows negotiating successfully with potential customers and coordinating sales of products from all shelf projects on a reciprocal basis for all investors. Such an organization or company will also assume all the problems on the investors' relations with executive and legislative governments, and through its participation in the process of preparing and implementing of the shelf projects development time approvals and hidden costs are reduced.

In addition to the organizational functions, a special company can bear the costs of the project, i.e. to be the real investor.

There are various schemes of participation of such companies in shelf projects. Thus, if the state-owned company takes part of the GEW costs, geological risks are removed, therefore, the State may require a large stake in the project or profit in its section. When the state company is not investing its own funds, the investor requires a greater return on invested capital.

Each country creates its own rules of the game, taking into account the specificity of shelf development. For example, in Brazil, where there is the lowest rate in the world of commercial success, the state-owned company Petrobras assumes the bulk of geological risks in shelf development – it conducts geological study at the expense of the state and provides geological information to investors acting under contractor's agreement.

In China, "the Chinese National Oil and Gas Company" (CNOGC) is the subject of state regulation of the shelf development project; it is involved in each of the PSA, and conducts GEW and mining on their own.

In Norway in 1972 to implement the state administration Norwegian Petroleum Directorate was established, and to implement commercial activity on the shelf in the interests of the state – a Statoil company.

[6] [Electronic resource]. – Access mode: http://www.gudok.ru/economy/news.php?ID=351955

[7] Donskoy S. and others. Shelf, money and risk. It is due to create conditions for the development of shelf deposits In Russia // Oil and Capital. – 2005. – № 10.

Table 1. Results of the investment costs evaluation, million doll.

Name	ARCTIC REGION			Caspian region
	Transshipment transportations		Direct transportations	
	Shuttle gas carrier – shipload 155 thous. m^3	Shuttle gas carrier – shipload 80 thous. m^3		
Gas platform	650	650	650	400
Underwater pipeline	200	200	200	100
LNG with infrastructure and fleet ships	2,100	2,100	2,100	2,020
Linear gas carriers – shipload thous. m^3 / ice class – number, units cost	155/ЛУ-26 1,320	155/ЛУ-26 1,320	155/ЛУ-88 2,800	155/ЛУ-28 1,760
Shuttle gas carriers – shipload thous. m^3 / ice class – number, units cost	155/ЛУ-83 1,050	155/ЛУ-86 1,320		
Terminal station – shipload, thous. m^3 cost	310 300	230 240		
Multifunction ice-breaking supply ship – number, units cost	2 160	3 240	2 160	
Safety ship	-	-	-	7
Supply ship	-	-	-	9
Total, million doll.	5,780	6,070	5,910	4,296

In the UK the shelf is characterized by a high degree of study, low prospects of commercial discoveries, developed infrastructure and is at the stage of declining production. As a consequence, government regulation is aimed at GEW stimulating and development of small deposits. The tool of state-owned companies is no longer used here.

In general, state participation in the process of shelf development is subject to very precise regularity. At the initial stage, when the shelf is poorly studied, there is lack of transport infrastructure and technology, the overwhelming number of states creates a specialized national company. This company participates in all stages of projects preparation and implementation. Subsequently, with the development of production, state-owned companies are gradually losing some of their powers and become privatized.

It is known that the development of shelf deposits require huge investments. This circumstance makes the management of the development of oil and gas offshores of special attention.

Thus, according to experts, long-term investment costs for the development of existing hydrocarbon fields of the Arctic shelf are projected at 5.78-6.0 billion doll.[8] At the same time the index return on investment is expected to reach 1.3, indicating the investment attractiveness of gas fields' projects development in the continental shelf in the Arctic.

Analysis of the investment costs of setting up offshore gas fields in the Arctic held by Federal State Unitary Enterprise "Central Research Institute named after acad. A.N. Krylov", shows that the implementation of offshore gas fields' development projects will require substantially more investment than those that are spent on field development in the less severe climate (ice) conditions. *Table 1* shows the results of the comparison ratings of investment costs, and *figures 2* and *3* are their structure in the Arctic and Caspian regions.

World experience shows that the average cost of the underwater pipeline for ice-free conditions is about 1 million dollars per kilometer. For the Arctic seas that value increases about two times. This fact is explained by increased costs of both the pipeline and the cost of its construction in difficult ice conditions.

[8] Romanyuk A. Lucrative place // North-West Marine Business. – 2007. – № 9. – P. 57.

Figure 2. Distribution of investments by development objects of the Arctic field, %

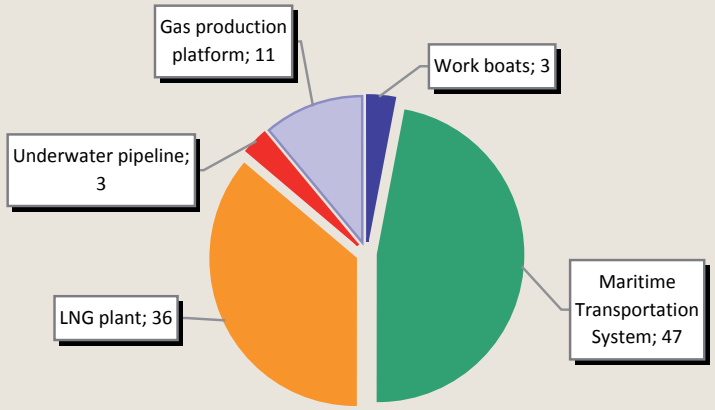
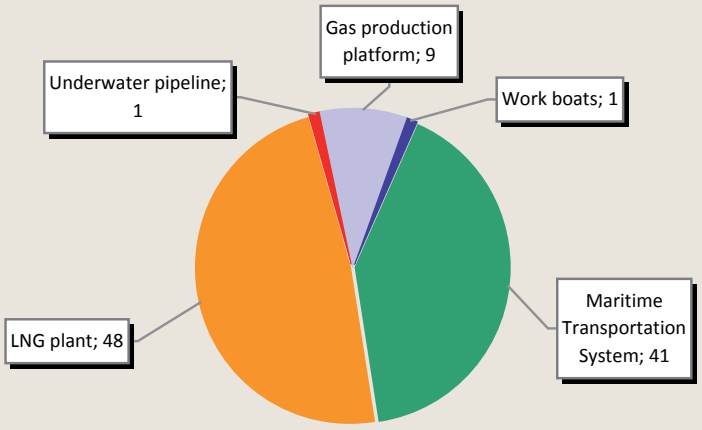


Figure 3. Distribution of investments by development objects of the non-Arctic field



As noted in the materials of CRI named after acad. A.N. Krylov, field development, located in the Arctic seas, can increase investment by about 40% compared with the deposits developed in the less severe climatic conditions. However, the organization of the transit transport schemes for liquefied natural gas may provide some reduction in investment costs, for example, by 3-4% with the ratio of ice and non-ice sites.

It is noteworthy that, in accordance with the statistical data research, the cost of gas liquefaction plants insignificantly depends on the region in which it is located. Thus, the cost of liquefaction plant of 10 billion cubic meters of gas is about 2100 million dollars (including the costs of shipping terminal in the gas storage and shipping dock, as well as fleet ships).

At the same time in the development of offshore hydrocarbon deposits in the Arctic gas liquefaction plant (taking into account the cost of shipping terminal and fleet ships) is no longer a prevailing article of investment costs. Despite the fact that the cost of the plant remains unchanged, its share in total costs decreases sharply (from 48 to 36%). However, the costs of all other objects in the field development, such as offshore gas production platform, the marine transportation system, underwater pipelines, work boats, are substantially increasing.

According to the estimation of CRI named after acad. A.N. Krylov, unit investment cost for 1 thousand cubic meters of gas produced would amount to 23 dollars in the extraction of the Arctic shelf. The level of profitability is expected to equal 1.3, indicating high investment attractiveness of such projects.

Currently, large-scale development of the Arctic shelf is a strategic direction for the Russian Federation.

Successful exploitation of hydrocarbon deposits on the Arctic shelf will make it possible:

- to create a new oil and gas producing region in the Barents Sea;
- to create an infrastructure for production and transportation of liquefied gas in the North-West of Russia;
- to create new and adapt to the arctic conditions the existing advanced technologies of integrated offshore oil and gas production (underwater mining complexes, multiphase transport of products over long distances, etc.);
- to create a regulatory framework that ensures production of hydrocarbons on the shelf;
- greatly stimulate the development of industrial science and the domestic industry to develop high technologies development of shelf deposits.

With the construction of offshore oil and gas installations on the Arctic shelf it is important that these activities were carried out within the economic, environmental regulations in accordance with the safety standards required when using modern technologies.

Oil companies operating in the Republic of Kazakhstan also proceeded to the development of the Caspian Sea. In its territory more than 200 deposits of hydrocarbons were found, 77 of which are being developed. In western Kazakhstan there are 90% of deposits are explored and 98.2% of them are at different stages of field operation.

The largest explored reserves are Tengiz, Karachaganak, Zhanazhol, Zhetybay, Kenbay, Kalamkas, Karazhanbas, Kumkol, Uzen. Their total extracted reserves are: oil – 1.565 billion tons, gas condensate – 650 million tons. Only on the Karachaganak project production of oil and gas condensate is provided in the amount of 12 million tons per year, of gas – 25 billion m^3 per year, amounting to not less than 48 billion doll. of income, including taxes and other payments to the budget.

In addition to the explored reserves the Republic of Kazakhstan has considerable expected reserves. Notable among the identified oilfields in the republic is the shelf of the Caspian Sea, where large structures are discovered – Kashagan, Kairan and Aktoty. Expected reserves of only one reservoir in the eastern part of the Kashagan field are preliminarily estimated from 25 to 60 billion barrels of extracted oil volumes. The program of stock assessment of this structure, which includes the development of geological models, options of wells constructions, technological scheme of operation will take between 3 to 5 years.

The first stage of new oil projects implementation related to the development of the Caspian Sea shelf zone, the expected reserves of oil and gas bearing structures which are able to bring Kazakhstan in the number of major world powers on stocks, and later on oil and gas production, has shown keen interest of foreign companies in their implementation, as evidenced by their direct participation in the activities carried out by a consortium "Kazakhstancaspishelf" [9].

Based on the understanding of the importance of facing challenges in the region, which as a rule, have strategic importance not only for Kazakhstan, but for all the Caspian states, the main priority should be given a comprehensive and environmentally sound development of all structural parts of the economy. The range of its aims is quite wide: the justification of economically and environmentally acceptable volumes of the annual production of various types of minerals, the depth of their processing, qualitative changes in the structure of industry.

A concrete fact, related to the conduct of large-scale works on the evaluation of oil and gas in this area is the adoption of a presidential decree № 1095 of the State program of development of Kazakhstan's shelf. It identifies three

[9] Egorov O.I., Chigarkina O.A., Baymukanov A.S. Oil and gas complex of Kazakhstan: problems of development and effective operation. – Almaty: Atymura, 2003. – 535 p.

Table 2. Oil and gas resources of the Caspian region, billion tons of equivalent fuel

Countries	Oil			Gas		
	Proved resources	Possible resources	Total	Proved resources	Possible resources	Total
Azerbaijan	0.7-2.0	5.4	6.1-7.0	0.4	1.3	1.7
Iran *	0	2.4	2.4	0	0.4	0.4
Kazakhstan	2.0-3.2	17.0	19.0-20.0	2.0-3.1	3.3	5.3-6.4
Russia *	0.04	1.0	1.0			
Russia **	0.2	1.2	1.4	0.9	1.5	2.4
Turkmenistan	0.3	6.4	6.7	3.7-5.8	5.9	9.6-11.7
Total in all countries of the Caspian Sea region	3.2-5.9	32.4	35.6-37.5	7-10.2	12.4	19.4-22.6
The same, except Russia	3.0-5.7	31.2	34.2-36.1	6.1-9.0	10.9	17.0-20.2

Source: Energy Information Administration, USA.
* Only the Caspian areas are taken into account.
** Based on the survey of the company "Lukoil" in recent years: reserves (categories ABC_1+C_2); resources (C_3, D_1, D_2).

phases: first, for 2003 – 2005, provides production of 500 thous. tons of oil a year; in the second stage – 2006 – 2010 – its size will be increased to 40 million tons per year and the third phase is associated with stabilization of production at the level of 100 million tonnes per year. However, it should be noted that the postponement of the commissioning of the Kashagan field in 2013 radically changed the assessment of all the parameters set forth in the Program.

Oil production determined in the Program was oriented to those expected reserves of hydrocarbons, which with some probability are identified to date *(tab. 2)*.

The current situation in Kazakhstan's Caspian Sea shelf resembles the process of development of oil and gas deposits of the country in previous years to some extent. Intensive increase of hydrocarbon resources production is not a reliable security in the form of contracts for the construction of new facilities to process them, companies of productive and social infrastructure.

The lag in the formation of the processing industries, transport systems (oil, gas and products pipelines), infrastructure (power lines, the enterprises of the construction industry) and social and household sector in aggregate evidence of the continuing practice of resources development by narrow departmental methods. Therefore, when designing the development of oil or gas fields the main problem is solved, namely, extracting as much as possible hydrocarbons within the shortest possible time, while forgetting about its quality characteristics, specific physicochemical parameters, potential for getting a large range of vital products.

Until recently, the resource potential of the Russian sector of the Caspian Sea was estimated as very moderate (see tab. 2). However, large-scale exploration work conducted in the past 10 years by oil company "Lukoil", which included a significant amount of seismic studies of 2D and 3D and Deep Drilling (9 exploratory wells in the 6 structures with common footage of 26.5 thous. m^2), have radically changed the attitudes and the evaluation of the NDS only of licensed blocks of "Lukoil" rose to 2 billion tons of VT. In general, in the Russian sector, they are estimated at 4–5 billion tons.

In recent years, significant amounts of hydrocarbons were discovered here. Thus, according to "Lukoil" (October 2006), proved reserves only in three fields (Khvalinskoye, Korchagin's and Filanovskiy's) exceed 570 million tons of standard fuel, but the total reservoir volume of industrial categories C_1+C_2 in the fields opened by the company are up on oil not less than 190 million tons (including about 30 million tons of gas condensate), on gas – 676 billion m^3.

North Caspian CED combines six fields, five of which (Filanovskiy's, Korchagin's, Sarmatskoye, "170 km", Khvalynskoye) are oil-gas condensate, one (Rakushechnoye) is gas condensate. Prospective area of the center is more than 6 km^2 in extent of 120 km and width of 45 – 70 km. The total reserves of natural gas deposits in the center on 01.01.2006 are as follows: category A+B+C_1 – 285.3 billion m^3, C_2 – 390.9 billion m^3. Prospective and expected resources of category C_3 – D are estimated in 1230 billion m^3. Three gas fields of the center are large marine deposits of Russia, supplies of which are about 4% of proven reserves of the Russian shelf. The degree of exploration of the central NDS is 56.4%.

Large-scale exploitation of hydrocarbon resources of the Caspian Sea should be a very important direction in the economic development of the states located in the zone of the region. In this regard, of priority importance becomes the joint implementation of projects of exploration, mining, transportation and utilization of oil and gas resources.

Assessing the overall situation in the Caspian Sea basin as a critical, and also, taking into account the uniqueness and climate significance of the Caspian Sea, the need to preserve the diversity of wildlife and prevent the negative effects of technological development, we believe that it is time to address major problems jointly by the Caspian states.

The feasibility of the most important aspects is to establish a regional integrated program, the main blocks of which were the issues of environmental management and environmental protection.

Within the scope of the regional program one could address such topical issues as:

• establishment of common principles of relations between states and oil companies on the basis of unification of the most important conditions for issuing licenses for exploration and extraction of mineral resources for the region;

• development of a legal regime of laying and operation of subsea pipelines, conduct geophysical, geological prospecting and drilling works in the shelf zone;

• creating a legal framework for cooperation among riparian states in the field of environmental protection, conservation of biological diversity of the Caspian Sea, conducting research in the sea area, co-financing major projects for joint development of oil and gas fields located on the border of national sectors.

One of the key issues of successful implementation of the development process deposits on the shelf is its implementation management. Effective project management ensures that rational offshore structures will be designed, prepared, assembled and will be operated in the optimal way.

The main functions of shelf projects management are:

⇨ selection of partners for cooperation in various stages of project implementation;

⇨ solution of technical issues, including determination of the reliability of design solutions;

⇨ taking into account the requirements of economic efficiency in the new field of shelf exploration in the absence of infrastructure;

⇨ focusing on safety and environmental protection.

The choice of partners includes:

– recruitment for the operating companies of shelf deposits development, using the appropriate authority or experience;

– selection of advisers and consultants working in the Russian academic institutes and industry, as well as foreign consultants;

– selection of design institutes working in the early stages of the project;

– selection of design institutes and engineering companies to perform work on the detailed design phase;

– selection of a place for platform construction, given that the shelf development industry is new to Russia;

– selection of companies to carry out construction works on the sea;

– selection of companies to carry out work quality control at various stages of the project.

The technical problems include:

- reliable analysis of ice data for the maximum possible length of the period for determining the extreme values of ice loads;

- realistic analysis of ice loads (range of results shows that some design formulas give too high values of loads from ice action);

- consideration of technological novelty of shelf for Russian oil and gas industry;

- optimal choice of methods of transport and storage of hydrocarbons in the arctic conditions, including ice and permafrost;

- selection of optimal model of field development and technology of hydrocarbons preparation preventing the formation of paraffin;

- selection of optimal technologies, agreed to by all parties of the contract, as well as government authorities.

The high level of management quality is the key to effective technical, technological and economic management decisions for the project. This circumstance is particularly important because shelf is a space (first of all the Arctic) which is a new untapped area, and the construction of offshore oil and gas facilities in it is a new technology for Russian industry.

Thus, shelf deposits have great hydrocarbon potential which can provide a significant portion of the country's energy needs and bring a huge economic impact. However, their effective and safe development requires solving several problems of economic, regulatory, technical, technological and environmental nature.

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UDC 332.14(470.1)

Efficiency of water resources' use in the regions of the North-West federal district in view of the Water strategy

In the article the description of the water use on the water-retaining capacity and the specific parameters of the water drain in the regions of the North-West federal district are represented. The estimation of the water use's efficiency in the NWFD is given; the problems on the principal parameters' maintenance are emphasized according to the reference points of the Water strategy.

Water industry, water strategy, directions of development, water-retaining capacity of the made product, water use efficiency.

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Competitiveness, advanced technology, equilibration of the territories' socio-economic development and life quality's improvement should become the strategic reference points of Russia's economic development in the long-term prospect. Aims' achievement in the specified directions is substantially connected with the development of the water-industrial economic structures [1]. In view of the determining role of the water-resources' providing, "Water strategy of the Russian Federation for the period till 2020" (authorized by the Russian Federation Government's decree from August, 27, 2009 № 1235-p), directed on the effective water resources' utilization was worked out. The major priority-driven directions of the water industry's development in the long-term prospect are [2]:

- guaranteed providing of the population and the economy's branches with the water resources;
- protection and restoration of the water objects' ecosystems to the state providing ecologically favorable conditions for the population's life;
- providing population's and economic objects' immunity from flooding and negative influence of the waters.

According to the mentioned Government's decree the programs of the regional socio-economic development should include the actions set by Water strategy and the plan of its realization.

Principal prognosis' parameters in the Russian Federation. In view of the scenarios of the national economy's development and rates of growth, considered in the Concept of the long-term socio-economic development of the Russian Federation, and of the water industry's condition, the principal prognosis' parameters of Water strategy, which are necessary to be reached in the water use by 2020, are specified. The water-resource component of the country's innovational development for the first time is estimated by with the integrated parameter that is the water-retaining capacity of the gross national product. In 2007 its value made 2.4 m^3/thousand rubles; this level of the water consumption is estimated as an inadmissibly high one in comparison with

the economically advanced countries. With the purpose of the increase of the water use's efficiency it is planned to lower the value of the water-retaining capacity of the gross national product to 1.4 m^3/thousand rubles, i.e. for 42% by the year of 2020.

Alongside with this criterion Water strategy includes the following parameters as the principal prognosis' indicators describing the water industry's condition: water losses at its transportation; the share of the polluted sewage which are fused insufficiently cleared or completely crude into the water objects; the quantity of the polluting substances in the structure of the sewage which is to be cleared; the share of the water industry's sites in the economically advanced areas with the water quality estimated as "relatively pure" and "slightly polluted".

The characteristics of the considered parameters of the water industry for 2007 and the expectant results of the increase of the water use's efficiency and the decrease of the anthropogenic influence on the water objects are represented in *table 1*.

It is necessary to emphasize that the parameter "the water-retaining capacity of the gross national product" takes into account the consumption of the fresh water only. The use of the full water-retaining capacity's parameter, estimated on the base of the total amount of the fresh and reused water's consumption, as the control indicator of the realization of the planned actions is not considered by the Water strategy. In our opinion skipping the role of this criterion prevents the optimum variant's choice for the decision of the problem of the regional water-retaining capacity's decrease. In *figure 1* the parameters' values of the water-retaining capacity in the federal districts are represented; from this comparison it is clear that in the fresh water use the most water-capacious are the Southern (7.1 m^3/thous. rubles) and the North-West (4.2 m^3/thous. rubles) districts. At the same time, if the Southern federal district also keeps the first position in the general water-retaining capacity (10.1 m^3/thous. rubles), the North-West federal district (8.2 m^3/thous. rubles) ranks fifth after the Southern, the Volga's, the Siberian and the Ural districts.

According to the data in figure the 42% decrease of the existing water-retaining capacity of the gross regional product which will provide the average level of 1.4 m^3/thous. rubles in the Russian Federation, can be a problem for some regions and it demands searching possible ways of the efficiency's increase of the water resources' use, including the development of the recycling water supply systems. Due to the dynamics of the water industry's parameters for the period from 1990 to 2007 *(tab. 2)* it can be noted, that to present day in the water consumption's volumes in all the districts the values' levels of 1990's are not achieved.

Table 1. Principal prognosis' parameters of the major directions of the national water industry's development according to Water strategy of the Russian Federation

Control parameters	Parameter value		Required decrease by 2020
	2007	By 2020	
I. Water-retaining capacity of the gross national product, m^3/thousand rubles	2.4	1.4	42%
Water losses at transportation, %	10	5.0	In 2 times
II. Share of the polluted sewage fused into the water objects, %	89	36	In 2.5 times
Quantity of the polluting substances in the structure of the sewage, million tons	11	6.6	In 1.7 times
Share of the water industry's sites with the water quality estimated as "relatively pure" and "slightly polluted", %	-*	Not less than 40	Increase**
III. Territories' immunity degree from flooding and other negative influence of waters, %	16	50	In 3.1 times
Quantity of the population protected from flooding and other negative influence of waters, one million people	1.9	4.8	Increase in 2.5 times
Share of the emergency hydraulic engineering constructions, %	5.0	0	100

* The information is not available.
** Due to the planned reduction of the ecological influence on the environment in 2.5 times.

Figure 1. The water-retaining capacity's parameters of the made product in the Federal Districts in 2007, m³/thousand rubles

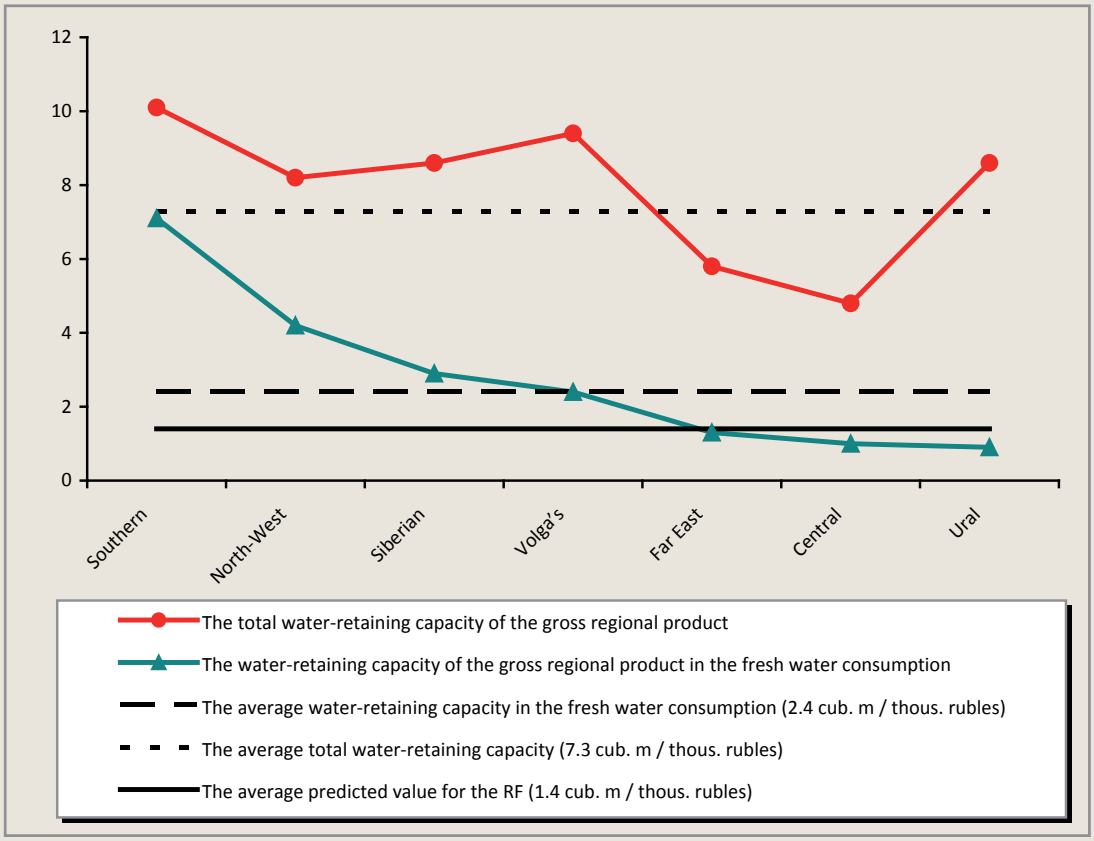


Table 2. The water industry's parameters determining the water-retaining capacity of the made gross regional product, and their change in the federal districts for the period from 1990 to 2007

Parameters	Southern	North-West	Volga's	Siberian	Ural	Central	Far East
Parameters' value in 2007 Share of the reused water in production – %	35 *	48	81	72	94	86	84
Share of the fresh water's consumption for the industrial needs, %	27+50 **	87	71	75	55	61	66
industrial and drinking needs, %	9	11	22	17	31	34	29
Parameters' change (2007 to 1990): - the fresh water's consumption, %	56	81	67	66	76	63	50
- volume of the reused water, %	68	88	77	84	101	87	64
- total water consumption, %	59	84	74	77	98	80	60
- volume of the sewage, relatively pure without cleansing, %	47	93	102	99	112	61	52

* It is determined taking into account the fresh water's consumption for irrigation.
** The share of the fresh water's consumption for irrigation.

The greatest rates of the total water consumption's growth can be noted in the Ural federal district (98%), mainly due to the increase of the reused water supply's volume which made 101% to the level of the year of 1990. At the same time the volume of the sewage of the "relatively pure without cleansing" category increased and made 112% that specifies the backlog of the

capacities' growth at the reused water supply's systems. The insufficient rates of the recycling water supply systems' development are also noted in the districts with the outstripping growth of the relatively clean sewage's volumes: in the Volga's federal district the level of 1990 is exceeded for 2%, in the Siberian federal district it made 99%, in the North-West federal district it made 93% (see tab. 2).

According to the Water strategy the regions with the greatest water supply (Siberian, Far East) have the priority value at placing such new large and water-capacious manufactures, as metallurgical, chemical, pulp-and-paper industries. On the territories of other districts (North-West, Central, Volga's, Southern and Ural districts) the water-capacious manufactures' development is provided by the existing capacities' enhancement and expansion with simultaneous water recycle systems' introduction.

The designated reference points of the water industry's development in these regions, including the North-West federal district, and their achievement estimated by the control indicator "water-retaining capacity of the gross national product" (for regions "water-retaining capacity of the gross regional product"), demand the analysis of the existing water-industry's situation at the regional level, and the timely elaborating of the program decisions on the increase of the water resources' effective use.

Principal prognosis' parameters according to the Water strategy in the regions of the NWFD. For the regions of the North-West federal district distinguished by the high water-retaining capacity, production's branch structure and natural and climatic conditions, the plan of measures on the water-retaining capacity's reduction will be determined by the rated parameters represented in *table 3*.

Preliminary calculations of the prognosis' parameters concerning the basic year of 2007 show that at the approach by the principle of "ratability" to the parameters' decrease the most adverse position is characteristic for the regions with the least water-retaining capacity of the gross regional product, such as Novgorod region, Kaliningrad region and Saint Petersburg, where the average level of the water-retaining capacity in the gross regional product is lower than the average planned level in the Russian Federation in general. At the

Table 3. Principal prognosis' parameters of the water use in the regions of the North-West federal district according to the Water Strategy

Subjects of the North-West federal district	Water-retaining capacity of the gross regional product (fresh water), m^3/thousand rubles		Water losses at transportation, %/million m^3		Amount of the polluted sewage of the drains' volume, %/million m^3	
	Reduction by 2020					
	for 42%		in 2 times		in 2.5 times	
	2007	2020	2007	2020	2007	2020
Leningrad region	20	11.6	6.4 / 40.2	3.2/-*	99.97 / 324.4	40 /-**
Murmansk region	8.4	4.9	1.0 / 19.0	0.5/-	95.9 / 383.4	38 /-
Pskov region	4.6	2.7	2.8 / 8.5	1.4/-	100 / 57.4	40 /-
Vologda region	3.0	1.7	1.6 / 12.2	0.8/-	76 / 155.9	30 /-
Archangelsk region	2.4	1.4	4.6 / 34.6	2.3/-	98 / 476.4	39 /-
Komi Republic	2.2	1.3	3.2 / 18.8	1.6/-	63 / 121.3	25 /-
Karelia Republic	2.16	1.3	4.5 / 10.7	2.3/-	99 / 204.0	40 /-
Novgorod region	1.2	0.7	13.6 / 16.8	6.8/-	99.4 / 75.1	40 /-
Saint Petersburg	1.1	0.6	6.7 / 90.6	3.4/-	100 / 187.0	40 /-
Kaliningrad region	1.0	0.6	8.6 / 14.7	4.3/-	100 / 115.8	40 /-
NWFD	4.2	2.4	2.1 / 266	1.0/-	95 / 3101	38 /-

* Absolute values will depend on the diversion capacity's value and within the given research were not considered (in the Water Strategy of the Russian Federation it is noted, that by 2020 the country's need for water resources will be guaranteed and provided in the volume of 107 million m^3, i.e. it will increase for 34%);

** Absolute values of the parameter by 2020 depend on the diversion capacity's value, industrial water use and other factors demanding a more detailed analysis, lying beyond the available statistical database.

same time, as it is expected, by 2010 the 42% decrease of the water-retaining capacity in the gross regional product will be achieved by all the regions, the part of them will remain outside the established value of 1.4 m^3/thousand rubles (the Leningrad, Murmansk, Pskov and Vologda regions). In our opinion, such approach concerning the water-retaining capacity in the gross regional product which does not take into account differences in the starting conditions of the regions and their socio-economic differentiation is not justified.

Water losses at transportation, represented in table 3, according to the statistics [3], make more than 5% in four subjects of the North-West federal district: the Novgorod region (13.6), the Kaliningrad region (8.6), the Leningrad region (6.4) and Saint Petersburg (6.7). First of all it is necessary to provide measures on the pipeline systems' enhancement in these subjects.

The least regions' distinction is noted in the parameter "the share of the polluted sewage", in all the subjects of the District its value is close to 100% except some cases (in Komi Republic it is 63%, in the Vologda region it is 76%). At the required decrease in 2.5 times of this parameter by 2020 its value in the most part of the District's subjects should make 38 – 40% of the volume of sewage to be cleared. The reduction of this category of drains is expected, first, due to the increase of the purification efficiency and, hence, the reductions of the amount of the sewage not cleared enough. Second, clearing complexes' enhancement and in some cases additional capacities' putting into operation should provide clearing constructions' stable and effective work that will allow to reduce the volume of the sewage taken away into the water objects without clearing. As the result of the mentioned measures polluting substances' dumping into the water objects can be decreased. At the same time there are doubts that at achieving the specified value of the planned dumping (of the polluted sewage and the polluting substances in its structure) the ecologically allowable influence will be provided. In our opinion, the rating of 38 – 40% of the parameter "the share of the polluted sewage" is too high, first of all the other approach based on the basin's principle with the account of the circuits of complex use and of the water objects' protection is required for its establishment.

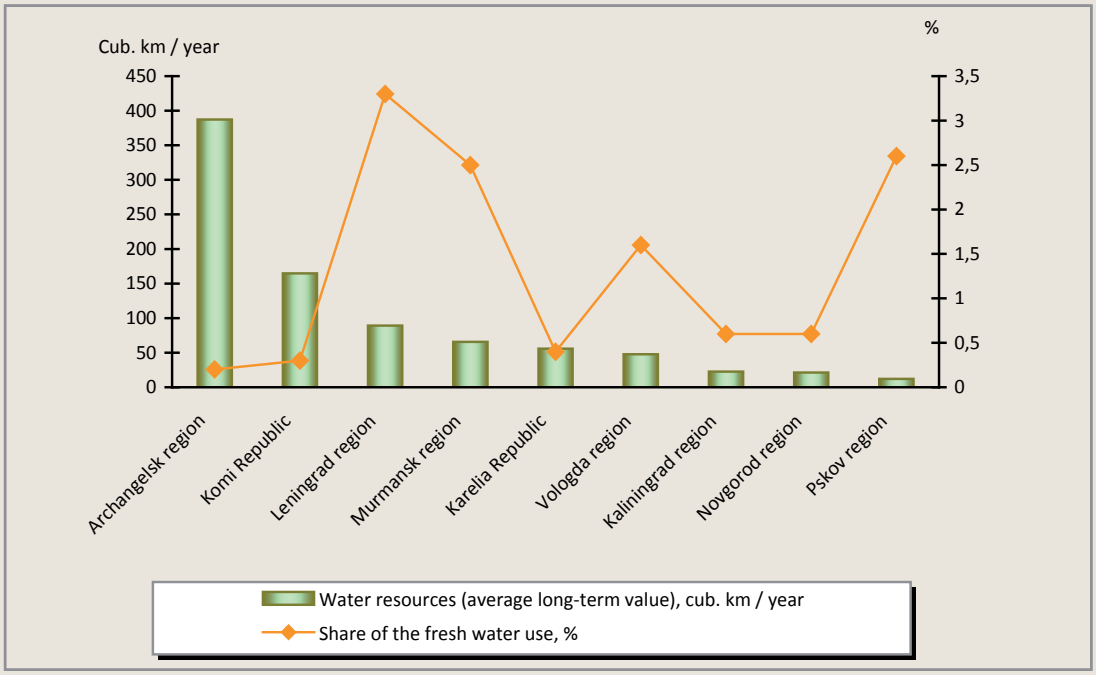
Opportunities of the principal parameters' achievement by the subjects of the NWFD. For estimating the opportunities of the principal parameters' achievement of the increase of the water industry's efficiency in view of the tasks set in the face of the regions by 2020, and for the differentiated approach's use for their development the analysis of the parameters in the NWFD regions is carried out: river drain resources, population, water consumption and water drain (fresh and reused water use in production, specific water consumption for the industrial and drinking needs, water losses, sewage's quantity and its structure according to the pollution degree, etc.), the gross regional product, the gross regional product per head, the branch structure of production [3, 5, 6].

Water resources of the NWFD regions. As a whole the NWFD territory is characterized by a high rate of the water supply and in this respect has favorable conditions for the water-capacious economic branches' development. For example, the water potential of the North-West federal district almost five times surpasses the potential of the Central federal district. But these resources are arranged irregularly and in some settlements water-industrial problems can take place.

In *figure 2* on the basis of the data [3] the parameters characterizing the NWFD regions' heterogeneity in the water resources and their use are represented. Archangelsk region and Komi Republic have the greatest water potential, surpassing accordingly in 32 and 14 times the potential of the Pskov region (12 km^3/year). The available resources in these regions caused the most water-capacious economic branches' development (energy and pulp-and-paper).

The share of the water resources' use in the NWFD regions, represented in (see fig. 2), takes into account only the fresh water use which amount essentially differs from all water sources' use in the Leningrad region. Here the annual fresh water use makes 1,613 million m^3 (25.5% of the total amount). In the parameter

Figure 2. NWFD regions' differentiation in the water resources and their use



of the water resources' use in the Leningrad region (3.3%) the value of the water use in Saint Petersburg (1,353 million m^3) is taken into account. From the comparison of the considered data it follows that on the quantitative indicators the NWFD regions have considerable potential for the water-capacious branches' development.

Water consumption in the NWFD regions is characterized on the statistics' basis [3] with the parameters represented in *table 4*.

The annual water consumption in the NWFD regions makes from 300 to 7,608 million m^3 (1:25), including the fresh water consumption from 107 to 6,255 million m^3 (1:58), and the specific drinking water consumption from 112 to 351 liters / 24 h per head (the average value in NWFD 254 liters / 24 h per head). The least volumes of the fresh water consumption are in the Pskov, Kaliningrad, and Novgorod regions and in Karelia Republic. Here the lowest specific water consumption for the industrial

Table 4. Water consumption's parameters in the NWFD regions (2007)

Subjects of the North-West federal district	Water consumption, in total (fresh and reused water), million m^3	Including reused water, %	Fresh water consumption in total, million m^3	Including for needs	
				Industrial, %	Drinking, liters / 24 h per head
Leningrad region	7,608	18	6,255	97	206
Vologda region	4,449	84	728	85	218
Murmansk region	2,623	39	1,605	92	351
Komi Republic	1,984	73	543	81	197
Saint Petersburg	1,863	37	1,179	47	331
Archangelsk region	1,548	55	693	83	233
Karelia Republic	1,282	82	226	60	191
Novgorod region	689	84	107	45	181
Kaliningrad region	401	64	146	49	209
Pskov region	300	3	292	84	112
NWFD	22,746	48	11,774	87	254

and drinking needs is observed (that doesn't denote the rational water resources' use and demands more detailed consideration of the problems of the population's providing with the centralized systems of water supply in each of the mentioned regions).

In the majority of the regions the prevailing part of the fresh water consumption goes for the industrial needs (60 – 97%), in Saint Petersburg, the Novgorod region and the Kaliningrad region the consumption makes about 50%. In the regions the fresh water savings, determined by the reused water use, amounted to 18 – 84%. The least value concerns to the Leningrad region; the greatest one concerns to the Novgorod and Vologda regions.

The regions of NWFD also differ *in the water drain*: the total amount of the sewage dumped into the water objects, makes from 82 to 6,181 million m^3 (1:75), including the sewage, which draining is permitted without clearing, from 6 to 5,856 million m^3 (1: 976), the volume of the polluted sewage dumping owing to the insufficient clearing or its absence makes from 57 to 1,187 million m^3 (1: 21) *(tab. 5)*.

From the analysis of the water draining structure it follows, that about 73% of the sewage dumping is made by the category "relatively pure, without clearing" and 27% – "needing clearing". The main part of the relatively pure water is made by the sewage dumping in the Leningrad region (68%), the minimal value of 0.07% concerns to the Novgorod region. The greatest amount of the sewage demanding clearing, characterizes the water drain in Saint Petersburg (36.5% of the total amount in the district), the least one is observed in the Pskov region (1.8%).

An inadmissibly low degree of clearing is characteristic for the work of the clearing water drain's complexes in all the District's subjects, that is specified by the dumping structure's parameters ("relatively cleared" and "polluted", including the part of dumping without clearing) (see tab. 5). As a whole in the NWFD the share of the relatively cleared sewage makes only 4.6% of the quantity of the water demanding clearing *(fig. 3)*.

Thus, the most part of the drains demanding purifying is dumped polluted into the water objects. The "contribution" of the District's subjects to the water objects' pollution on the territory of the North-West region is characterized by the share of the polluted sewage in the percentage of their total amount in the district (*fig. 4*).

It is necessary to note that the estimation of the polluting "contribution" to the water objects at the account of the sewage's pollution, and also of the polluting substances' quantity in view of their harm is more objective [4].

The water protection's condition in the District's subjects is characterized by the data in *figure 5,* where the share of the polluted sewage, dumped into the water objects without purifying, is represented in each subject of the District.

Table 5. Water draining parameters in the NWFD regions (2007)

Subjects of the North-West federal district	Amount of the sewage dumped into the water objects, million m^3				
	In all	Of them			
		relatively pure, without clearing	demanding clearing, in all	Including	
				relatively cleared	polluted
Leningrad region	6,181	5,856	325	0.08	325
Murmansk region	1,756	1,356	400	16	384
Saint Petersburg	1,317	130	1,187	0	1,187
Archangelsk region	675	188	487	11	476
Vologda region	674	469	205	49	156
Komi Republic	513	321	192	71	121
Pskov region	291	234	57	0	57
Karelia Republic	241	35	206	2	204
Kaliningrad region	137	21	116	0	116
Novgorod region	82	6	76	1	75
In NWFD	11,866	8,615	3,251	150	3,101

Figure 3. Sewage dumping structure after water clearing complexes in the North-West federal district (2007)

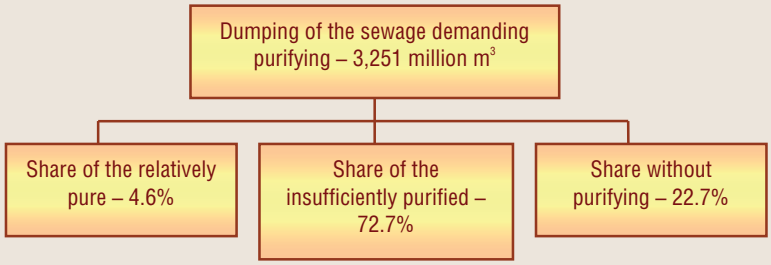
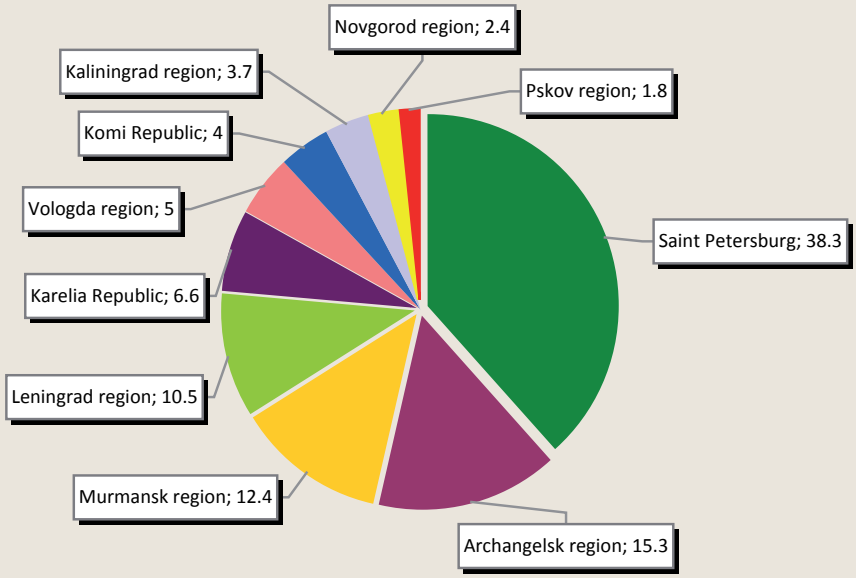


Figure 4. Polluted sewage dumping into the water objects in the NWFD subjects, %



This parameter reflects the unsatisfactory condition of the clearing constructions which do not provide the required degree of purifying owing to out-of-date technologies' application, deteriorated or incomplete set of constructions. Its value in the District makes 22.7% that exceeds the average level in the RF (18%).

Less critical is the situation in Komi Republic where the ratio between relatively cleared and polluted sewage makes 1:1.7 and in Vologda region the ratio is 1:3.2 (as a whole in the District it is 1:21, in the Russian Federation it is 1:12).

Connection of the water consumption with the general socio-economic indices. For the comparative characteristic of the regions the factors of the parameters' differentiation were defined (the ratio between the parameter value's excess and the minimal value – $P_{diff.}$), the most significant in the socio-economic plan. The values of $P_{diff.}$ in the considered parameters for the regions are represented in *figure 6,* where the NWFD regions are placed according to the general water consumption decrease.

The analysis showed that *the Pskov region* has the least potential: in the gross regional product (63,108 million rubles, in figure 6 it corresponds $P_{diff.} = 1$), in the gross regional product per head (88,967 rubles) and in the volume of the total water consumption (300 million m^3); and *the Novgorod region* has the same tendency: in population (655 thous. people) and in the fresh water consumption (107 million m^3).

The maximal distinctions of the NWFD regions, concerning its subjects with the least

Figure 5. Quantity of the polluted sewage without purifying dumped into the water objects in the NWFD subjects

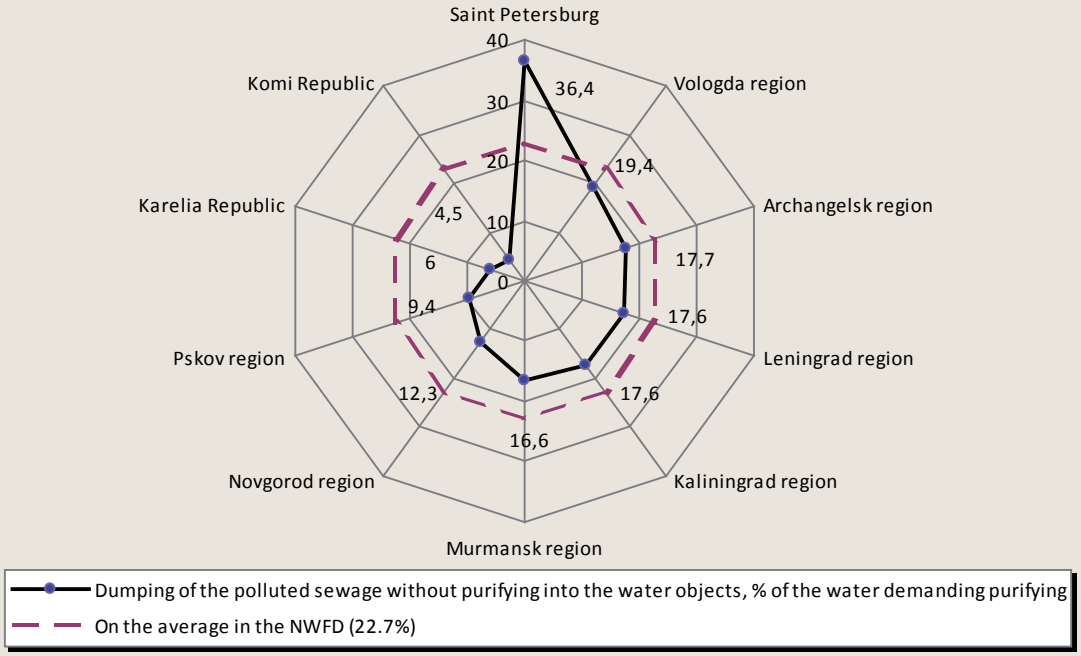
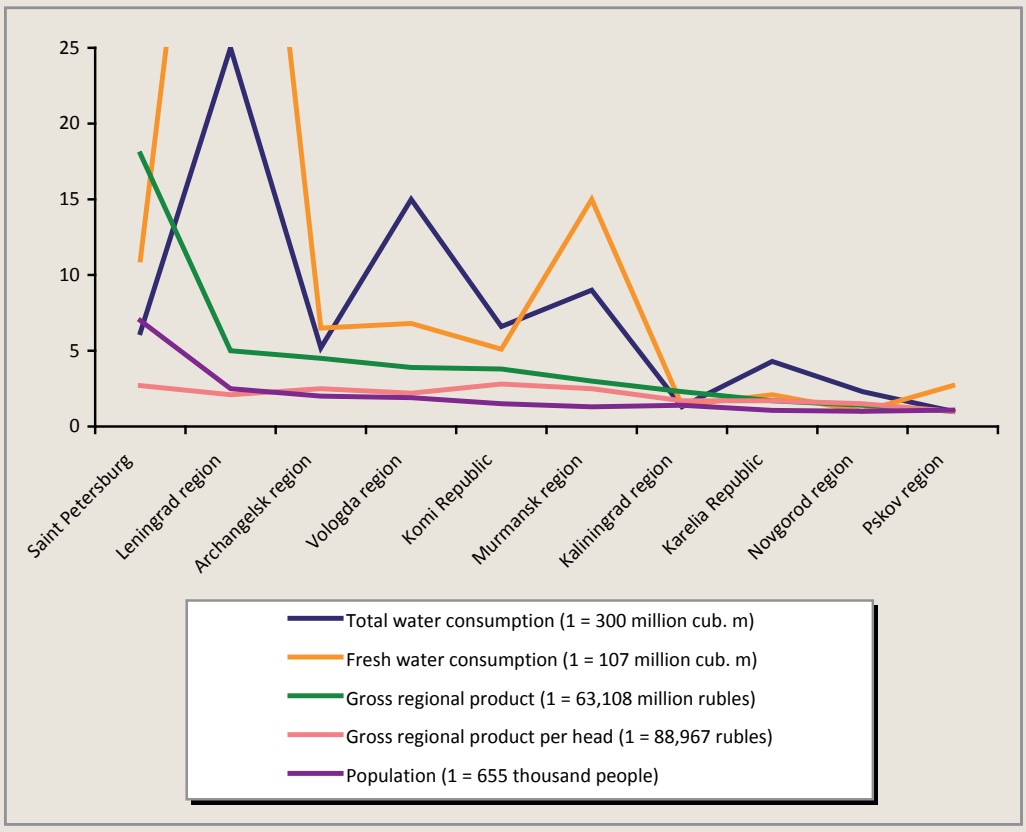


Figure 6. Parameters characterizing the NWFD regions' distinction, 2007



potential, are characterized by the following values of $P_{diff.}$: a) Saint Petersburg – 7 times in population; 17.6 times in gross regional product; b) Komi Republic – 2.8 times in gross regional product per capita; c) the Leningrad region – 58.5 times in the fresh water consumption and 25.4 times in the total water consumption. Analyzing the criteria $P_{diff.}$ represented in figure 6, it is possible to note that in the ranged number of population among the NWFD subjects Saint Petersburg where at the high gross regional product there are rather low volumes of the total water consumption and considerable volumes of the fresh water consumption (the third position after the Leningrad and Murmansk regions) stands aside. It can be explained by the water consumption structure in Saint Petersburg, which has equal shares of the industrial needs (47%) and drinking ones (47%) (see tab. 4). Here the high volumes of the fresh water consumption are caused by the plentiful population.

Besides, according to figure 6, for the Leningrad, Murmansk and Vologda regions the total water consumption's rise is characteristic at the relatively low volumes of the gross regional product and the smaller population, in comparison with the marked $P_{diff.}$ for Saint Petersburg. In the Leningrad and Murmansk regions the growth of the total water consumption and the fresh water consumption are noted that is caused by the low share of the reused water supply. In the first case it makes about 18%, in the second case it makes 39% (see tab. 4). The situation in Vologda region is different due to the fact that there isn't the sudden change of the fresh water parameter here that is caused by the high 84% share of the reused water supply.

Total water-retaining capacity and the water-retaining capacity in the fresh water in the structure of the gross regional product. Taking into account the inconsistence between the socio-economic indices and the water consumption's level let's consider their connections, using the criterion "the water-retaining capacity in the gross regional product" (the amount of the water for one unit of the made gross regional product). This criterion is the integrated reflection of the socio-economic differentiation of the Russian regions. Its value for each region is represented in *figure 7* by two parameters: the water-retaining capacity in the fresh water in the gross regional product and the total water-retaining capacity in the gross regional product in view of the industrial use of the reused water. The second parameter is necessary to be taken into account alongside with the first one at elaborating concrete decisions on the water-retaining capacity's decrease in the gross regional product. Also in figure the average levels of the total water-retaining capacity in the gross regional product in the fresh water consumption are represented; in 2007 in the North-West federal district they made 8.1 and 4.2 m^3/thousand rubles accordingly.

The Leningrad (20), Murmansk (8.4) and Pskov (4.6) regions have high rates of the fresh water consumption relative to the average value of the water-retaining capacity in the gross regional product in the District (4.2). Relative to the total water consumption the most water-capacious regions are Leningrad (24.4) and Murmansk (13.6) regions. The Vologda region (18.2) and Karelia Republic (12.3) also belong to this group.

With the purpose of revealing the opportunities of the average level's decrease of the water-retaining capacity of the gross regional product in the District from 4.2 to 2.4 m^3/thousand rubles according to the Water strategy it is necessary to compare two kinds of the water-retaining capacity in each subject of the District. On the basis of these parameters' comparison we can draw the conclusion that the decrease of the water-retaining capacity of the gross regional product in the fresh water is necessary to carry out in the regions with the low water rotation (the Leningrad and Murmansk regions). More detailed researches of the regional industrial production's structure, production specificity's studying and the opportunities of the more effective use of the water resources are necessary for other regions.

In our opinion it is necessary to relate the use of the sewage of the category "relatively pure, without clearing" to these opportunities. As the basis of the mentioned proposal the following parameters' ratings are represented in *figure 8* for the NWFD regions: operating

ratio of the reused water in production (%), the amount of the sewage "relatively pure, without clearing" in percentage relative to the volume of the reused water.

From the comparison of the considered parameters values it follows that the higher values of the water rotation in industry correspond the smaller volumes of the relatively pure sewage and their smaller share relative to the volume of the reused water. Thus the water-retaining capacity if the gross regional product in the fresh water is higher in the regions with the smaller water rotation and the high share of the relatively pure sewage. First of all, it is necessary to note the Murmansk and Leningrad regions, where the volumes of the relatively pure sew-

Figure 7. Parameters of the water-retaining capacity of the gross regional product in the NWFD regions in 2007, m^3/thousand rubles

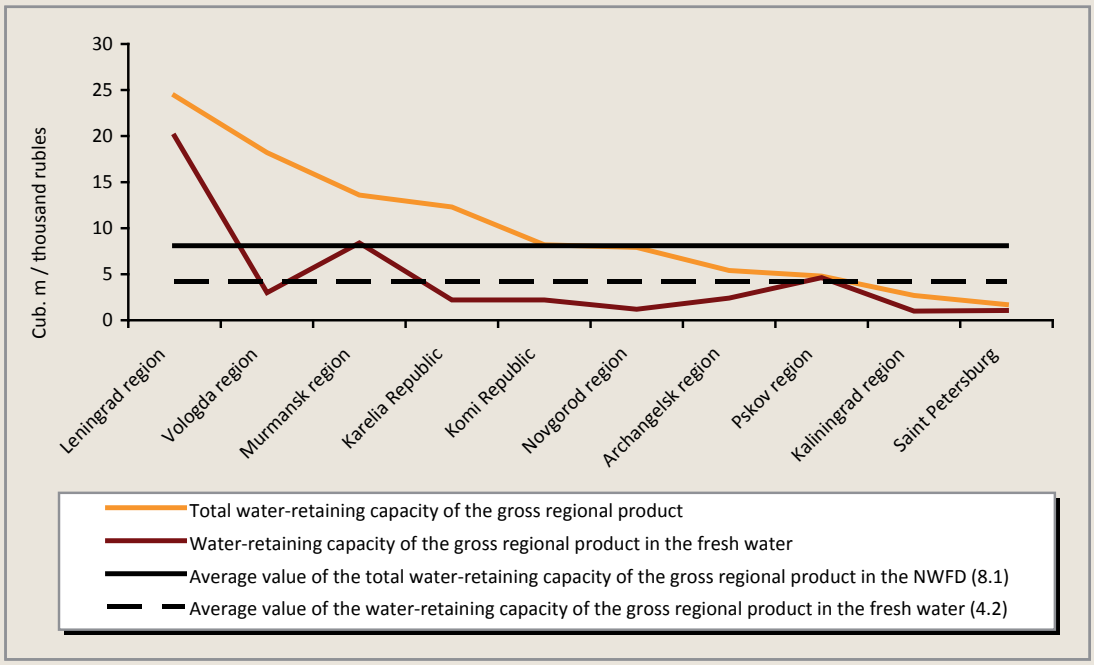
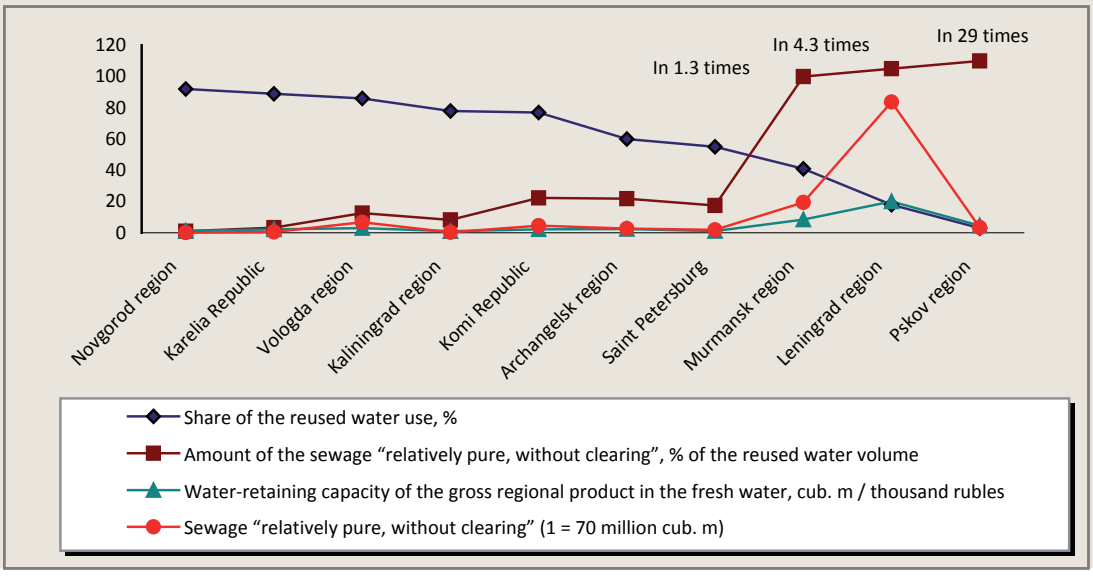


Figure 8. NWFD subjects' characteristic according to the parameters, defying water-retaining capacity of the gross regional product in the fresh water



age exceed the volumes of the reused water supply in 1.3 and 4.3 times accordingly. In the Pskov region this excess is the maximal (in 29 times), as the volume of the reused water is small (8.08 million m^3) thus ratio of the reused water = 3%, the share of the industrial water consumption is great (84% – 245 million m^3, see tab. 4) and the volume of dumping the sewage of the category "relatively pure without clearing" is considerable (234 million m^3).

Thus, from the analysis it follows, that the parameter of the relatively pure water is necessary for considering as the criterion supplementing the regions' characteristic in the water resources' use.

Parameters of the water drain in the gross regional product. For the comparative estimation of the water industry's situation in the regions and the effective water resources' use alongside with the considered parameters of the water-retaining capacity of the gross regional product it is necessary to define the similar parameters in the water drain which can be the control indicators of the water-retaining capacity's decrease. For the NWFD subjects in table 6 the parameters of the water drain of the gross regional product of various sewage's categories (sewage in all, relatively pure without clearing, polluted, and polluted without clearing) are represented. The parameters of the sewage's category "relatively pure" are not represented, as their cost values in the District's subjects are small or equal to zero (Saint Petersburg, the Kaliningrad and Pskov regions); as a whole in the NWFD their value makes 0.05 m^3/thous. rubles.

The data represented in table 6 correlate with the parameters of the water-retaining capacity of the gross regional product mentioned above. The regions with the high water-retaining capacity of the gross regional product make up the group with the greatest volume of the water drain in the category "in all": the Leningrad (19.8 m^3 / thousand rubles), Murmansk (9.1) and Pskov (4.6) regions. In NWFD the average value of this parameter made 4.3 m^3/thousand rubles. As it was noted earlier (see fig. 8), the mentioned regions were noted in dumping sewage of the category "relatively pure without clearing", that is caused by the low share of the reused water use in industry (in 2007 they made 17, 41 and 2% accordingly – the lowest values of this parameter in the District).

By the amount of the sewage for a unit of the made product, which demand purifying, the most "contaminant-capacious" regions are Karelia Republic (2.0 m^3/thous. rubles), the Murmansk (2.1) and Archangelsk (1.7) regions; the less "contaminant-capacious" (0.8 m^3/thous. rubles) regions are Komi Republic and the Kaliningrad region. The contaminant capacity's value of the gross regional product in the other District's subjects made 0.9 – 1.1 m^3/thous. rubles. From the comparison of the specific water drain's parameters it follows that the branch structure of production causes the certain expenses' volume connected with the necessity of sewage's sterilization, and in the NWFD subjects it differs up to 3 times on a unit of the made product. The ratings of the polluted sewage's dumping, represented in *table 6*, also specify the insufficient water protection financing and the large scale of the caused damage to the water ecosystems in the District's subjects. The considered parameters of the water drain of the gross regional product are necessary for being taken into account in the programs of the regional socio-economic development, at the decision of the financing questions in the water protection sphere and for using as the additional control indicators at the estimation of the efficiency of carrying out the actions on the water-retaining capacity's decrease.

Efficiency of the water resources' use in the NWFD subjects. Estimation of the efficiency of the water resources' use in the District's subjects is represented in *table 7* as the result of the analysis of the water use parameters carried out earlier. As the basic estimated parameters were considered the following ones: the water-retaining capacity of the gross regional product (total and in the fresh water consumption), dumping the relatively pure water as the share of the reused water volume, the share of the reused water use in industry. Preliminarily the regions were divided into three groups depending on the value of the total water-retaining capacity of the gross regional product and in view of its average value in the District:

Table 6. Parameters of the water drain in the gross regional product in the NWFD subjects (2007)

Amount of sewage in categories		
1. "In all" in the District – 4.3 m^3/thousand rubles In its subjects:		
Leningrad region – 19.8 Murmansk region – 9.1 Pskov region – 4.6	Vologda region – 2.8 Archangelsk region – 2.4 Karelia Republic – 2.3 Komi Republic – 2.1	Saint Petersburg – 1.2 Kaliningrad region – 0.9 Novgorod region – 0.9
2. "Relatively pure without clearing" in the District – 3.1 m^3/thousand rubles In its subjects:		
Leningrad region – 18.7 Murmansk region – 7.0 Pskov region – 3.7	Vologda region – 1.9 Komi Republic – 1.3 Archangelsk region – 0.7	Karelia Republic – 0.3 Saint Petersburg – 0.1 Kaliningrad region – 0.1 Novgorod region – 0.1
3. "To be cleared" in the District – 1.2 m^3/thousand rubles In its subjects:		
Murmansk region – 2.1 Karelia Republic – 2.0 Archangelsk region – 1.7	Saint Petersburg – 1.1 Leningrad region – 1.1 Novgorod region – 0.9 Vologda region – 0.9	Pskov region – 0.9 Komi Republic – 0.8 Kaliningrad region – 0.8
Including "polluted" in the District – 1.1 m^3/thousand rubles In its subjects:		
Murmansk region – 2.0 Karelia Republic – 2.0 Archangelsk region – 1.7	Saint Petersburg – 1.1 Leningrad region – 1.0 Novgorod region – 0.9 Pskov region – 0.9	Kaliningrad region – 0.8 Vologda region – 0.6 Komi Republic – 0.5
Of them "polluted, without clearing" in the District – 0.3 m^3/thousand rubles In its subjects:		
Saint Petersburg – 0.39 Murmansk regions – 0.34 Archangelsk region – 0.30	Leningrad region – 0.18 Vologda region – 0.16 Kaliningrad region – 0.14	Karelia Republic – 0.12 Novgorod region – 0.11 Pskov region – 0.08 Komi Republic – 0.04

1) with the high water-retaining capacity (more than 10 m^3/thous. rubles): the Leningrad, Vologda, Murmansk regions, Karelia Republic; 2) with the average water-retaining capacity (from 5 to 10 m^3/thous. rubles): Komi Republic, Novgorod, Pskov, Archangelsk regions; 3) with the low water-retaining capacity (less than 5 m^3/thous. rubles): Kaliningrad region, Saint Petersburg.

The estimation of the efficiency of the water resources' use in the NWFD regions is a preliminary one, directed on revealing the most adverse regions, which first of all require changes in the water industry's situation, and also on the formation of the criteria's system allowing to choose the set of necessary measures in each concrete case.

Findings

From the mentioned above analysis of the water-industrial and socio-economic characteristics of the North-West federal district regions it follows:

- in the territorial water resources' supplies the North-West federal district ranks third after the Far East and the Siberian districts (in comparison with the Ural federal district); in the water-retaining capacity of the gross regional product and the parameters of the water drain of the gross regional product ("contaminant capacity" of the made product) the NWFD takes the leading position both as a whole and in the comparative estimation of the regions characterized by the low water use efficiency;

- development and realization of the measures on the 42% decrease of the water-retaining capacity of the gross regional product in the NWFD subjects, which are settled by the accepted in 2009 Water strategy of the Russian Federation for the period till 2020 with the purpose of the water-resource provision of the regional socio-economic development, demand redesigning and approving of the circuits of the water objects' complex use and protection being the main tool of the allowable

Table 7. Efficiency of the water use in the NWFD regions

Subjects of the NWFD	Sewage "relatively pure without cleaning", % of the reused water volume	Share of the reused water in industry, %	Water-retaining capacity in the gross regional product, m³/thousand rubles		Water use's efficiency
			in the fresh water	total (fresh + reused)	
Vologda region	12.6	86	3.0	More than 10	High
Karelia Republic	3.3	89	2.2		
Leningrad region	> in 4.3 times	18	20.0		Low
Murmansk region	> in 1.3 times	41	8.4		
Novgorod region	1.0	92	1.2	5 – 10	High
Komi Republic	22.3	77	2.2		Average
Arkhangelsk region	21.8	60	2.4		
Pskov region	> in 29 times	3	4.6		Low
Kaliningrad region	8.2	78	1.0	Less than 5	High
Saint Petersburg	17.5	55	1.1		

influence's regulation (water sample, sewage dumping) on in the water-industrial river basins and providing water objects' complex use and protection in the long-term prospect;

- as the control indicators of the realization of the Water Strategy's regulations concerning the decrease of the water-retaining capacity in the regional economy, alongside with the offered in the Strategy, it is worthwhile to use the following parameters: the total water-retaining capacity of the gross regional product; the share of the reused water in production – the parameter reflecting the technological development of production and the water use efficiency; the specific water drain of the made product in the sewage categories " pure without clearing", "to be purified", and other criteria of the water drain, characterizing the "contaminant capacity" of the made product;

- it is necessary to realize the differentiated approach for revealing the prognosis levels of the regions' water-retaining capacity in view of their distinctive features and the existing efficiency of the water resources' use. With this purpose it is necessary to develop the system of the parameters reflecting the interrelation between the water use and the socio-economic characteristics of the regions. In our opinion, the mentioned in the given work approaches on the example of the comparative estimation of the water resources' effective use in the North-West federal district's subjects can be used as the methodical instruments of estimation of the water use efficiency's rise.

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Investment process in the region: the new century – old problems

The article deals with the investment process in the Vologda oblast, its peculiarities and problems in comparison with the North-West federal district and Russia. The ways to overcome the low investment activity with the increasing role of the government regulation in the region are determined.

The Vologda region, investments, investment process, government regulation.

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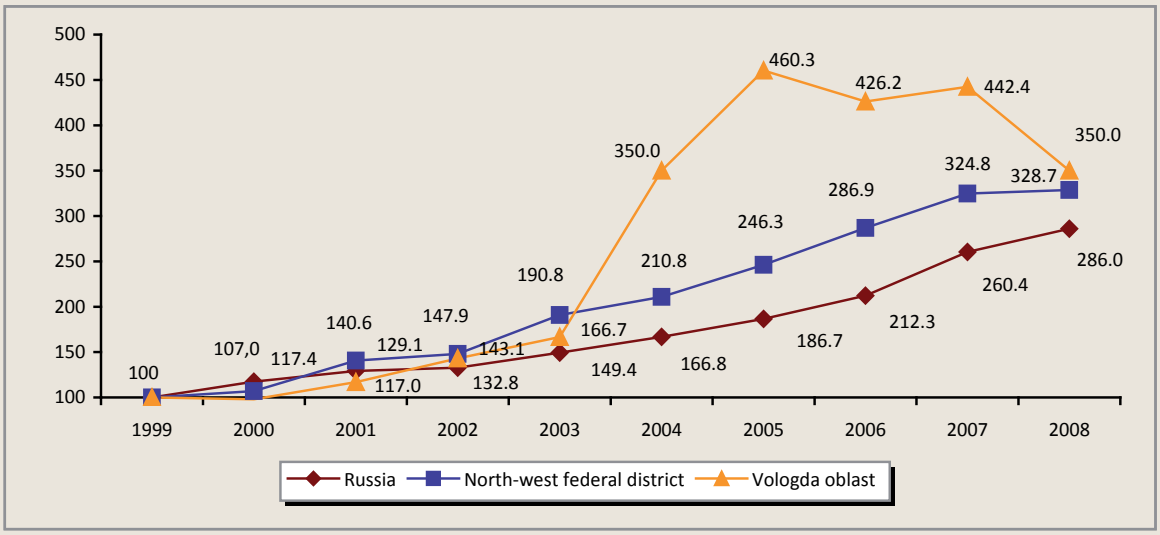
Nearly twenty years separate us from the beginning of radical economic reforms in Russia relating to the transition to the market economy, but the subject matter related to investment activity does not lose its importance, moreover, with each new step in the development of the market economy it is becoming increasingly important. Today we have sufficient time interval in our arsenal in order to establish certain regularities of the investment process and its problems, as well as to determine the necessary approaches to solving the identified problems.

Investment sphere of the country in the 1990's was in the grip of a deep crisis, which is reflected in the unprecedented decline in investment in the country as a whole and in individual regions. After a four-fold decrease in the volume of investment in the first half of 1990 over the next few years there was stagnation in which the decline in investment continued. These phenomena were accompanied by falling rates and volumes of production in all sectors of the economy, and lower living standards. The default of 1998 for national and regional economies became a turning point, because after it the recovery of the investment process began, but today we can say that a number of opportunities has not been realized.

By this time in the investment area serious problems had been exposed which were

Figure 1. The dynamics of investments in fixed capital in % to 1999



hindering the socio-economic development of the country as a whole and its individual regions. Their solution required substantial material and financial resources, strong political will and time, which, as we understand it today, were limited by almost ten years interval. Without overcoming the crisis in the investment field, caused by the transition to a new management model, in 2008, there is an immersion in a new wave of crisis. We note here that there were significant changes in the investment process during years preceding a new crisis, but many problems are unresolved, which are likely to hamper the withdrawal from the new wave of crisis. We try to identify these "pain points" by analyzing national statistics on the Russian Federation, North-West federal district and the Vologda region.

One of the most important features of the investment process of the post-default period is its stable positive dynamics, as it is shown in *figure 1.*

This graphic illustrates how fairly synchronously investment processes develop in Russia, in the regions of the North-West federal district and in the Vologda region. Based on the data we can state that there was a significant increase in the level of investments in 1999. A sharp rise in investments in the Vologda region is particularly impressive that allowed the region to improve its ranking among the regions of Russia, although through the neighbourhood its place remains quite modest *(tab. 1)*. In 2008 investment dynamics sensitively reacts to the approach of the financial crisis, which is reflected in a slowdown of investment and change of its vector. The latter becomes particularly noticeable in the Vologda oblast.

Analyzing the data presented above, there is the: how did such a substantial rise in investment in the region reflect on the qualitative characteristics of the investment flow, were there prerequisites for the transition to a qualitatively new stage of development?

In connection with the transition to the market economy the structure of investment by ownership patterns has changed *(tab. 2)*. We should recognize the emergence of a substantial number of new investors as a good thing, because this is the evidence that the investment market of the region is dynamically developing. Over the past ten years the proportion of private investors has significantly increased, for which the Vologda oblast is becoming increasingly attractive as a ground for investing.

Changes in the structure of investment by ownership patterns have led to changes in the structure of funding sources *(tab. 3)*. They have become more diverse, but the following

Table 1. Rating of the Vologda region in investments in fixed capital per 1000 people

	2000	2003	2004	2005	2006	2007	2008
In the Russian Federation							
North-West federal district	*2*	*3*	*3*	*3*	*3*	*3*	N/d
Republic of Karelia	21	31	26	34	41	52	-
Komi Republic	8	11	13	8	7	14	-
Arkhangelsk oblast	28	15	14	15	9	8	-
Vologda oblast	*32*	*26*	*10*	*9*	*12*	*16*	-
Kaliningrad oblast	51	28	24	23	20	24	-
Leningrad oblast	14	9	9	10	8	11	-
Murmansk oblast	25	25	36	31	31	44	-
Novgorod oblast	31	34	47	41	33	38	-
Pskov oblast	64	64	73	79	81	79	-
St. Petersburg	27	12	18	16	16	13	-
In the North-West federal district							
Republic of Karelia	3	8	7	8	9	9	9
Komi Republic	1	2	3	1	1	4	2
Arkhangelsk oblast	6	4	4	4	3	1	1
Vologda oblast	*8*	*6*	*2*	*2*	*4*	*5*	*6*
Kaliningrad oblast	9	7	6	6	6	6	5
Leningrad oblast	2	1	1	3	2	2	3
Murmansk oblast	4	5	8	7	8	8	7
Novgorod oblast	7	9	9	9	7	7	8
Pskov oblast	10	10	10	10	10	10	10
St. Petersburg	5	3	5	5	5	3	4

Table 2. Investments in fixed capital of the region by ownership, %

Patterns of ownership	2000	2003	2004	2005	2006	2007	2008	2009	2009 to 2000, p.p.
Investment in fixed capital, total	100	100	100	100	100	100	100	100	-
Governmental	31.6	15.3	9.3	9.9	9.6	10.3	13.5	16.6	52.5
Municipal	7.2	3.8	1.9	3.7	2.9	3.2	4.7	3.7	51.4
Mixed Russian	23.0	34.9	33.4	27.3	21.8	14.4	20.7	19.0	82.6
Mixed foreign	8.9	14.9	6.1	7.5	8.5	10.5	7.6	6.5	73.0
Private	29.0	30.4	48.9	51.3	56.5	60.3	52.6	53.2	183.4
Foreign	0.0	0.5	0.3	0.2	0.6	1.1	0.8	0.8	-

circumstances pay attention to. Firstly, a number of sources because of the underdevelopment of the financial market does not play a significant role; secondly, too fast the state rejects the role of an active participant in the investment process, particularly in the social sphere; thirdly, own means of businesses that they can send for investment purposes, is clearly not sufficient and their use highly depends on the profitability of products, which, unfortunately, has no stable upward trend.

Great expectations were associated with attraction of foreign capital into the economy of Russia and its regions. But practice has shown that serious capital comes only when there is confidence of recipients in themselves. Therefore, more significant (in the scale of Russia) flows of foreign capital were recorded in the period after 1998. The dynamics of foreign investment directly depends on the structure of the region's economy, as industries of the commodity sector and the primary processing are still more attractive for foreign investors.

The low proportion of foreign investments in the economy of the region shows a decline of investment attractiveness of the Vologda

Table 3. Investment structure on funding sources, %

Investment sources	2000	2003	2004	2005	2006	2007	2008	2009	2009 to 2000, p.p.
Total	100	100	100	100	100	100	100	100	-
Including *Own funds*	49.9	68.3	47.7	39.8	38.9	34.2	44.0	39.1	78.4
Among them - profit	29.5	36.6	30.2	28.2	25.0	16.0	21.8	-	-
- amortisation	20.3	30.2	16.6	11.2	13.6	17.8	20.9	-	-
Obtained funds	50.1	31.7	52.3	60.2	61.1	65.8	56.0	60.9	121.6
Among them - budgetary	20.6	8.3	5.6	6.3	5.0	6.3	11.5	10.5	126.5
Including - of federal budget	6.6	4.3	3.3	2.7	1.3	1.8	3.4	6.0	90.9
- of regional budgets	10.0	2.7	1.4	1.1	1.7	3.1	6.6	3.4	34.0
Borrowed current assets	3.8	1.1	0.6	0.7	0.9	1.1	2.3	0.5	13.2
Off-budget funds	0.6	0.6	0.2	0.03	0.1	0.2	0.2	0.2	33.3
Bank loans	3.8	10.0	10.5	7.5	3.6	11.4	7.2	9.1	239.5
Other	21.3	11.7	35.4	45.7	51.5	46.8	34.8	40.6	190.6

region for foreign investors. This suggests that foreign investors are not willing to take the risk of own production in the region. Dynamics of foreign investments is unstable: the decrease in investments is replaced by their growth and vice versa.

We note here that, in the Vologda region there were significant investments of foreign capital in 2004, but it was presented almost by loans taken out from the USA and UK in the development of the metallurgical industry. In spite of the positive features of the period 2004 – 2008, the volume of foreign capital has not grown, although the region has good conditions for foreign capital. The following prerequisites can be identified: the good transport position, the stable social and political climate, prevalent economic potential, developing infrastructure. In general, we should recognize the structure of foreign capital irrational from the perspective of the region, since it has small proportion of direct investments.

A good indicator of changes in the structure of the economy is the technological structure of investments, which forms the ratio between active and passive parts of the basic production assets. The higher the share of machinery and equipment, the higher the proportion of the active part of basic assets, which, of course, creates opportunities for high-quality technological progress. During the monitoring period in the technological structure of the investments in the region *(fig. 2)* there were no significant changes: the cost of building and construction works is still high. This leads to the fact that today in the region the share of equipment in operation for five years reduced at times, while over two-thirds of all machinery and equipment operate more than 15 years (this indicator is twice higher than in developed countries), the average age of equipment in the industry is 20 years.

Reproductive investment structure of the Vologda region for 2000 – 2008 has the opposite tendencies *(tab. 5)*. On the one hand, the

Table 4. The volume of foreign investments in the economy of the region by types, million USD

Foreign investment	2000	2003	2004	2005	2006	2007	2008	2008 to 2000, times
Total	19.9	286.6	1108.3	430.96	161.47	177.84	4142.79	208.2
Direct	9.2	18.9	1.0	14.59	18.61	55.76	5.87	0.63
Portfolio (shares)	2.6	1.0	1.8	10.99	22.37	2.53	0.15	0.06
Other investments (loans)	8.2	266.7	1105.6	405.38	120.49	119.55	4136.76	504.5
Percentage of total investments	0.2	4.1	4.4	5.0	0.7	5.2	1.7	8.5

Figure 2. Technological structure of investment in fixed capital, in %

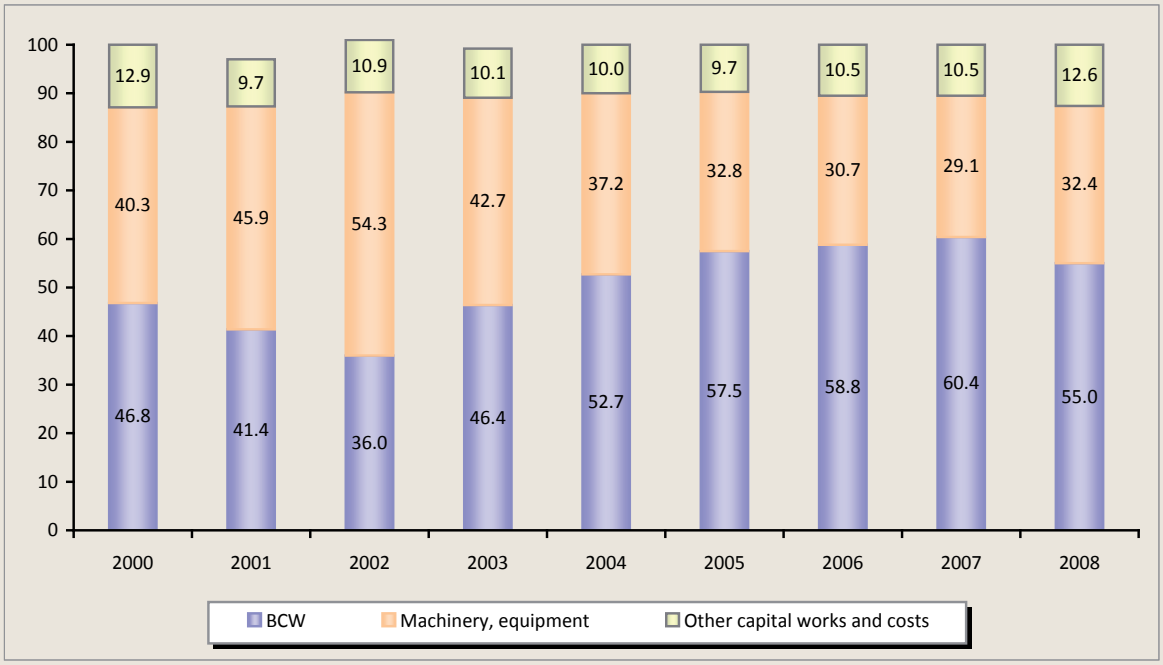


Table 5. Reproductive structure of investment in fixed capital, % to total

Industry	2000	2003	2004	2005	2006	2007	2008	2008 to 2000
Investment in fixed capital	100	100	100	100	100	100	100	-
Modernization and reconstruction	69.5	58.9	43.7	33.7	29	23.5	26.6	38.3
New Construction	30.5	25.8	46.5	58.5	62.5	65.8	58.1	190.5
Acquisition of fixed assets	-	15.3	9.8	7.8	8.5	10.7	15.3	-

declining share of capital investments allocated for reconstruction and technical re-equipment, which can lead to the preservation of a high degree of depreciation of production assets. This, in turn, indicates that the volume of investments is mainly determined by minimal technological needs and investment, preserving technological backwardness, can not become a support for the region's economy. On the other hand, the share of investment for their accumulation increases (new construction) that can be considered as the beginning of the transition to innovative development of the economy. However, in this financial crisis the increase in the share of investment for new construction is likely to lead to an increase in the number of unfinished construction projects.

One of the major structural characteristics of the investment process, reflecting the direction of investment flows, is the branch structure of investment, which transformation reflects the trends of the country's economic policy. The greatest changes occurred in the period of shock therapy, when, because of the liberalization of prices, some industries have lost the financial resources that did not allow to compete with the influx of imported products. Since the second half of 1990, the intensity of changes in the sectoral structure of investment has declined, however, they continue to be evident.

First of all, we note that the movement of investments is formed under the following circumstances:

- capital flows to the industry with the highest yield;
- the movement of capital is carried out in those segments of the economy where there is a guarantee for sustainable business income;
- direction of investment is determined by the economic spheres, which develop under the multiplicative effect of "growth potentials";

Table 6. The sectoral structure of investments of the Vologda region, %

Sector	2000	2003	2004	2005	2006	2007	2008	2009	2008 to 2000, p.p.
Industry	40.3	53.3	50.0	42.3	32.7	31.5	37.1	39.7	98.5
Agriculture	5.9	5.7	2.3	2.5	3.6	4.5	4.4	1.5	25.4
Construction	1.5	3.4	0.7	0.6	0.9	1.3	1.3	0.8	53.3
Transport and communications	30.4	21.0	39.3	47.2	53.9	49.9	39.9	42.8	140.8
Trade	1.6	3.1	0.9	0.8	1.1	2.2	1.2	1.1	68.8
Other	20.3	13.5	6.8	6.6	7.8	10.6	16.1	14.1	69.5
Total	100	100	100	100	100	100	100	100	-

Table 7. Investment structure in fixed capital by industries,%

Branch	2003	2004	2005	2006	2007	2008	2008 to 2003, p.p.
Industry	100	100	100	100	100	100	-
Metallurgical production	57.8	70.1	71.9	58.9	43.3	55.3	95.7
Chemical production	19.3	10.3	4.7	13.4	33.4	21.8	113.0
Wood processing	6.3	2.5	3.2	4.1	9.8	7.5	119.0
Food production	4.8	7.4	6.0	3.0	3.1	4.7	97.9
Machinery and equipment production	1.7	0.9	0.4	1.5	1.2	1.5	88.2
Textile production	0.3	0.7	0.3	0.3	0.6	0.5	166.7
Pulp and paper production	1.0	0.1	0.1	0.6	0.8	0.7	70.0
Other non-metallic production	6.9	4.5	6.3	5.7	2.6	4.4	63.8
Other industries	1.9	3.5	7.1	12.5	5.2	3.6	189.5

• spatial orientation of investment flows is formed in the direction of economic centers and zones of influence with more developed infrastructure and providing more income with less investment.

The sectoral structure of investments of the Vologda oblast *(tab. 6 and tab. 7)* shows the unbalanced development of the regional economy.

During the period of economic transformation the investment in agriculture reduced significantly. This trend can be seen as unfavorable, because decline in investment in agriculture can affect the country's food self-sufficiency. This fully applies to the Vologda region, which has all conditions for the production of essential foodstuffs, not only for domestic consumption but for export outside the region. The share of investment in construction in the oblast also remains at a relatively low level, although the industry is of great importance to investment activities. As for such an important product of the construction industry, as construction of residential houses, the share of investment in housing construction in the area tends to decrease. In the sectoral structure the investment of transport and communications is marked out on the volume. We note here that the jump in the volume of investment in figure 1 is the result of increased investments in this sector. Of course, for infrastructure development of the oblast these investments are important, even though much of them are related to the financing of pipeline construction linking gas deposits in Siberia with Western Europe.

Data of table 6 and table 7 give a visual representation of the direction of investment flows. We conclude that the basic income country (and some regions, including the Vologda region) extract from oil exports, raw materials and metals; part of these revenues in the form of investment is in the same industry. We also note that with the visible growth of investment there is no noticeable change in the basic proportions of the economy and industry.

It should be emphasized that the decline in shares of such industries as machinery, forest industry, and light industry looks oppressive, as for the development of these industries in the country and in the Vologda region there are all the necessary conditions (natural resources,

skilled labor forces, scientific and technical basis). In this case the products of these industries are aimed at domestic consumers, so their development will contribute to the accumulation process at the regional level. Also we should note that the share of investment in industries that define scientific and technological advance is still not high enough.

As for the territorial structure, it remains asymmetrical, and does not create opportunities for the development of municipalities of the Vologda region *(tab. 8)*.

The data in this table very clearly show that for the period 2000 – 2009 much of the investment still goes to two major industrial centers of the oblast – Vologda and Cherepovetz. Most of the municipalities of the region do not receive sufficient investment that in the future can adversely affect the functioning of their economies.

The following table shows the grouping of the municipal entities of the region in two important coordinates, they are: the share of investment, which accounts for a certain municipality, and the index of physical volume of investment, which allows to make a comparable assessment of investments over a period of time *(tab. 9)*.

The analysis of the tables shows that over the past ten years in some districts-outsiders (investment share in the overall volume is less than 1%) investments increases, but these rates

Table 8. Grouping of municipalities of the Vologda region in terms of investment, as % of total

More than 10%	From 10% to 3%	From 3% to 1%	Less than 1%
		Year of 2000	
Vologda Cherepovetz	District of Vologda District of Vytegra	District of Belozersk District of Vashki District of Veliky Ustyug District of Gryazovetz District of Sokol District of Chagoda District of Cherepovetz District of Sheksna	District of Babaevo District of Babushkino District of Verkhovazh'ye District of Vozhega District of Kadui District of Kirillov District of Kichmengsky Gorodok District of Mezhdurech'ye District of Nikolsk District of Nyuksenitsa District of Syamzha District of Tarnoga District of Tot'ma District of Ust'-Kubinskoye District of Ustyuzhna District of Kharovsk
		Year of 2009	
Vologda Cherepovetz	District of Veliky Ustyug District of Vytegra District of Sheksna	District of Vologda District of Gryazovetz District of Cherepovetz	District of Babaevo District of Babushkino District of Belozersk District of Vashki District of Verkhovazh'ye District of Vozhega District of Kadui District of Kirillov District of Kichmengsky Gorodok District of Mezhdurech'ye District of Nikolsk District of Nyuksenitsa District of Sokol District of Syamzha District of Tarnoga District of Tot'ma District of Ust'-Kubinskoye District of Ustyuzhna District of Chagoda District of Kharovsk

Table 9. Grouping of municipalities of the region by the share of investments and the index of physical volume

		The share of investment to total investment in the region (%)			
Index of physical volume of investments in % (2009 to 1999)		More than 10%	From 3% to 10%	From 1% to 3%	Less than 1%
	More than 300%	Vologda	District of Veliky Ustyug District of Sheksna		District of Kharovsk
	More than 200%		District of Vytegra		District of Verkhovazh'ye District of Mezhdurech'ye District of Syamzha District of Ust'-Kubinskoye District of Ustyuzhna
	More than 100%	Cherepovetz		District of Vologda District of Gryazovetz District of Cherepovetz	District of Kichmengsky Gorodok District of Nyuksenitsa District of Sokol District of Tot'ma
	Less than 100%				*District of Babaevo* *District of Babushkino* *District of Belozersk* *District of Vashki* *District of Vozhega* *District of Kadui* *District of Kirillov* *District of Nikolsk* *District of Tarnoga* *District of Chagoda*

Note. A group of districts having extremely low investment rates is in italics.

are clearly insufficient to overcome the one percent barrier and enter the path of sustainable development. The group of regions located in the lower right square arouses anxiety, which investment rate is extremely small.

Thus, in the investment sphere of the Vologda region there are profound crises related to the establishment of the market economy. However, in the period from 1999 to 2009 there were positive changes, which include the following:

1. Positive dynamics of investment in recent years and generally increasing volume of investments have improved the proportion of gross fixed capital formation in GRP.

2. There are new owners-investors, who have interests in our region and are ready to invest in the development of a number of industries.

3. Financing sources of investment are more diverse, amounts of foreign capital are increasing.

These positive characteristics of the investment process allow positioning the Vologda region, which belong to the territories comprising the "investment core" of the country. The region has sufficient investment potential and decreasing investment risks, as is reflected in the ratings annually carried out by the magazine "Expert".

However, along with the positive characteristics there is a number of negative ones, the overcoming of which would make the investment process even more dynamic. They are:

1. Lack of stability in the positive dynamics of the investment process.

2. Insufficient investment in the sectors of the economy of the region, capable to alter its appearance.

3. Irrationality in terms of development prospects of the oblast of industrial, technological and territorial structure of investment, as well as the structure of foreign capital.

Finding of ways to overcome the crisis in the investment area is part of one of the most serious discussions throughout the period of transformation, it concerns the question of the relation between market and government regulatory tools of economic processes (including investment).

In essence, this is a struggle between two conceptions of socio-economic development of the country, which oppose the market and the state. This question nonpluses us.

We try to look at this problem from another side. The basis for the development of complex systems is the interaction of self-organization and the organization. The character feature of the process of self-organization is the spontaneous nature, while the organization is associated with the deliberate ordering human activities. Hence, in an economic research the problem of the relation of spontaneous self-organization (in fact, they are market processes) and deliberately organizing human role in them (it can be represented by functioning of state institutions) has the essential importance. Hence, there is an important methodological conclusion, based on the fundamental postulates of the system and synergistic approach: in terms when a system is undergoing a profound transformation and is in unbalanced state, when choosing regulatory tools taking into account of motion trends of the system and analysis of its response to external exposures becomes necessary. Moreover, a system in an unstable state has increased sensitivity to even small incidents that may have a decisive influence on the trajectory of its development.

Recognition of the investment sector in the region as complex and open system that has the ability to develop, but is characterized by dependence on external conditions, suggests that its evolution follows the laws inherent in this class of systems. We especially note that during periods of instability "an unpredictable behavior of people, endowed with freedom of will may play the role of the destabilizing factor" that can cause unpredictable behavior of complex system. But an accident does not negate determinism, moreover, it complements it. This is manifested in the fact that at the point where there is a choice of development alternatives, the field of possible paths of development is limited by the internal properties of the system. The fact that ways of evolution of complex systems are not the only ones, and there are a range of possible paths within the field of possibilities, is outlined by E. Knyazeva [4], S. Kurdyumov [2], V. Budanov [1]. We agree with these authors, who affirm that there is a higher type of determinism – determinism with understanding of the ambiguity of the future and the possibility of entering the desired future, i.e. determinism, which strengthens the role of man. This pattern of complex system development has specific requirements for management. Taking into account the above information, the following requirements to the nature of the state regulation of the investment process in the region, which should be active, effective, "soft" and meets the following criteria, were formulated:

1. State regulation should be based on the functioning laws of the system.

2. State regulation should force the synergetic effect, in which the volume of the result is determined by the volume of investment funds, and how the used funds and management practices correspond to the internal properties of an object for investment, determining its susceptibility to influences as well.

3. Detection of investment objects, initiating cooperative effects, reduced to the justification and selection of investment priorities. Support for selected objects of investment by the state operates as the control parameter, a trigger mechanism for self-organizing processes (on the principle of the multiplier). These investment objects are called to play the role of a link, and if it is grasped, you can pull the whole chain.

4. State regulation should be timely.

5. The regulatory system should be seeking feedback from the investment sphere, to prevent destructive and strengthen creative tendencies.

The past years, according to some authors, were a period of missed opportunities. So today, taking into account the new system calls of the "turbulent" decade, we need more active and substantiated steps in the direction to sustainable development of the country as a whole and its individual regions.

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UDC 330.341.1(476+470.2)

The basic parameters of the scientific and technical activity in the Republic of Belarus and in the of the NWFD of the RF *

In the article the comparative analysis of the basic parameters of the scientific and technical activity in the regions of the North-West federal district of the Russian Federation and in the Republic of Belarus is carried out.

Innovations, scientific and technical potential, international scientific and technical cooperation.

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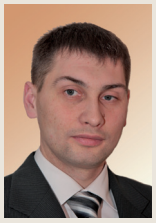

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The up-to-date part of the new economy's formation in the post-socialist countries is critical in the context of the processes determining the transition from the industrial paradigm of development to the postindustrial one. The development of this paradigm's structural basis (i. e. national innovational systems) led to both the essential increase of the scientific and technical potential in some countries and to the serious expansion and intensification of the traditional researches' spheres which along with the development of the new branches of the scientific knowledge and with the interdisciplinary approach led to the objective impossibility of the full-fledged scientific development in a separate state.

The critical number of the researchers working on the decision of the essential present-day problems can be only formed at the international level. Fundamental researches in the new fields of knowledge demand the material and financial resources' accumulation not only in separate countries, but also in the world community in general. Therefore the cooperation in the scientific sphere between the states at all levels (at a state level, at a regional level, at a level of a separate organization, group and researcher) nowadays becomes the process caused by the logic of the universal development. The existing specialization of scientific schools, the historical, climatic and economic conditions of the countries' and regions' development form preconditions for the achievement of the synergetic effect received as a result of seeking optimal points of making efforts of the parts and their complementary interaction according to the pattern "winning&winning". This peculiarity of international scientific and technical cooperation (ISTC) allows providing maximization of the effects, both economic and socio-cultural which cannot be achieved with the traditional support on the internal means only.

Thus, for activation of the innovational development of any scientific and technical activity's subject (a country, a region, an organization, and a group) forming strong relations with foreign partners is necessary. In the mentioned context the scientific task lies in the optimization of the selection process of a partner, which interaction will secure the synergetic effect. The logic of the directions' definition of the coordinated innovational development is connected with studying the opportunities caused by the developed scientific and technical potential, and the needs determined by the specific character of the economic and socio-cultural development of Belarus and Russia's North-West federal district.

Two directions of the quantitative analysis are possible. The first one is connected with the partners' and absolute characteristics (for example, the size of the territory, the gross national product, the level of employment in economy) and, accordingly, with their scientific and technical potentials. The second direction is caused by the structural hierarchy's presence in the elements of cooperating innovational systems (of a country or a region).

The analysis of the scientific and technical cooperation's system organized between the subjects, representing different levels of interaction means carrying out estimation of the start conditions determined by the innovational potential of a country (a branch, an organization). In this research's context the innovational potential can be defined as a set of personnel, material, financial and information resources of the scientific and technical sphere and innovational infrastructure providing its efficient functioning. The general definition of potential can be adapted to different levels, including supranational, national, regional, branch-wise levels and a level of an enterprise.

The general characteristic of the partners (NWFD and Belarus) shows the fundamental similarity of the basic development's aspects of their socio-economic and scientific-technical spheres. Against the background of the general tendency of the advancing but non-stable growth of the production volumes (with the fluctuations' amplitude from 5 to 10%) the high degree of the reserves' deterioration is marked, which is aggravated by the insufficient size of investment (from 5 to 7% of the reserves' cost).

The period of the production base's renewal can make 30 years. The partners do not possess the developed hi-tech production's clusters. In the foreign commerce turnover the structural deformations caused by the significant share of the products' export with the low added cost are noted while the import streams are directed on the goods with a bigger quantity of technological repartitions. As a result the competitiveness of the majority of Belarus' and Russia's production is basically determined by the relative cheapness at the sufficient basic degree of quality.

Thus, the enterprises work within the framework of the classical model "demand and supply", but the non-price determinants of demand practically do not operate. The traditional character of the produced commodity groups does not allow receiving additional profits from the practical realization of the temporary monopolies' concept created by means of the exclusive production's release.

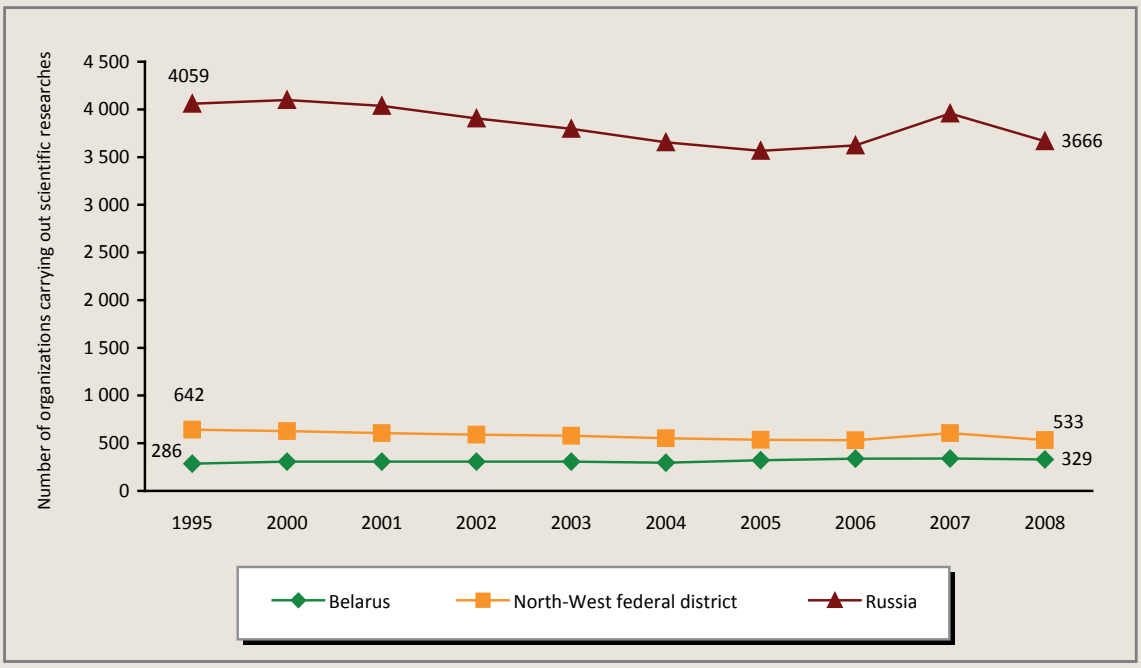
The comparative analysis shows the partners' fundamental adequacy in the actual sizes of the economy. So, at the eightfold territorial superiority of North-West federal district the higher population density in Belarus provides approximate labor potential's comparability. At the relative specific equivalence of the industrial development we should note the importance of the Belarus agrarian sector. The difference in the gross national product's size per head in Belarus to North-West federal district makes 1.4 times; in the specific volumes of the retail trade this difference makes 1.6 times. In the gross output of North-West federal district the weight of wages is more that causes the greater consumption potential of the Russian workers *(tab. 1)*.

In the conditions of the raising inequality of the world development the major task is providing high rates of economic growth. Thus escalating of the scientific and technical potential should make the basis of the progressive development. The measures of optimization of the ratio between new knowledge and its use in the real sector of economy, of increase of the investments' effectiveness in scientific-technical and innovational activity are necessary. On the other hand, the scientific and technical potential's contribution to the competitiveness'

Table 1. The comparative analysis of the socio-economic potential of Belarus and Russia's North-West federal district (by the data of 2008)

Parameter	Country / District / Region				**NWFD to Belarus , times**
	Russia	Including NWFD	Including Vologda region	Republic of Belarus	
Territory, thous. km^2	17098.2	1687.0	144.5	207.6	**8.1**
Population, thousand people	142008.8	13501.1	1223.0	9,690	**1.4**
Mid-annual number of the workers occupied in economy, thous. people	67174.0	6801.1	613.7	4,594	**1.5**
Gross regional output, billion doll.	867.4	84.4	8.1	44.7	**1.9**
Gross regional output per head, doll.	6108.5	6251.9	6623.1	4614.3	**1.4**
Average monthly wages of workers in economy, doll.	526.4	581.5	502.5	323.0	**1.8**
Capital assets for a person occupied in economy, million doll.	27.5	28.5	30.3	34.6	**0.8**
Investments into capital assets for a person occupied in economy, million doll.	3.8	4.6	4.7	2.6	**1.7**
Volume of the industrial output for a person occupied in economy, thous. doll.	11.4	13.0	19.9	9.7	**1.3**
Volume of agricultural production for a person occupied in economy, thous. doll.	1.2	0.6	1.3	2.5	**0.2**
Turnover of the retail trade, billion doll.	422.3	39.6	2.2	17.8	**2.2**
Turnover of the retail trade per head, doll.	2974.0	2933.3	1833.3	1837.0	**1.6**
The average USA dollar exchange rate (according to the data of the National bank of Belarus), RB rubles				2,149	
The average USA dollar exchange rate (according to the data of the National bank of Russia), RF rubles	25.7				

Dynamics of the number of organizations carrying out scientific researches



Sources: Regions of Russia: Socio-economic indices. 2009: stat. coll. / Russian statistics. – Moscow, 2009. – P. 782; Belarus and Russia. 2009: stat. coll. / Belarus statistics; Russian statistics; Committee of the Allied state. – Moscow, 2009. – P. 129.

growth depends on the macroeconomic environment in the country, on the development of infrastructure, on normative legal provisioning, on adequacy of the measures on the state innovational, structural-investment and industrial policy.

The scientific core is made up of the research organizations and groups working in them. At the period from 1995 till 2008 the number of organizations carrying out scientific researches decreased for 9.7% in Russia, for 17% in NWFD, and for 15% in Belarus *(figure)*. The increase became possible due to the growth of the research organizations', higher educational institutions' and industrial organizations' quantity, against the background of the reduction of design offices', experimental plants' and survey organizations' number.

Organizations, carrying out researches, concentrate in large cities: in Belarus it is Minsk (203 units, or 62%), in NWFD it is Saint Petersburg (361 units, or 68%), i.e. the scientific clusters in NWFD and Belarus are generated according to the focal-geographical principle.

Insufficient development of the "factory science" (scientific divisions at the industrial enterprises) is characteristic. The share of the industrial enterprises, carrying out researches, in the total number of the scientific organizations made 19.8% (65 units) in Belarus in 2008[1], and 7% (265 units) in the Russian Federation in 2007[2].

The number of personnel occupied with researches, for 10 thousand of the people occupied in economy, both in NWFD and in RB has not essentially varied recently. Thus the researchers' concentration in NWFD two times surpasses the level of Belarus *(tab. 2)*.

Despite of the relative stability of the scientific staff's number, the increase of qualifying and age disproportions is observed. In particular, the tendency of the scientific staff's ageing is traced. The significant share of Belarus and Russian

[1] Conditions and perspectives of the scientific development in the Republic of Belarus in 2008: analytical report / I.V. Voitov [and oth.]. – Minsk, 2009. – P. 15.

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Table 2. Dynamics of the number of personnel carrying out scientific researches (for 10 thousand people occupied in economy), people

Country / region	Year							2008/2002, %
	2002	2003	2004	2005	2006	2007	2008	
The Russian Federation, including	133	131	126	122	120	118	111	**83.5**
North-West federal district, including	168	165	161	155	152	152	146	**86.9**
Vologda region	7	7	9	8	9	8	8	**114**
Republic of Belarus	68	66	64	69	66	69	69	**101.4**

Sources: [Electronic resource]. – Access mode: www.gks.ru; Science; Innovations and technologies in Belarus. 2008: stat. coll. – Minsk, 2009. – P. 54.

researchers is of the pension age. Nowadays in Belarus the share of Doctors of Science older 60 years makes 33.7% and the share of Candidates of science older 60 years make 23%; in NWFD the situation is almost the same.

Thus, despite of the specificity of the scientific work based on the extended productive age, the conditions for breaks in the personnel chain, for decrease of the succession level at scientific schools, for increases of probable loss of knowledge not included into scientific reports and skills of the research activity are created.

In the territorial aspect the personnel potential is dispersed irregularly. The most part of the scientific staff is concentrated in Minsk and Saint Petersburg. In 2008 the number of personnel made 23.7 and 44.7 thousand people accordingly (or 75.4 and 83.9% of their total number). The staff of the superior level of proficiency (Doctors and Candidates of Science) is also dispersed in the same way. In 2008 in Minsk its quantity made 83.3% (3,224 people) of its total number, and in Saint Petersburg its quantity was 83.7% (11,753 people).

The scientific personnel potential's concentration in capitals and regional centers is characteristic for all CIS countries. As a rule, all fundamental and applied science is concentrated in such "points of an attraction". Scientific institutions existing at a local level are mainly occupied with the decision of the minor problems focused on getting the commercial effect in the short-term period.

In North-West federal district the share of the researchers in the total number of the personnel occupied with researches makes 54%. In Belarus the share of the researchers is 5% higher, than in NWFD, and 10% higher than in the Russian Federation in general.

At the period from 2000 till 2008 the number of the Russian and Byelorussian researchers decreased, the number of the design offices and organizations that caused the decrease of the scientists' qualitative level the innovational potential was reduced.

For the mentioned period in Belarus the share of Doctors of Science decreased for 0.3%, the share of Candidates of Science decreased for 1.3% *(tab. 3)*. In Russia insignificant structural fluctuations of the staff of the superior level of proficiency are observed. We can note that in the structure of the Belarus researchers the share of the staff with scientific degrees is rather low.

Table 3. Share of the researchers with a scientific degree of Doctor of Science, Candidate of science, %

Parameter	Russia		Including NWFD		Belarus	
	2000	2008	2000	2008	2002	2008
Researchers in total,	100	100	100	100	100	100
Including:with a scientific degree – doctor of science	5	7	5	6	2.6	2.3
– candidate of science	20	20	21	20	11.3	10.0
without a scientific degree	75	73	74	74	86.1	87.7

Sources: Regions of Russia. Socio-economic indices. 2009: stat. coll. / Russian statistics. – Moscow, 2009. – P. 786; Science, innovations and technologies in Belarus. 2008: stat. coll. / Byelorussian statistics. – Minsk, 2009. – P. 58.

Personnel problems in many respects are caused by low image of the scientific work, by low solvent demand for the research results, by absence of the effective mechanisms of attraction and keeping experts in the scientific and technical sphere.

In 2008 in NWFD 196 organizations (in RB – 116 organizations) were engaged in post-graduate students' preparation (for one organization it made, accordingly, 94 and 37 post-graduate students). As a rule, within the framework of the postgraduate studies the time period of three years is established for preparation and presentation of a dissertational research. In 2008 in Byelorussia preparation of Doctors of Science was fulfilled by 38 organizations, in NWFD it was fulfilled by 65 organizations (for one organization it made, accordingly, 3 and 10 Doctors of Science).

The efficiency of Candidates' and Doctors' preparation is at a rather low level *(tab. 4)*.

As a whole it is possible to note, that the share of the successful postgraduate studies' completion with presentation of a dissertation in both considered territorial units is insignificant. In 2008 in RB 3.5% of post-graduate students of their total completion number finished studies with presentation of their dissertations, in NWFD the share is 22%. Among the probable reasons is insufficiency of the three-year period for the high-grade carrying out of the educational and scientific plan, especially in view of the procedural and design aspects of the dissertation's preparation and of the multistage admission for its presentation. Besides, the existing level of the research grant does not allow the post-graduate student to concentrate completely on the research activity. As a matter of fact, in view of the raised material demands in the youth segment and the growing cost of a basket of goods, a post-graduate student faces to a choice: either to be occupied with the non-profile work or, in view of the poor financial position of scientists, to seek for prospects of his/her personal potential in a more highly paid sphere.

Recently the positive dynamics of growth of the internal expenses for researches has been kept *(tab. 5)*. Thus the science intensiveness of Belarus gross national product, making 0.97% (0.75% in 2008), seriously remain behind the parameter achieved in NWFD (1.66%). We can note that in the nearest future the European Union intends to reach the 3% level of the science intensiveness of the gross national product. In Sweden and Finland this level has already been surpassed.

Thus, the dynamics and the level of the science intensiveness of the gross national product in Belarus (less than 1%) and in NWFD of the Russian Federation (about 1.5%) do not show that the mentioned countries really follow the innovational way (from the economic safety's point of view the critical level of the science intensiveness should make 1%).

The basic source of means for carrying out scientific researches is the state budget (in Belarus

Table 4. The basic parameters of the activity of Postgraduate and Doctoral Studies in Belarus and NWFD, 2008

Parameter	Belarus	NWFD
Postgraduate study entrance (2005), people	1,508	6,200
Postgraduate study completion (2008), people	1,083	4,100
Postgraduate study completion to entrance, %	71.8	66
Postgraduate study completion with presentation of the dissertation (2008), people	38	900
Postgraduate study completion with presentation of the dissertation to entrance, %	3.5	22
Doctoral Studies completion, people	53	197
Doctoral Studies completion with presentation of the thesis for a doctor's degree, people	4	31
Doctoral Studies completion with presentation of the thesis for a doctor's degree to completion, %	7.5	15.7

Sources: Conditions and perspectives of the scientific development in the Republic of Belarus in 2008: analytical report / I.V. Voitov [and oth.]. – Minsk, 2009. – P. 29; The basic parameters of the development of the North-West federal district's regions. 2009: stat. coll. – Vologdastat, 2009. – P. 166.

Table 5. Internal expenses for researches in gross national product, %

Country / district / region	2004	2005	2006	2007
The Russian Federation	1.34	1.23	1.25	1.25
North-West federal district	1.72	1.66	1.69	1.66
Vologda region	0.05	0.04	0.06	0.07
Belarus	0.63	0.68	0.66	0.97

Sources: [Electronic resource]. – Access mode: www.gks.ru. Science, innovations and technologies in Belarus. 2008: analytical report / I.V. Voitov [and oth.]. – Minsk, 2009. – P. 17.

it makes 50%, in Russia it makes 60%). Thus the shares of the charges on fundamental investigations are approximately equal and make 15 and 17% accordingly.

For several years the positive tendency of increasing the number of the patents' for inventions has been marked. Nevertheless, in their quantity for 1 million inhabitants Russia's regions remain behind the industrially advanced countries in 3 times, Belarus remains behind in 5 times.

The densities of the expenses for technological innovations in the total amount of the sold enterprises' production made 5.5% in Russia, and 4.2% in Belarus. In the structure of expenses for technological innovations the charges on the equipment's purchase (i. e. on the ready decisions' purchase) prevail, whereas in the leading countries the basic share accounts for researches (up to 80% of expenses). The goods' cost paid by the Russians and Belarus include the cost of foreign scientists' work and the cost of transnational corporations' scientific and technical activity instead of providing employment and worthy payment level within own innovational economy.

For the recent five years the share of the new production in the total amount of the industrial production increased to 14% in Belarus and to 3.4% in NWFD *(tab. 6)*. In the industrially advanced countries the bottom rate is 30%.

In the context of the foreign commerce organization there is a steady negative balance on technologies, services of technical character and hi-tech goods. For instance, in Belarus these commodity groups' import exceeds the export (1.9 and 2.6 times accordingly). In Russia in general and in NWFD in particular the technologies' and the technical services' import exceeds export (2.2 and 1.7 times accordingly).

The innovational activity of organizations is still low: in Belarus it hardly makes 17%,

Table 6. Innovational activity of the organizations in Belarus and in NWFD

Parameter	Year					2008 / 2004
	2004	2005	2006	2007	2008	
1. The number of organizations carrying out innovational activity, units						
Belarus	292	318	378	380	371	1.27
Russia	2,532	2,708	3,285	3,339	N/d	1.32*
NWFD	287	290	401	357	360	1.25
2. Densities of the organizations, carrying out innovational activity, in the total number of the organizations, %						
Belarus	13	14.1	16.3	17.8	17.6	1.35
Russia	9.6	9.7	9.9	10	N/d	1.04*
NWFD	9.1	9.4	11	9.8	N/d	1.08*
3. Volume of the innovational goods, works, services (in percentage to the total amount of goods, works. services)						
Belarus	11.9	15.2	14.8	14.8	14.2	1.19
Russia	5.3	5	4.7	4.6	N/d	0.87*
NWFD	2.4	3.3	4.4	3.4	N/d	1.42*

*2007 / 2004, times.
Sources: [Electronic resource]. – Access mode: www.gks.ru; Science, innovations and technologies in Belarus. 2008: stat. coll. / Belarus statistics. – Minsk, 2009. – P. 142.

in NWFD it makes about 10%. The innovational infrastructure is not developed, 10 technological parks are registered in Belarus (only two of them work effectively), and in NWFD 3 parks operate.

According to the analysis we can draw the conclusion that for the national innovational systems of Belarus and North-West federal district of the Russian Federation the problems of reproduction and use of the scientific and technical potential are characteristic. It is possible to conclude, that at the present moment they do not form the conditions for the reduction of the qualitative backlog from the level of the innovational sphere's development in the leading countries of the world. The long-term negative trends still operate: the outflow of the personnel occupied with researches; the low level of the science intensiveness of the gross national product; the insufficient densities of the added cost of the high technology production in the gross national product; the reduction of innovatively active enterprises' quantity; backwardness of the hi-tech sector of economy; the negative trade balance of the innovational production. All this constrains the real increase of competitiveness of Byelorussian and Russian economies.

For NWFD of the Russian Federation and for Belarus the unfairly long terms of the technologies' use, the high degree of the technical equipment's deterioration are characteristic. The reasons of the backlog also lie in the low innovational activity of enterprises. It is connected with insufficient research financing and with the enterprises' shortage of means for purchase of highly effective technologies. Besides they have no sufficient motivation for active investment into scientific development. The market of intellectual property does not work in full force. The innovational infrastructure is not developed and the rates of its subjects' creation are low.

One of the main obstacles in involving scientific and technical potential to the decision of the problems of Byelorussian and Russian economies' modernization is the existing isolation of managing subjects' and scientific organizations' interrelations. It is necessary to intensify the activity on the joint innovational productions' creation in two mentioned countries, also within the framework of innovational infrastructures.

Nevertheless, there is also some peculiarity in the development of Belarus and NWFD that allows expecting the synergetic effect from the construction of the complementary cooperation system based on the use of absolute and comparative advantages. Integration of the efforts for overcoming the problems marked above will allow increasing scientific and technical potential of Belarus and NWFD, and raising the efficiency of its use.

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UDC 631:311(470.1)

Agriculture on the European North: All-Russian agricultural census results

On the basis of All-Russian agricultural census results of 2006 the analysis of the objects, resource potential and agriculture pattern of the European North of Russia is given in the article. The census results allow us to draw up a number of concrete guidelines on the development of government's agricultural policy.

Agriculture, All-Russian agricultural census, European North, economic management, resource potential, infrastructure.

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In 2006 in July as consistent with the Federal Law dated July, 27, 2005 "On All-Russian agricultural census" and the Decree by the RF government dated October, 31, 2005 "On organizing All-Russian agricultural census" All-Russian agricultural census (ARAC) was taken; on the distant and hard-to-reach territories it was hold from the 15th of September till the 15th of November in 2006. The previous agricultural census was hold in 1920.

The results of census allowed us to receive the data on the following: the objects of census, agricultural employment, dimensions and structure of areas, cattle and poultry head, machinery and equipment availability, presence of production buildings and condition of agriculture infrastructure [1, 2].

Business entities

According to the results of census as a whole in the European North of Russia as of July, 2006 there were 700 agricultural enterprises including 310 large-scale and medium-scale ones, 1,920 peasant (farmer) households, 337 individual entrepreneurs, 2.2 thousand nonprofit

Table 1. Structure of agricultural organizations regarding business entities as of July, 1, 2006, %

Business entities	Russia	European North	Arkhangelsk region	Including Nenets Autonomous District	Murmansk region	Karelia Republic	Komi Republic
Large and medium agricultural enterprises, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Among them: economic associations and companies	35.2	31.0	27.7	-	23.1	47.2	29.6
agricultural production co-operatives	37.9	25.8	38.0	72.7	25.6	-	22.2
state-run and municipal unitary enterprises	9.5	18.7	9.5	9.1	17.9	34.0	24.7
Small agricultural enterprises, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Among them: economic associations and companies	58.7	46.4	30.6	-	100.0	87.5	53.7
agricultural production co-operatives	30.8	20.9	23.1	100.0	-	-	29.6

citizen associations (fruit garden, vegetable garden, dacha and other associations), 418.5 thousand personal subsidiary plots and other individual households of citizens.

Thus a combination of large, medium and small enterprises and households is typical of the agricultural sector of the area. At present the collective, personal subsidiary and peasant-and-farmer structures are functioning here. Different entities have been formed: agricultural production co-operatives, economic associations and companies, state-run unitary enterprises, individual and farmer households.

The structure of agricultural organizations regarding business entities on the whole in Russia, in the European North, in republics and regions is shown in *table 1*. As follows from the data given in the table, in the European North among large and medium agricultural enterprises the percentage of economic associations and companies made up 31%, the percentage of agricultural production co-operatives made up 25.8%, the percentage of state-run and municipal unitary enterprises made up 18.7%. On the whole in Russia their percentage was 35.2; 37.9 and 9.5% respectively. The portion of state-run and municipal unitary enterprises in the area under consideration especially in the Karelia Republic and the Komi Republic is higher than in Russia.

All-Russian agricultural census found that in 2006 the agricultural production in the European North wasn't carried out by 32.3% of large and medium enterprises, 53.1% of small enterprises, 66.7% of farmer households, 16.7% of personal subsidiary households and other individual households of citizens. On the whole in Russia these indicators were 29.4; 37; 51.1 and 24.1% respectively. It indicates that the modern government agrarian policy doesn't promote the agrarian entrepreneurship development.

Judging by the census results, in 2005 in the European North 73.3% of agricultural enterprises, 68.1% of peasant (farmer) households and individual entrepreneurs were engaged in growing the cereals, potatoes and other agricultural crops; respectively 70.3 and 41% were engaged in cattle breeding, 10.7 and 41% were engaged in ship, goat and horse breeding, 10.1 and 3.2% were engaged in reindeer and other livestock breeding.

Resource potential

Manpower resources. From the census figures, as of July, 1, 2006 out of the total number of workers engaged in economy of the European North 76% were the workers of large and medium agricultural enterprises, 7% were the workers of small enterprises, 12% were the workers of farmer households and 2% were the workers' percentage of individual entrepreneurs. The major part of manpower resources in the Murmansk region (96%) and Nenets Autonomous District (93%) was engaged in large and medium enterprises. In the Arkhangelsk region 16% of the employed workers are the share of farmer households *(tab. 2)*.

Table 2. Labour force in the context of enterprises and households of the European North as of July, 1, 2006, thousand persons

Area	Large and medium agricultural enterprises	Small agricultural enterprises	Farmer households	Among them the permanent employee	Individual entrepreneurs
European North	25.7	2.6	3.9	0.9	0.6
Arkhangelsk region	9.5	1.4	2.3	0.7	0.3
Including Nenets Autonomous District	2.2	0.09	0.02	-	0.07
Murmansk region	3.8	0.02	0.08	0.02	0.02
Karelia Republic	4.8	0.1	0.8	0.07	0.08
Komi Republic	7.6	1.0	0.8	0.2	0.2

The average annual labour force of large and medium agricultural enterprises engaged in fishery in the area composed 12%, those engaged in hunting – 0.2% and those engaged in produce processing of traditional and other trades – 24.3%. All workers of small agricultural enterprises were engaged in produce processing of traditional and other trades *(tab. 3)*.

Land resources. The total land area of the European North composes 36 mill. ha including 25.4 mill. ha of reindeer pastures. Nearly three fourth of reindeer pasture area are situated in Nenets Autonomous District (39.9%) and the Komi Republic (33.1%). Only small part of land is used for farming – 2.2%, and only 0.9% of land area is the share of arable land. The highest percentage of cultivated areas for the growing of agricultural crops is typical of the Karelia Republic (73.8%) and the Arkhangelsk region (19.8%), the lowest percentage – Nenets Autonomous District (0.1%) and the Murmansk region (0.3%). The low area development is explained by the adverse natural conditions to agriculture, immense areas wood-covered and small population density.

Natural hayfields and pastures dominate the agricultural land. So, the share of meadows per a hectare of arable land was 1.3 ha in the

Table 3. Occupation with traditional kinds of activity in the agricultural enterprises of the European North in 2005, %

Area	Large and medium enterprises			Small enterprises		
	Fishery	Hunting	Produce processing	Fishery	Hunting	Produce processing
European North	12.0	0.2	24.3	-	-	100.0
Arkhangelsk region	8.5	0.2	24.4	-	-	-
Including Nenets Autonomous District	0.9	-	28.7	-	-	-
Murmansk region	22.9	-	3.9	-	-	100.0

Table 4. Supply of land in the European North as of July, 1, 2006, thous. ha

Size and structure of land resources	European North	Arkhangelsk region	Including Nenets Autonomous District	Murmansk region	Karelia Republic	Komi Republic
Total land area	36037.7	20430.3	18144.9	6665.2	131.4	8810.8
Including the area of deer pastures	25404.9	10434.9	10142.5	6570.4	-	8399.6
Of the total agricultural land area:	803.0	457.7	23.0	17.5	97.0	212.8
arable land	317.6	188.8	0.2	12.4	51.2	65.3
hayfields	318.0	182.8	17.6	1.1	25.7	108.4
pastures	108.8	71.7	5.0	0.1	11.8	25.2
Share in land area, %: deer pastures	70.7	51.1	55.9	98.6	-	95.3
agricultural lands	2.2	2.2	0.1	0.3	73.8	2.4
Arable land	0.9	0.9	0.0	0.03	39.0	0.7

European North, 113 ha in Nenets Autonomous District, 2 ha in the Komi Republic. The areas and structure of land are shown in *table 4.*

As is obvious from the census results, 32% of agricultural land weren't used in the European North, and 25% – on the whole in Russia. In the Murmansk region this indicator accounted for 44%, in the Arkhangelsk region – 39% and in the Karelia Republic – 15%.

The analysis of agricultural area distribution among the European North enterprises and households which occupied with farming indicated that the percentage of agricultural enterprises made up 70.6%, that of peasant (farmer) households and individual entrepreneurs – 10.6% and that of personal subsidiary households of citizens was 14.3% of lands.

The average size of total area of land, reindeer pastures, agricultural lands and sown area per one enterprise (household) is shown in *table 5.* As the given data indicate, agricultural enterprises had 550 ha of agricultural land on the average, peasant (farmer) households and individual entrepreneurs – 26 ha, personal subsidiary households of population – 19 hundred m^2 of agricultural land and 7 hundred m^2 of sown area.

The major part of sown area was in the possession of agricultural enterprises, including 64% – in the possession of large and medium enterprises; the share of population households was 13% of the total sown area, that of peasant (farmer) households – 8%.

Feed crops (82.9%) dominated the total sown area in the households of all categories, the share of grain crops and leguminous plants was 2.1%, that of potato – 13.5%, that of vegetables in the open ground – 1.3%, that of industrial crops – 0.2% *(fig. 1).*

The main areas of grain crops and leguminous plants were concentrated in Arkhangelsk region (71%), those of potato – in Arkhangelsk region (46%), the Komi Republic (29%) and the Karelia Republic (22%). The areas under grain crops (93%) and feed crops (90%) were located in the agricultural enterprises, those under potato (84%) and vegetables (81%) – in the households of population.

The taking of census allowed us to get information about the action area under the protected ground in the agricultural enterprises, peasant (farmer) households and individual entrepreneurs *(tab. 6).*

Table 5. Total area of land, area under reindeer pastures and agricultural lands in the European North per one enterprise (household) occupied with farming as of July,1, 2006

Enterprises and households	Total land area	Deer pastures	Agricultural lands	Sown area
Agricultural enterprises, thousand ha	48.3	35.6	0.55	0.006
Peasant (farmer) households and individual entrepreneurs, ha	295	208	26	8.6
Private subsidiary households, ha	0.20	-	0.19	0.07

Figure 1. Structure of sown area under the agricultural crops for the yield of 2006 in the households of all categories in the European North (by % out of total sown area)

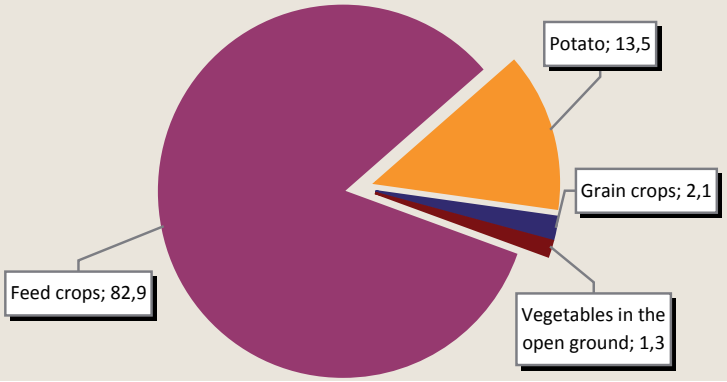


Table 6. Total action area of winter and spring greenhouses and hotbeds at the agricultural enterprises, peasant (farmer) households and individual entrepreneurs, 2006, thous. m²

Agricultural enterprises	Including		Peasant (farmer) households and individual entrepreneurs	Including peasant (farmer) households
	Large and medium	Subsidiary households of non-agricultural enterprises		
European North				
411.2	373.2	20.1	6.9	4.6
Arkhangelsk region				
129.8	123.3	6.6	2.0	2.0
Including Nenets Autonomous District				
15.8	15.8	-	-	-
Murmansk region				
60.2	55.8	4.4	1.4	0.5
Karelia Republic				
19.6	17.7	1.9	1.7	1.7
Komi Republic				
201.6	176.4	7.2	1.8	0.4

As is evident from the data cited above, the share of agricultural enterprises was 90.8% of the total action area of greenhouses and hotbeds, that of subsidiary households – 4.9% and that of peasant (farmer) households – 1.1%. The main areas of protected ground at the agricultural enterprises were concentrated in the Komi Republic (49%) and Arkhangelsk region (32%); 43% of action area of greenhouses and hotbeds at the peasant (farmer) households were located in Arkhangelsk region, 37% – in Karelia.

The agricultural enterprises allotted 88% of the action area of greenhouses and hotbeds for vegetables, the peasant (farmer) households – 63%. At these households the shares of cucumber crops were respectively 72 and 55% of the total area under vegetables crops.

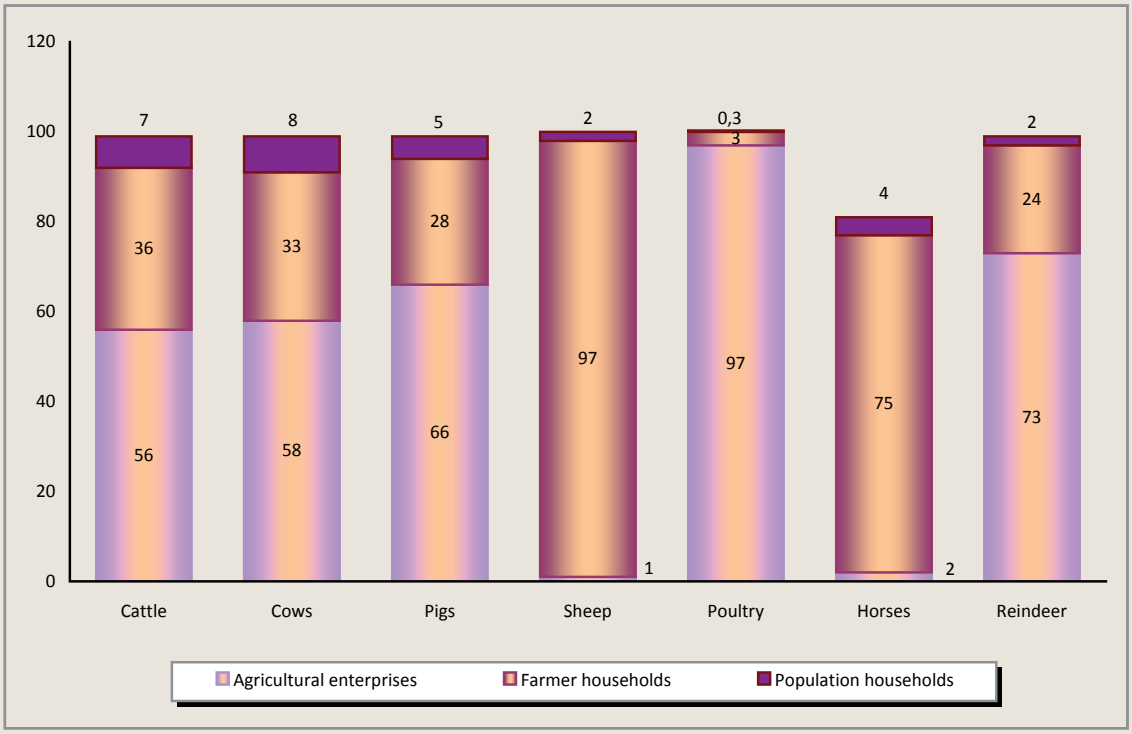
Livestock capita. The analysis of livestock being kept on the households of different agricultural producers showed that the livestock of cattle, pigs, sheep, poultry and deer was centered in general in the households of population and agricultural enterprises *(tab. 7)*.

The share of agricultural enterprises out of the total number of livestock was the following: cattle – 56%, including cows – 58%, pigs – 66%, poultry – 97%, deer – 73%, foxes and blue foxes – 100% and minks – 84%. In 2006 the pork, egg and poultry production was centered in the large enterprises where the poultry

Table 7. Livestock capita in the European North as of July,1, 2006, thous. heads

Kinds of livestock	Households of all categories	Including				
		agricultural enterprises	among them large and medium	farmer households and individual entrepreneurs	among them farmer households	population's households
Cattle	179.3	100.8	88.8	14.4	13.2	64.1
Including cows	77.5	45.2	39.8	6.5	5.9	25.9
Pigs	104.7	69.4	57.9	6.2	4.8	29.1
Sheep and goats	76.7	0.7	0.2	1.1	0.8	74.8
Among them sheep	40.8	0.5	0.1	0.9	0.7	39.4
Poultry	4237.2	4097.7	3958.7	14.7	13.9	124.8
Horses	10.9	2.1	1.6	0.5	0.4	8.2
Reindeer	382.2	278.3	271.7	11.8	5.9	92.2
Rabbits	99.3	5.4	-	0.8	-	93.1
Foxes	5.3	5.3	-	-	-	-
Blue foxes	11.0	11.0	-	-	-	-
Minks	93.9	78.9	-	-	-	-

Figure 2. Structure of livestock capita in the European North, %



factories worked. These enterprises equaled with the industrial enterprises in the level of production organization, the technological level and the use of advanced manufacturing sciences. The households of population dominated in keeping of sheep and goats (97% of the total number), rabbits (94%) and horses (75%). In the peasant (farmer) households there are only 7% of the total head of cattle including cows – 8%, pigs – 5%, horses – 4%, sheep and deer – 2% each *(fig. 2)*.

In the issue of census we received the information about the concentration of livestock capita. 23% of agricultural enterprises having 1,110 heads on average concentrated 68% of cattle head; 27% of enterprises keeping 22,000 heads of deer on average had 71% of livestock.

As for the peasant (farmer) households and the individual entrepreneurs, 62% of cattle head were kept at 10% of such households, having 237 heads each on average; 17% of that – at 9% of the households having 74 heads each on average; 71% of households had on average from 2 to 14 heads of cattle per one household.

Only 10% of personal subsidiary households were engaged in cattle breeding, on average one household had 2 heads. 30% of households had 1 head each, 49% – 2 heads, 17% – 3 heads, 8% – 4 heads each. 2% of households kept on average 7 heads per one household, only 0.2% of households – 15 heads of cattle. Such households approximate to farmer households in their nature of activity.

Sheep breeding takes an important place in the economic complex of the North. This field conforms with the nature of the district and the work skills of native population most of all, it is notable for high efficiency as well. Owing to the lack of expenses for laying-in of fodder and housing construction the venison production is high-yielding: in the households the first cost of venison per a quintal is more than two times as low as that of the beef production.

As of July, 1, 2006 the total head of deer was 382.2 thousand heads in all categories of households in the European North. The share of the district was 23% of the total head of deer in Russia *(tab. 8)*.

Table 8. Total head of deer regarding the categories of agricultural producers in the North areas as of July, 1, 2006, thous. heads

Area	Households of all categories	Including				
		Agricultural enterprises	among them large and medium	farmer households and individual entrepreneurs	among them farmer households	population households
Areas of the Extreme North and the localities equated to this status	1664.3	920.7	844.6	22.2	16.0	721.4
European North	382.2	278.3	271.7	11.8	5.9	92.2
Arkhangelsk region	212.2	148.3	143.0	8.8	2.9	55.1
Including Nenets Autonomous District	209.9	146.6	141.7	8.8	2.9	54.5
Murmansk region	67.0	59.4	58.1	0.6	0.6	7.0
Komi Republic	103.0	70.6	70.6	2.4	2.4	30.0

Among the northern subjects the 2nd place is taken by Nenets Autonomous District (12.8%), the 5th place – the Komi Republic (6.2%). The largest herd of deer is concentrated in Yamal-Nenets Autonomous District (44% of the total head of deer in the North area).

The census returns indicated that the reindeer head is 24% as little as the level of 1991 (2,258 thousand heads). For that period of time the reindeer head has been reduced by 2% in the European North and by 32% in the Asian part. The total head of animals has been reduced most of all in the Far Eastern federal district – from 1,2136th to 446th heads. It has been reduced by 49% in the Sakha Republic (Yakutia), by 62% in the Chukchi Autonomous District, by 85% in Magadan region and by 77% in the Koryak Autonomous District. The increase in deer head has been taken place only in Yamal-Nenets Autonomous District – from 490.5 th heads in 1991 to 732.2 th heads in 2006.

Techniques, production premises and infrastructure. All-Russian agricultural census permitted to get the information about present farming techniques, machinery, equipments and production premises, and also about the provision of the different agricultural producers with the subjects of infrastructure. There were 12.2 tractors and 7.1 cars per one large and medium agricultural enterprise on average, respectively 3.4 and 1.1 per one small enterprise. The agricultural enterprises are poorly equipped with machinery for applying the organic and mineral fertilizers and lime, and also with equipment for mechanized feeding, milking, disposal and milk-cooling. The farmer households and the individual entrepreneurs lack for farming techniques, machinery and equipment heavily.

In 2006 there were 1.8 tractors, 2 dual-purpose vehicles, 0.7 horse mower, 18.7 cars and 6.3 motorcycles per 100 households of population (*tab. 9*).

There were 1.3 all-terrain vehicle, 0,8 self-propelled barge and launch, 1.4 outboard motorboat, 2.2 hook-on boat motors, 3.1 motor sledges, 3.7 compact and mobile electrical power stations and 5.8 radio stations per one agricultural enterprise keeping reindeer breeding and herd horse breeding. The farmer households and the individual entrepreneurs are equipped with techniques much more poorly.

The available machinery of enterprises and households is rather old. At the large and medium agricultural enterprises the percentage of tractors at the age under 3 years is only 5%, the percentage of tractors aged of 9 years and more is 85%. At the small enterprises these indicators were respectively 5 and 90%. At the farmer households and the individual entrepreneurs the indicators of age machinery structure are not any better: the percentage of tractors at the age under 3 years is 4%, the percentage of tractors aged of 9 years and more is 87%.

As the census results show, the provision of the agricultural enterprises, farmer households and individual entrepreneurs with the subjects of infrastructure remains low *(tab. 10)*.

Table 9. Present techniques on average per 1 agricultural enterprise (household) in the European North as of July, 1, 2006, units

Machine name	Large and medium enterprises	Small enterprises	Farmer households and individual entrepreneurs	Population households *
Tractors	12.2	3.4	0.6	1.8
Trucks and dual-purpose vehicles	7.1	1.1	0.2	2.0**
Tractor plough	1.6	0.7	0.2	0.7***
Tractor mowers	3.0	0.9	0.2	0.3****
Sowers	1.0	0.2	0.05	-
Potato planters	0.4	0.2	0.06	-
Organic fertilizer spreaders	0.9	0.3	0.06	-
Machinery for applying the organic and mineral fertilizers and lime	0.6	0.08	0.03	-
Balers	1.4	0.5	0.1	-
Farm loaders	0.7	0.1	0.03	-
Potato diggers	0.5	0.2	0.09	-
Feed distributors for cattle	0.7	0.09	0.01	-
Milking units	1.2	0.4	0.06	0.04
Milk treaters and coolers	0.8	0.1	0.02	-
Motor units, motor cultivators	-	-	-	2.8
Cars	-	-	-	18.7
Motocycles	-	-	-	6.3

* Per 100 households.
** Dual-purpose vehicles.
*** Horse mowers.
**** Tractor and horse ploughs.

Table 10. Provision of the North area agricultural enterprises and households with the subjects of infrastructure as of July, 1, 2006, by % out of the total number of economic entities farming

	Area of the Extreme North and the localities equated to this status	European North	Arkhangelsk region	Including Nenets Autonomous District	Murmansk region	Karelia Republic	Komi Republic
Hard-surface road communication with main municipal district town or with mainline communications network							
1	65.5	78.1	69.0	27.3	70.4	92.3	86.0
2	73.3	85.8	82.1	-	72.7	90.9	86.4
Local hard-surface roads							
1	28.1	52.4	43.7	4.5	55.6	59.0	59.6
2	-	-	-	-	-	-	-
Power network connection							
1	83.3	90.0	85.1	63.6	77.8	97.4	98.2
2	85.3	77.3	77.7	6.7	48.5	78.5	80.1
Heat supply network connection							
1	31.2	40.5	31.0	31.8	33.3	43.6	56.1
2	4.2	3.1	2.6	-	12.1	1.5	4.4
Access to water-supply network							
1	35.7	55.2	39.1	27.3	70.4	69.2	63.2
2	8.3	18.7	18.7	-	27.3	14.7	22.3
Gas network connection							
1	5.1	5.2	3.4		3.7	-	12.3
2	6.6	0.9	-	9.1	-	1.1	1.9
Treatment facilities on the stock-farms							
1	6.8	17.1	11.5	9.1	29.6	10.3	24.6
2	2.0	6.8	8.1	3.3	6.1	3.8	9.2
Internet							
1	15.5	28.1	29.9	27.3	33.3	25.6	24.6
2	-	-	-	-	-	-	-
Water-supply system and production drains treatment							
1	8.8	21.0	12.6	13.6	37.0	23.1	24.6
2	-	-	-	-	-	-	-

Notes: 1 – large and medium enterprises; 2 – farmer households and individual entrepreneurs.

In the European North nearly half (47.6%) of the large and medium enterprises hadn't local hard-surface road; as a whole in the North area this indicator is even higher – 71.9%. Gas distribution networking is still very low. In the European North only 17.1% of the large and medium agricultural enterprises and 6.8% of the farmer households and individual entrepreneurs had some treatment facilities on the stock-farms.

Summary

The aim of All-Russian agricultural census has been attained. Missing in the statistics and reports the data on the subjects, resource potential, agriculture pattern, including small entities have been obtained. The extensive information has been collected. It will allow agro economics to work out some scientifically grounded suggestions for the government agricultural policy improvement and agile development of the rural areas. The information will be used in studies as well. The census returns are of great value for drawing up the government program of agricultural development and regulating the agricultural produce, raw material and food markets in the medium-term prospect of both the country and its regions.

The information evidences that it is necessary to change the criteria according to which the enterprises and households are rated as agricultural producers. In accordance with the Federal law "On agriculture development" the enterprise or individual producer is considered to be an agricultural producer if in the income structure the share of enterprise in selling and processing is no less than 70%. In the North environment the diversification of agro economy intends to cut this threshold till 40 – 50%.

The census returns indicated that quite a lot of enterprises and households didn't carry on any agricultural production both in Russia and in the North areas. For the provision of agricultural entrepreneurship with economic incentives it is necessary to improve the legislation which intends to make the requirements of target use of agricultural lands tougher, to neutralize the monopolistic influence of procurement, intermediate, processing and commercial structures, to cut the portion of exported products and to extend the agricultural producers' access to financial markets.

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UDC 338.47(470)

Rail transport structural reforms: some results

Some results of the third stage rail transport structural reforms are examined. The short analyses of the Russian railway system, infrastructure, rolling stock and main directions of R&D are presented in the article. The author touched economic and social impacts of reforms.

Reforms, railway transport, cargo and passenger transportation, social and economic impact.

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Before launching into the question under consideration, the author believes that there are sufficient reasons to remind of main indicators of transport development in Russia. It will help the author to express well-grounded opinion, besides any economic research should be accompanied with statistical data and calculations. It should also be noticed that the indicators of transport sector development such as loading of cargo, freight turnover, railcar turnover etc. put easy the researcher into orbit which makes it possible to see main outlines of national economy development rather clear. In the author's opinion, the real state of affairs is reflected in the light of the main indicators of transport work.

The railway network doesn't cover the whole territory of Russia. At present 6 constituent territories of the Russian Federation don't have railway (the Altai Republic, the Tuva Republic, Nenets Autonomous District, the Magadan region, Chukchi autonomous District, the Kamchatka krai). In another 10 constituent territories of the Russian federation the railway network is not developed enough to satisfy the transport needs of the regions. It testifies to the effect that natural resources are not involved in the economic turnover, and integration relationships between enterprises are not arranged. The differences of transport provision between the constituent territories of the Russian Federation have achieved unsustainable level. The big part of population hasn't. The considerable part of population hasn't year-round access to main transport communications of the country at all.

The territorial disproportions in the railway infrastructure development, transport provision of the regions and development of traffic capacity led to the situation when one forth of railway in the developed central districts and big towns works in the mode exceeding the optimum level of workload.

Since the beginning of 2000 the railway transport has got the go-ahead for the reform which has the following aims: to break up the monopoly of the sector, to set up new market entities of railway transportation, to develop competition etc. The main character is currently "Russian Railways"PLC.

"Russian Railways" PLC was founded in May, 2003 on the basis of 987 organizations which had been included into the Ministry of Railways. The authorized capital is more than 1.53 trillions roubles, 100% shares are federal ownership. The company has 133 subsidiary and dependent companies. The principal subsidiaries of the company are 17 railways that unite the network of trunk roads of the country.

We'll note the basic problems raising before the railway transport of the country at the current stage of economy development.

First of all, it is low rate of renewal of basic assets. The average level of assets deterioration is almost 60%, the considerable part of them is outside the limits of standard service life. The existing deficit for track laying is more than 10 thousand km of railway. One shouldn't forget that over the last 17 years the length of railways in Russia reduced by 2.5 thousand km.

The deterioration of non-public railway stock is more than 70%. It is the rolling stock of the enterprises! 52% electric locomotives, 31% diesel locomotives and 39% traction aggregates exceeded the standard service life. 40% loaded and discharging machines, car dumpers and devices for defrosting adfreezing loads demand to be replaced and 20% demand to be modernized to a considerable degree.

Another massive problem of the domestic railway transport – low technical and technological level of railway transport in comparison with the advanced nations of the world. Since the beginning of the perestroika in the Soviet Union and economic reforms the level of domestic railway machinery and techniques have been considerably behind the level of the advanced nations of the world, and the rate of lagging doesn't go down. It is enough to say that in spite of making high-speed train "Soyuz" and its short-term operation there is no serial manufacturing of the train because of technical reasons. Russia had to make a very expensive contract with the German company "Siemens".

Technical and economic characteristics of the serial production stay at the level of 1960 – 1970's and the production basis of many enterprises doesn't make it possible to increase the volumes and to direct the production towards the output of up-to-date competitive production that is world standards-driven.

All-Russian Research Institute of Railway Transport sets its sector "the scientific development prospects" and considers five main directions for scientific researches which have decisive importance for railway transport development and for successful work of "Russian Railways" PLC[1].

The increase in transit by rail freightage sets as one of central objectives to ensure the increase in freight capacity of main directions of railway network. When the rail freightage increasing by 3 – 7% a year the possibilities of existing network will have been exhausted by 2012 – 2015. The most effective answer to the question is a considerable increase in mass of freight trains. The studies on modelling of dynamic processes happening in the trains of high mass – 6, 9, 12 and 18 thousand tons have been carried out.

Railway transport development strategy till 2030 determines the speed and high-speed traffic as an important factor of "Russian Railways" PLC development.

The most important direction of innovation development of the railway transport is to intensify the work of each unit of transport equipment. In this respect the solutions on increase in carrying capacity of freight cars and increase in their thrust load. The experimental wagon of high load-carrying capacity have been made, these are universal and specialized semi-wagons, hoppers for bulk cargo and oil tanks.

Another direction for intensifying the work of rolling stock is use of clearance possibilities of domestic railways. The experimental examples of semi-wagons in wide clearance (these semi-wagons are shorter and wider than the standard ones) have been made. The use of these wagons gives the possibility to increase the mass of trains with the same length of station tracks. New ways of traction development should be noted here among perspective directions – they are making gas turbo carriers and using power accumulators.

It is rather efficient and thrifty to use up-to-date power accumulators made with nanotechnologies. They have high power intensity, high speed of charging and discharging. The experimental domestic accumulators have been set at the traction substation of the Experimental ring of All-Russian Research Institute of Railway Transport, at the model and experiment examples of shunting gas turbo carrier.

[1] Railway transport development strategy till 2030 // Bulletin of All-Russian research institute of railway transport. – 2007. – №6.

Table 1. The volumes of loading and freight turnover in Russia by the kinds of transport in 2008 – 2009

	Loading of cargo, million tons		Freight turnover, billion tons-km	
	2008	2009	2008	2009
Automobile transport	6893.0	5240.5	216.0	180.1
Rail transport	1304.0	1108.2	2116.0	1865.3
Sea transport	35.0	37.6	84.0	97.5
Internal river transport	151.0	97.6	64.0	52.6
Air transport	1.0	0.7	3.7	3.5
Industrial rail transport	3555.0	3021.7	31.8	28.0
Pipeline transport	1067.0	985.0	2464.0	2245.8
Total	13006.0	10491.3	4979.5	4472.8
Source: Materials of meeting of total board of Transport Ministry of the RF. March, 2009.				

Table 2. Passenger turnover and passenger transportation by the kinds of transport

Kinds of transport	Passenger turnover (milliard passengers-km)			Passenger transportation (million people)		
	1990	2000	2009	1990	2000	2009
Rail	274.0	167.1	153.6	3143.0	1419.0	1139.6
Bus	262.0	164.4	140.7	28626.0	22033.0	13659.3
Air	4,8	53.4	112.4	91.0	23.0	45.0
Internal river	-	0.9	0.8	90.0	26.0	17.7
Underground	-	46.9	40.5	3695.0	4186.0	3345.0
Tram	-	25.1	7.3	6000.0	7421.0	2283.0
Trolleybus	-	28.1	8.4	6020.0	8759.0	2479.0
Total	-	486.1	463.7	47665.0	43867.0	22968.6
Source: Materials of Russia's statistics year-book for respective years.						

Railway transport is a heavy fuel-energy user. The energy component of freight cost price is 12 – 16%. The energy-saving programme for "Russian Railways" PLChas been worked out, the issues regarding the energy savings by heavy-freight, speed and high-speed train operation are being decided.

Now we go to the economic indicators.

Below we give *table 1* that representsthe indicators of loading and freight turnover by the kinds of transport for the last two years.

For the last years the indicators of rail transport work were ranged within the data of the table. So, for example, in 2001 loading of cargo and freight turnover were 1056.1 mill. tons and 1433.6 bill. tons-km, in 2005 – 1273 mill. tons and 1858,1 bill. tons-km.

The fact that the freight turnover indicators have increased attracts attention. The answer is easy. In connection with the growth of delivery of bulk cargo for export (oil cargo, coil, wood, fertilizer etc.) the number of kilometres travelled by both loaded and empty rolling stocks has increased.

We give the indicators by passenger transportation *(tab. 2)*.

As follows from the table over 19 years the passenger transportation by railway reduced almost by 3 times. We suppose that decrease in population mobility doesn't influence on many aspects of social and economic life of the country in a positive way.

It is beyond any doubt that the social and economic activity reform in any sector must be finished with the result which at least doesn't worsen the condition of national economy as well as the condition of workers engaged in the given sector and the population in whole. It is doubtful when the reform is carried out just for "hardware".

Summing up the results of three stages of the railway transport reforming in Russia

(2001 – 2010) one should mean that ten years – is quite real term to come up to the parameters built into the plan and to reach the real achievements and the direct results[2].

When following up and analyzing the course of structural reform of railway transport the Institute of Economics Prediction of RAS undoubtedly acted on the premise that the changes had been necessary and had been dictated by the objective reasons and the replacement of one economic setup with another.

It is necessary to notice that over the years past the beginning of the reform we have stored questions the answers to which one can't always find. At the same time we act on the premise that they (the questions) – are not only the subject of the railway experts. They touch upon theoretical and practical interests of economic community of our country.

"Reduction of aggregate national economic costs for cargo transportation by railway" was declared as the basic aim of reform. According to the plans the following tasks were to be solved: to increase stability of rail transport work, its accessibility, reliability and service quality; to make uniform well-balanced transport system of the country; to satisfy the growing demand for rail transport services.

To all appearances, the reformers of 1990's didn't imagine the scales of the sector and tried to make the railwaymen put the railways on the reformist path quickly by storming attempt "tomorrow by 9 a.m.". These attempts ran into the cautious line of experts.

In 1996 we might say an outstanding event took place. It was All-Russian railwaymen congress. At the congress it was spoken that the sector wasn't against the market principles but transfer to market must be realized little by little, commercialization mustn't be regarded as of paramount importance, it was necessary to carry out fundamental changes to both the management of huge sector. Solution of particular economic tasks of each railroad, each rail branch, each rail interchange up to optional halt. The delegates pointed out the fact that other transport sectors that had joined in reforming quickly (automobile, air, river, sea transport) displayed the preliminary results of "their reforms" by that time – vessels were being sold out, auto transportation market has been transformed into practically uncontrolled field of economic management by foreign carriers, aircraft overhaul plants started to offer piracy products etc.

Nevertheless in 1998 the Railway Reform Concepts were adopted (rammed?), later – the Reconstruction Programme (2001), and now the sector is formally finishing the last third stage of reform.

We stress that the science representatives including academic science attracted the reformers' attention to the necessity to work out in details the fundamental economic rail problems having their own Russia's peculiarity (period of transition to market, exposed structural disproportions, vast territory, irregular spacing of productive forces and production capacities etc.).

We'd like to pay your attention not so much to technical and technological aspects as to macroeconomic ones corresponding with the character and peculiarities of our institute's activity; they were pointed out as far back as 1990s[3].

The railways in Russia to be precise from the Urals to Far East were intended to be chiefly a political project in order to hold out the vast territories in common economic space. In the European part of the Russian Empire later the USSR the railroading was economically sound. The railway network, just network, not the only line through the Siberia (the Trans-Siberian Railway), was added with overland communications as well as, and it is also important, meridian rivers having connected the indus-

[2] For example, the agriculture reform in the countries of EU (previously – EEU) planned for 1958 – 1968 led to full self-provision of the countries with food and agricultural raw materials though at the beginning of it self-provision was practiced only in tree positions. Vietnam could turn over its look during 10 years-period. And there are a lot of other examples.

[3] See for example Yaremenko Yu.V. Economic discussions. – M., 1999.

trial North with the South of raw materials. There were already multi-model technologies of cargo transportation. The Trans-Siberian Railway from the Urals to Vladistok still has no alternative. Hence it appears great distinctions regarding transport accessibility, character of transportation market (monopoly) etc. The question arose –can we proceed from the same economic positions in regard to the European part of Russia's railways and to the Trans-Siberian railway by new conditions? Is it against making a uniform transport space?

By the way, it is not easy to find any intelligible explanation why the length of railway network has reduced by 2.5 thousand km at the territory of the largest country in the world over the period of reforms?

The second thing. Reforming the sector was developed under the flag of liquidation of natural monopoly. How deep and elaborate were the problems of monopoly worked out generally? Are there todayafter ten years reforming period any evidences and illustrationswhich prove that newly-made railway structure is economically more successful than the Ministry of railways having been a monopolist? And why?

We add that after the reforms finish "Russian Railways" PLC will keep main and station tracks, energy saving systems, signalling and communication. All the rest will be private ownership. The state won't be able to affect the railways later. If the infrastructure monopoly arises and some shares are sold ("Russian Railways" PLC – is a public corporation and our state has already sold the state shares to private individuals more than once) and the infrastructure can be private even partly, then what consequences can be there? Are there any researches which are taken as a basis when the reform being prepared, the researches about comparison of state and private monopoly on the rail transport, about how much the private owner is more efficient than the state?

The third thing. The father of Russian railways S.Yu. Vitte considered the transport competition to be a bad phenomenon putting the brakes on the economy development. Even at that time almost all today's "innovations" were given trial runs in practice[4]. The reform implied creation of competitive environment. We are of opinion that the mentioned task has a complicated solution procedure. The development of competition and competitive relationships at the rail transport is faced with quite a number of peculiarities which were announced about in 1996 at the railwaymen congress mentioned above. The experts asked themselves – what mechanisms can operate under the conditions when there is no alternative to railway regarding parallel tracks, for example? One can and must discuss interspecific competition – frequently motor-vehicle transport simply takes away cargo from the railways. And intraspecific competition at the rail transport isn't noticeable for the time being in the form that was seen by the reformers of 1990's.

The operation companies having been established (now there are 2.5 thousand car owners and about 100 operation companies) have a large rolling stock (they have almost half out of million rolling stock), but true indicators of their work are worse than those of "Russian Railways" PLC in the major integral indicator – wagon turnover. For "Russian Railways" PLC it is 8 days and a half, for private companies – 13. Why are their performance indices lower in comparison with "the monster Ministry of railways"?!

The forth thing. The ailway sector is doomed to centralized control over rolling stock all the more so taking into account the extent of our country, security peculiarity etc. Under "the monopoly" of the Ministry of Railways empty wagons after discharge went to freight area according to the plans pre-developed and the departures from the plan were eliminated by operational regulating. Thus, the minimum empty running and time of rolling stock turnover were reduced. When privatizing the rolling stock, the main factor of management of its work – regulating the removal of empty wagons between roads and the delivery of them to be loaded – doesn't work.

[4] S.Yu. Vitte said about "arbitrary tariffs" of the private companies, now it is called "tariff liberalization".

How much will the inputmanagement system permit the wagon operators to transport "money-losing" cargo, war cargo, developing its business "effeciently"?

The fifth thing. Technological advance of the sector. Over the period of reforms the technical equipment of railways hasn't improved. It is talked of both basic assets and rolling stock. The reform documents say clearly that mass investments will be attracted and that will make it possible to supply the railways with up-to-date rolling stock of our domestic manufacture. It hasn't happened, the rolling stock is going out of date, the locomotives and waggonage coming into the sector have no time to replace the obsolescent machinery. Starting the train "Sapsan" is an remarkable event, of course, but there are no answers to the questions on domestic industry which is capable to supply machinery and equipment of high up-to-date quality not only to the railway Moscow – Saint Petersburg.

Will the operators of private rolling stock (and in time of private traction) be able to spend a lot of money to produce up-to-date machinery and equipment? Who will place such challenges before them and control the scientific and technological revolution?

Private companies practically never take part in constructing the large infrastructural projects of long pat-back period. How much can one predict the given component of that sort of activity?

Without marking out as separate points we would like to pay your attention to some more points. Passenger and freight traffic in the large megalopolises of Russia entails great difficulties connected with over-loading of urban and circular highways. The traffic jam costs are calculated, although the experts understand – they are huge. The gradual reduction of passenger transportation by commuter trains don't favour the solution of the mentioned complicated tasks, and the latter demand their special solution in the megalopolises of total number (urban dwellers plus passengers arriving every day for the various purposes – 6 cities) about 30 million people.

The reform doesn't answer these questions yet. Life is strongly dictating the need to address the mentioned and other problems of railway transport development on the way of Russia's modernization.

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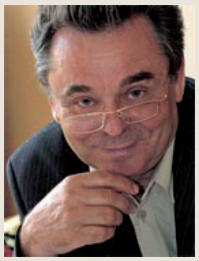
Noospheric economy as a planetary active economic sphere of civilization development



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Anthropogenic development of civilization, the increased strength of the economy, more and more manifest the negative trends of globalization have emerged as major factors of biosphere constants' changes of our planet. Competition for resources has intensified, an unprecedented bundle of world according to income has happened, a systemic crisis of Human spirituality as a result of his alienation from Nature has appeared. As a result, humanity appeared to be under the threat of civilization crisis, and reached, figuratively speaking, its "growth limits". In the XXI century there can already arise conditions in which the further development of human civilization would be impossible[1].

All the foregoing, indicates that the world is under the conditions of objective transformational imperatives – the need to move to implementation of the new planetary noosphere paradigm of its social and economic development – ensuring of the harmonization of macro system "Nature – Man – Society", where the Man and the Nature become the value and intrinsic value of social reproduction taking into account international civilization laws, standards, principles and trends, but with preservation of the natural history of their spiritual and material culture.

The supporters of noosphere doctrine, based on Vernadsky's theory on the noosphere, believe that the survival of civilization, the preservation of the biosphere is possible only with the harmonization of relations between human society and nature as a whole on the basis of global thinking and responsibility of the

[1] On the development of problems of noosphere economy's formation see a list of author's works: Nikitenko P.G. Efficiency of savings: system imperatives and entrepreneurship method. – Minsk: 1992; Nikitenko P.G. The model of sustainable socio-economic development of Belarus: problems of formation and evolution. – Minsk: 2000; Nikitenko P.G. Noospheric economy and social policy: the strategy of innovative development. – Minsk: 2006; Nikitenko P.G., Andreev, I.L. Civilization process at an angle of noospheric view. – In 3 books. – Minsk, 2002; Nikitenko P.G. The imperative of innovation development of Belarus: theory, methodology, and practice. – Minsk, 2003; Noospheric development of Belarus: theory, methodology and practice. – Minsk, 2009. – Pp. 7-53, 107-117; Nikitenko P.G. Anti-crisis model of life in Belarus. – Minsk, 2009.

Man and his mind for the livelihoods of people in the world, embodied in the relevant socio-economic management practices. In other words, the solution of problems of noospheric social reproduction must proceed from the understanding that the people are included not only in socio-economic, socio-cultural, scientific, technical, socio-historical, but in the evolutionary – genetic planetary (global) noospherical process. The more fully rational abilities, intellect, culture and spiritual qualities of the individual are developed, the more responsible and creative he applies to the case, the deeper and more systemic he predicts long-term consequences of his actions on nature and society, the more complex problems he raises, and may solve to improve his livelihoods .

Noting the importance of developing people's abilities, their intellectual, cultural and spiritual qualities, it is important to bear in mind that these qualities as a product of non-material production in comparison with the material culture are not only eternal, but consistently collected and are the foundation on which it is possible to have a new quality improvement of the material and non-material production. This classical circumstance was essentially disregarded when discussing the most important components of the country's wealth. Meanwhile, it is the mind as essential and cognitive human activity, the ability to think logically and creatively in his activities and own life that helped him, having separated and systematized work, to master new ways of farming and increase productivity, find the application of oil reservoirs which did not bring any benefit to mankindfor thousands of years, and identified the leading force of scientific and technological progress. Due to the mind the Man invented new ways of transportation and distribution of goods, a new strategy of behavior in the market, new opportunities for communication between people. You can endlessly enumerate the objects created by the creator – the mind, which remained unused until the Man because of his cognitive activity, the ability to think logically and creatively saw something help full in them.

The mind increases the cost of products, introduces new resources into circulation. Its significance for social development is no less significant. Even Adam Smith had given many proofs in favor of that prudence of an ordinary person leads not to anarchy, as it was commonly thought, but to the birth of a new order. Therefore, a clear Noosphere thinking is the first duty of every intelligent man and society, because society is not something given by nature, it is the result of human livelihood. It is the human mind that creates society.

The mind organizes the entire system. It promotes innovation, improves the organization of socio-economic activities, increases production efficiency and makes needs satisfaction better. It helps to predict and plan for not only the immediate, but also for the long term. The mind can coordinate the interaction of all elements of the system: finance, information, energy, materials, equipment, manufacturers, resellers and consumers. With its help, people can define the policy objectives and the means of their achievement and thereby improve its application.

The mind is subordinate to company's targets whose life is longer than human life. Much in this world depends on the forecast and deliberate intervention in the course of events – the use of the mind increases the probability of success in the selection of program-target methods of government management of social and economic processes.

The undisputed and growing evidence and "tangibility" of intellectual activity, especially its nucleus – the area of the mind (noosphere) as a perennial and intensively reproducible global (national and international) resource of intellectual activity and a driving force for sustainable socio-economic development necessitates the use in a system of categorical social reproduction a special term "Noospheric economy". Its understanding objectively follows from the role and significance of the noosphere in the civilization process, the essence of which in its reproductive paradigm is to ensure the reproductive harmonization of macro-system Nature – Human – Society and maintaining it for future generations.

The term "Noospheric economy" is interpreted by us as *a reasonable environmental and man-saving method of social reproduction of nature, people, goods, works and services by improving the system of corporate innovation planetary industrial relations and largely post-industrial productive forces with the relevant performance criteria: creative development of the human person, the maximum employment of working population and the growth of human longevity, preservation of nature for future generations, the qualitative growth of GDP and its reasonable distribution among the relatively rich and poor members of society*.

It should be noted that Noospheric economy as a reality in one way or another has been functioning at all stages of development of productive forces and production relations. It determined the level and pace of technological progress, economic growth and the level of civilization in general, and in fact – a global conflict of civilization development of man and mankind on our planet as a socio-economic and biological phenomena. It passed several stages of its formation on the typological classification of the level of development of productive forces and production relations – primitive, slave, feudal, Asiatic, capitalist, but by the typological characteristics of the level of development of productive forces and technology it has recorded itself as a pre-industrial, industrial and postindustrial ways (social economic system) of social reproduction.

At all stages and in all ways (systems) of social reproduction the Man's mind appeared in various forms of knowledge and incarnated in the man's intellect, his professionalism (human development) as well as in technologies and technological lifestyles of STP. In fact, the Man's mind and its planetary accumulation ensured development of the world's productive forces, technology and industrial relations, which altered the ways of national social reproduction, its targeted priorities and values.

However, despite the seeming evidence and understanding of the place and the role of the noosphere in civilized socio-economic development now, this main economic factor-imperative remains outside of conscious inclusion in industrial relations, particularly through the use of commodity-money relations and its direct cost evaluation. Meanwhile, as the essential phenomenon the mind, being accumulated in various forms of knowledge – science, education, information, technology, culture, spirituality, psychology and others, increasingly "claims" about the need to "isolate" ("dispose") itself from a purposeful activity and directly fix itself in the quality of specific intangible product – the valuable asset of noosphere (intellectual) value.

A distinctive feature of the noospheric economy is growing knowledge-intensity of GDP and implementation of the continuity of education through the growth of its technology contents a priority human need. Continuity of education through improving its knowledge-intensity provides the growth of workforce quality and the possibility of long-term growth of the organic structure of production and, consequently, increasing its intensification, innovation and efficiency through STP. Reproduction in the relationship of scientific knowledge and science education as a commodity is a priority process of civilization development.

A characteristic feature of the noospheric economy is the recognition of the fact that along with the creation of a new product – knowledge the role of diffusion and transfer of the mind increases. This implies increased attention to the "distribution on world knowledge" (the spheres of the mind) and "national innovation systems", which are the actuators and structures of the planetary mind in the economy as a commodity.

Based on the content set forth and the target function of socially oriented noospheric economy, it is clear that it is worthwhile to consider social reproduction as the unity not on the two (I, II), as it is now generally accepted, but as the three combined units:

$$\begin{array}{ll} \text{I} & C_1 + V_1 + M_1 = \Pi_1; \\ \text{II} & C_2 + V_2 + M_2 = \Pi_2; \\ \text{III} & C_3 + V_3 + M_3 = \Pi_3; \\ \hline & \sum C + V + M = \Pi \end{array}$$

where: I is the production of means of production, including natural resources; II – production of consumer goods, including gifts of nature; III – production of man as a social product (intelligence, knowledge, science, education, culture, services); C, V, M, Π – reproduction of respectively permanent funds, variable funds, surplus product and gross national product.

This very approach to the grouping of sectors of social reproduction allows describing the socio-economic some development as a reasonable, stable and interconnected innovative process of funds accumulation and reproduction of material and intangible product.

As it follows from the three sector schemes of social reproduction departments, in which the Noospheric paradigm of socio-economic development is organically linked, the need for a continuous and balanced functioning of these units providing reproduction of social product and funds accumulation, is obvious. However, the role and place of consumption funds and savings here is not entirely clear, if we approach these categories from traditional positions.

Typically, consumption, as well as accumulation is associated with material wealth as society's end in itself and is opposed to accumulation, by analogy with Karl Marx's approach to it, who considered consumption as anything that does not serve the cause of capital. "He cannot accumulate – he wrote – who eats all his income, instead of spending a good part of it to hire additional productive workers, yielding more than they are worth" (Marx K., Engels F., Collected works. Vol. 23. P. 602). And this situation is quite true for the capitalist social reproduction, if you do not take into account the importance of eternal and historically specific relationship of economic and social progress of society in general in social reproduction.

If consumption is considered in terms of our interpretation of the noosphereic social production, where the real wealth of society should be the person's identity, consumption is the accumulation of variable funds in all spheres of social production. It is the consumption as the accumulation of variable funds that is a prerequisite and condition of the reproduction of basic ratio of noospheric reproduction – on occasion, first of all the development of the mind of the people themselves, not only on the production of material goods, which is lawfully indicated now by many researchers (Elmeev V.Ya. Reproduction of society and man. M., 1988. P. 187; Subetto A.I. Research economy at the beginning of the XXI century – to new grounds of synthesis of economic science in the noospheric system. SPb – Kostroma, 2009. P. 78).

Hence it follows the need of understanding the consumption as all that serves the accumulation of variable funds, but, naturally, "dies" in the development of human personality, his intelligence, health and longevity, and secondly, the new interpretation of the theoretical and methodological aspects of savings and assets.

We proceed from the fact that a specific of accumulation category, on the one hand reflects something in common characteristic of all the concrete – historical (specific) public enterprises, and on the other – its verity is in a certain type (kind, method) of socio-economic activities. At the same time complexity of this problem lies in the fact that it is the accumulation that objectively "forms" the unity of the natural material and immaterial bases of the progressive way of life, but our consciousness, thought and mind is not always able to reflect, systematically cover the process and determine the appropriate forms to its socio-economic and environmental activities. Ignoring this possibility, the dialectics of its development, it is impossible to understand the "secret" of the objective natural birth of the true values of social production, and moreover to develop a more effective mechanism for its management.

The whole theory of society's development, in our opinion, is the application of the

theory of accumulation in its most consistent, complete, thoughtful, rich and concrete form to each of the stages of societal development.

The reported ideological and theoretical assumptions lead to a reasonable conclusion that one cannot try uncover accumulate by studying the individual, especially one of its manifestations, for example, through the "accumulation" funds, its relationship with the consumption fund, or the process of expanded reproduction of material wealth. This very side is not paid attention by many researchers. Singling out the "financial activities" as the only cornerstone of the common ground of social life, they do not take into account the proposition that the accumulation reflects the eternal and historically specific relation of "economic" and "social" progress of society in general, their inseparability.

The existing interpretations of "savings", although some of the mare close to the truth, have to varying degrees, one methodological and substantive inaccuracy, consisting of the fact that they are united by the desire to reflect the natural-material manifestation of the accumulation process, rather than its substance. Accumulation here is not any category which systematically reflects the objectively flowing within society a continuous process of development of the means of production, public relations, intelligence, knowledge, consciousness, thinking, human and society culture, the harmonization of nature, society and man. Thus the most important thing is overlooked – it is the integrity of accumulation, within which there may be contradictions between the material and spiritual, economic and social, human and ecological processes of accumulation.

That is why it is important that in view of contemporary political-economic theory there constantly were aggregate content and the integrated result of the accumulation, the "end product" of which serve not only things, benefits, services, and not only the mind, knowledge, consciousness, thought, culture, but the man himself in his relations with other human beings and nature, i.e. society, nature and people in general.

In this sense, of the enduring methodological importance is the idea of Marx that "if we consider...the society as a whole, the outcome of the social process of production is always the society itself, i.e. the man himself in his social relations. Everything that has solid form, such as product, etc., appears in this movement only as a moment, as fleeting moment" (Marx K. and Engels F. Collected works. Vol. 46. Part 2. P. 222).

Therefore, understanding of the internal dialectics of accumulation, the subject of the forces application and the product of which is nature, society and people are indispensable for a correct interpretation of its essence. In this regard, the accumulation in the noospheric economy is not something that is "close", "near" or "above" the social production or the productive forces or the production relations, or man or his final labor results, but all these together. It is first of all a form of synergistic existence of "socio-economic matter", it provides its self-movement, as a biosocial process, a systematic basis, material and spiritual synergetic driving force of a natural socio-economic development of society.

In the politico-economic sense today, it is important and necessary to consider accumulation in the system of social reproduction as a process of accumulation of progressive post-industrial human (planetary) industrial relations implicated in the harmonious socio-economic development of the triad "Nature – Man – society". Its material and spiritual basis is a man of work, its source is scientific work in all areas of socio-economic activities.

Based on the conceptual provisions of the holistic nature of accumulation in the post-industrial noospheric economy it is important to define an adequate general socio-economic form of its functioning. Moreover that, in essence, for the considered type of economy a scientific universal functional social-economic form has not yet been identified, although when considering the nature of accumulation, as well as in the presented diagrams and matrices of three-sector model of the reproduction process

one can trace the objective possibility of use of such categories as "funds" as a functional social economic form.

The validity of this approach makes us study the problems of capital intensity of production in full intensification and innovative production. This category allows you not only to establish and express a common link and hierarchy of objectives, sources, factors and forms of savings in the noospheric economy, but also to create a possibility to carry out the construction of a system of planned management of activities efficiency in all spheres (economic and social) as well as regional, sectoral and enterprise levels mainly through funds-economic methods of management.

To make this opportunity real, we should, above all, rethink the existing theoretical heritage of understanding of the category of funds, determination of their socio-economic content. Typically, researchers concerned with the funds, reduce their content to the individual material elements of the productive forces, more precisely, only to the so-called objective factors of social production - the means of production in the form of productive assets (fixed and circulating) and major non-productive assets. There is no unity in the definition of these categories as well. There is no interpretation of "generic", general category of funds neither in textbooks, nor in economic dictionaries, scientific literature, encyclopedias.

The conceptual interpretation of the funds, in our view, can be given, if it is approached by analogy with the conceptual interpretation of the capital, while abstracting from the common assertion that the "productive assets and capital are the real media, respectively, of the socialist and capitalist relations of production" which confuses the essence of funds as a socio-economic category.

Only natural resources, means of production and people can be universal real carriers of any mode of production and the type of accumulation. Funds as well as capital are the socio-economic form of accumulation by their socio-economic nature of particularly industrial relations, which are represented in these and other accumulated real elements and give them a specific social character. In this respect, Marx noted: "The Capital is not a thing, but a certain, social, owned by specific historical formation of society relation of production, which is represented in the thing and give this thing a specific social character" (Marx K. and Engels F., Collected works. Vol. 25. Part 2. P. 380).

By analogy with this definition of capital we can express socio-economic content of the funds: funds is not a thing, but a definite social relation of production, which is represented in the thing and gives this thing in the noospheric socially oriented economy its social character. At this interpretation the funds as opposed to capital for its socio-economic essence exclude person's estrangement from the real factors of production, and maintain social justice based on the totality of scientific work, equivalent to sharing the results of labor and conservation attitudes toward nature and man.

Funds, in our opinion, by their material composition should be different from the capital quantitatively. The difference should be up not to include in its composition the labor force, which is currently the case, but the fact that this category, by contrast, included along with material factors, not only manpower, but the employee as its labor resource media.

This requirement stems organically from the considered essence of accumulation in the noospheric economy. It should be noted that in practice for labor collectives now it is more important and necessary the desire to have in their composition, not only manpower, but the worker as a person creatively and actively participating in the production process. Moreover, the composition of the funds, based on the considered essence of accumulation, should include not only labor, financial, information, energy resources and the means of production, but also natural resources. In other words, funds should reflect the relations of production in the social reproduction of noosphere economy to the entire accumulation of national wealth.

The inclusion of labor and natural resources together with the means of production in the funds is crucial to improve efficiency in the noosphere economy. They allow implementing real economic calculations at all hierarchical levels and in all spheres of activity. They really can induce regions, businesses, individual producers to seek beneficial result not at the least cost to make a profit, that characterizes the essence of capital, but while avoiding any wastage of resources (funds) for more newly created value (income), the conservation of nature for future generations. This is a fundamental difference from the capital, because the comparison of all the newly created value (income) with funds (resources) of companies or the region will provide an objective comprehensive evaluation of the effectiveness of each participant in production.

However, to justify the funds as a form of savings in the noospheric economy it is equally important to understand that they, like capital, are the movement of value, but not a thing at rest. In the process of accumulation the funds commit a continuous motion – rotation, assuming constant connection to the value of renewable resources, production conditions and the employee. It has three stages that can be schematically represented as follows:

$$\text{Д} - \text{Т} \quad \begin{matrix} \text{ТР} \\ \text{СП} \dots \text{П} \dots \text{Т}^1 \\ \text{ПР} \end{matrix} \Leftarrow \text{Д}^1 \dots \text{Т}^1 \quad \begin{matrix} \text{ТР}^1 \\ \text{СП}^1 \leftarrow \\ \text{ПР}^1 \end{matrix}$$

where: Д, Д^1 – money; Т, Т^1 – goods; ТР, ТР^1 – human resources; СП, СП^1 – means of production, ПР, ПР^1 – natural resources.

For the normal turnover of funds its consistency and continuity is important. If the movement of funds is delayed on the first phase, there can be formation of treasures, and inflation of the cost (money) that obstructs the flow of production of goods and services; if it happens on the second phase, not functioning physical factors will always be at one extreme, and unemployed workers at the other; and if it happens on the third –there will be the accumulation of unsold products, creation of conditions for their deficits and formation of treasures.

The production of all newly created value and consumer value, as well as human development and improvement of industrial relations, i.e. accumulation of funds, is the leading trend of the cycle noospheric socio-economic development. The steady increase and qualitative improvement of the funds becomes a condition for the realization of this trend.

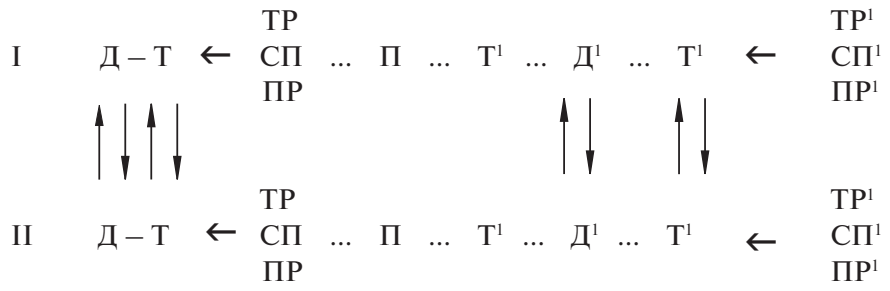
Funds in their motion tend to a constant change and inter conversion, which is caused by specific historical conditions of their operation, regardless of sectoral and territorial boundaries. This is in turn explained by the fact that the whole nature of accumulation in noospheric economy, as well as of the funds is defined by humanism to man and nature, the equivalent exchange of scientific work, civilization needs of every individual and society as a whole, and the exception of exploitation in the production relations. Consequently, if these traits do not get a steady trend to progress, it is totally unacceptable to argue about the functioning of the category of funds and especially their acquisition.

It should be noted that for the substantive characteristics of funds in terms of their movement, and to provide a more precise functional relationship with the existing classification of the main areas of social reproduction it is no less important to clarify their existing names relatively to independent core types. In particular, it would be rightfully to call the funds, which fulfill the circuit in the production of tangible products, economic funds, which in turn should be divided into basic economic funds and current economic funds. The funds which exercise the circuit in the production of social product (use-value that satisfies the nonmaterial (spiritual) human needs, that is the product of labor, received today in the so-called intangible (spiritual) sphere of production), should be advisably called social funds, which in turn should be subdivided into basic social funds and current social funds.

The terms “economic funds” and “social funds” are supposed to use in the meaning

in which they cover all industry sectors of the so-called today tangible or intangible (spiritual) production. In this case the economic and social funds represent only relatively independent types of funds, functions of which are the content of relatively independent, but not separated with rigid boundaries from each other business sectors, providing social and economic development. They represent only specific functional forms of funds, which in their cycle do not only consistently take all three forms – money, production and commodity, but also interact with each other, with the ongoing processes of integration, such as science, education, culture and production.

Interaction and integration of economic and social funds in the process of circulation occur only under the condition that their different phases, without delay, come not only from one to another only within the cycle of economic and social funds, but the funds in general, as it were, vertically, through their boundaries. This process can be summarized as follows:



where I and II are the cycles of economic and social funds respectively.

This important aspect of the funds movement is not yet paid attention by the economic science. No accident that in our mind, especially the ordinary one, the results of commodity production in the material sphere are often absolutized and fetished, and intangible, spiritual sphere acts as its tax cosumer, dependent, spendthrift, sponger. Hence is the persistence of the residual approach in the socio-economic practices to the development of social sphere.

The aspects of the funds accumulation considered above do not only expand the representation on the content side of the noosphere reproduction. They to some extent are the key to improving the scientific methodology and techniques of the planetary and regional economic sphere.

Using the Noosphere philosophy of management in Belarus, Russia and Ukraine, it is important to give up many hopelessly outdated, but still used dogmas that defined the life of the Soviet Union and ultimately led to its disintegration. For greater anti-crisis stability, ensuring dynamic growth, improving the whole life of our people it is necessary to start with the formation of the new – namely, noospheric philosophy and economic thinking, especially among the representatives of four major institutions of society – government, science, education and religion. However, it is equally important to review the subject of economic science and education, which can no longer be limited to the study of reproduction problems of only goods, works and services, and even more of capital. Science is designed to study human activity on the Earth in all entirety of its manifestations in all periods of biological cycle of the individual. This implies that economic science must include in its subject matter the knowledge of all other sciences and fields of activity, that is, to act as a synergic science that shapes people's innovative, noospheric outlook, ability to think globally but act locally – in the interests of the country and the people. Noospheric thinking and actions require identifying a new criterion of economic effectiveness. Instead of the profit

indicator, cost-effectiveness values, return, etc. calculated on its basis, the new criterion should be the indicator of revenue – the newly created value (GDP),with a scientific, rational distribution by uniform state standards and principles for all participants in the production: 33.(3)% of income (GDP) is a tax, 33.(3)% is payroll, 33.(3)% – fund for development (16-17% – depreciation and 16-17% – profit). At the same time it is necessary to change the system of accounting and statistical records, simplify taxes, reduce the tax burden, making it the same for all able-bodied (33.3% of revenue). Proceeding from the need to fill all three economic models with noospheric content, it is due to change the depreciation policy and pay policies, pricing, accounting and structure of production costs, banking, monetary and investment policies; all these should be linked to market valuation of income and GDP. Thus, the economy should be human and nature measuring system of market social reproduction.

The economic mechanism should ensure the transformation of capital into the category of "funds", the strengthening the competitiveness of our economies in the global space, which implies a rejection of the use of principles such as reliance only on self-reliance, especially in science, large-scale import substitution, achieving a surplus at any cost, in particular, through the use of tariff protection.

In the future, through the development of socio-ecological-economic management mechanism it is due to reach the increase of morality in society: it must be such as to naturally decrease the levels of bureaucracy, social parasitism, dependency, economic raiding, especially the intellectual one. This mechanism is designed to greatly enhance the prestige of moral intelligence and productivity, to create conditions for full employment with decent pay levels and adequate pensions for people.

Anti-crisis economic model of life assumes priority intellectual accumulation, which should be reflected in legislation. To this thesis have become more substantial it is important to overcome the absolutization of a material dependence of people and the fetish of profits, money, object-proprietary form of production and accumulation, where people worshiping wealth, are not truly free agents and creators of social relations, but their role is indicated by faceless concepts of "factors", "people", "mass", "officials", when a person serves only to material production, adapting to it himself and the nature. Alas, today it is not the personality who dominates but the cult of power, money, benefits, positions, capital value, the show is run by the desire for social parasitism, occupation of property and money by raiding, fighting for power, for "plum job".

From the standpoint of capitalist ideology the nature, scientific and technological progress, talent, intelligence, industrial relations, etc. are non-economic categories. Moreover, almost all social activities, in fact, are reduced to unproductive labor, to parasitism in relation to material production. This ideology defines the political and economic installation and operation of Byelarusian, Russian, Ukrainian politicians, public administrators, educators and others, in other words, the carriers, as they say, of common sense. However, as we have seen, the pragmatics of the first water are not given either to save the world nor change it for the better. And here it is to the point to recall the words of a genius scientist that the man "is the inevitable manifestation of a large natural process", that "transforming his systemic nature, he at the same time transforms and develops the physical, intellectual and other intrinsic (noospheric. – P.N.) forces dormant in him" (V.I. Vernadsky. Scientific thought as a planetary phenomenon).

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Factors of migration of the northern regions' population

In the article migration factors and their influence on the process of the population formation in the northern regions are considered, their classification is given; it is probable to operate the population migration through influencing controlled factors such as legal, economic, organizational and informational ones; the reasons of the population migration in 2005 and in 2008 are represented.

Factors of migration, migration policy, population, northern regions, reasons of migration.

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For the Russian North the period of 1990s and 2000s turned out to be complicated in the demographic development. The national economy's transition to the market principles, the change of the state's role in the northern areas' development resulted in the essential population's and manpower resources' reduction *(tab. 1)*.

From 1990 to 2009 the population of the North of Russia decreased from 9 million 807 thousand to 8 million 204 thousand people, i.e. the cumulative losses of the northern territories' population made 1 million 603 thousand people. The European part of the Russian North has 65.9% of losses, the Asian part has 34.1% of them. As a result the ratio between the Asian and European shares of population changed. If in the beginning of 1980s in the European North more than 50.0% of the total number of population lived, by 2009 the number reduced to 45.7%. Thus, it is possible to note that from the mid-1980s the population of the Asian North began to outnumber the population of the European North.

During the period of the Russian North development in the decision of the problem of the enterprises' providing with manpower resources migration had special value. The point is that natural resources are situated far from the inhabited areas of the country. For their economic circulation it is necessary to involve the enormous quantity of people. In such areas there is a situation when the number of migrants starts to outnumber the native population in many times.

Nowadays the role of migration is also great. Though at the initial stage of the extensive North territories' development migration caused the population's growth, at present time, on the contrary, it takes up a significant part of the northern territories' population *(tab. 2)*.

Table 1. Population of the northern regions which territories completely belong to the Far North and to the districts compared to them in 1990 – 2009, thousand persons

Regions	1990	1995	2000	2005	2006	2007	2008	2009
The Russian Federation	147,665	148,460	146,890	143,474	142,754	142,221	142,009	141,904
The North of Russia	9,807	9,111	8,509	8,295	8,260	8,233	8,229	8,204
European North	4,808	4,493	4,124	3,877	3,839	3,805	3,782	3,751
Karelia Republic	792	771	735	703	698	693	691	688
Komi Republic	1,249	1,157	1,058	996	985	975	968	959
Archangelsk region	1,576	1,498	1,390	1,305	1,291	1,280	1,272	1,262
Murmansk region	1,191	1,067	941	873	865	857	851	842
Asian North	4,999	4,618	4,385	4,418	4,421	4,428	4,447	4,453
Sakha Republic (Yakutia)	1,111	1,037	963	951	950	950	951	950
Tyva Republic	313	303	306	308	308	309	312	314
Taimyr (Dolgano-Nenets Autonomous District)	52	43	38	39	39	38	38	37
Evenki Autonomous District	24	20	18	18	17	17	17	16
Kamchatka Territory	477	422	372	352	349	347	346	344
Magadan region	390	267	202	175	172	169	166	163
Sakhalin region	714	659	569	532	526	521	519	515
Hanty-Mansijsky Autonomous District (Yugra)	1,267	1,293	1,360	1,469	1,478	1,488	1,505	1,520
Yamal-Nenets Autonomous District	489	478	496	523	531	539	543	544
Chukotsky Autonomous District	162	96	61	51	51	50	50	50

Table 2. Population increase in the northern regions, which territories completely belong to the Far North and to the districts compared to them in 1990 – 2009, thousand persons

Regions	Years	Increase / Decrease			Annual average increase / decrease	
		Total	Natural	Mechanical	Natural	Mechanical
The Russian Federation	1991 – 1995	17,892	-2,599396	2,617288	-519,879	523,458
	1996 – 2000	-1,988027	-4,127058	2,139031	-825,412	427,806
	2001 – 2005	-3,550060	-4,406566	856,506	-881,313	171,301
	2006 – 2008	-849,572	-1,519397	669,825	-506,466	223,275
The North of Russia	1991 – 1995	-844,654	58,171	-902,825	11,634	-180,565
	1996 – 2000	-505,299	-23,549	-481,750	-4,710	-96,350
	2001 – 2005	-183,181	-32,707	-150,474	-6,542	-30,094
	2006 – 2008	-57,760	37,060	-94,820	12,353	-31,607
The European North	1991 – 1995	-379,853	-51,645	-328,208	-10,329	-65,642
	1996 – 2000	-345,550	-86,151	-259,399	-17,230	-51,880
	2001 – 2005	-225,159	-110,443	-114,716	-22,089	-22,943
	2006 – 2008	-87,995	-33,908	-54,087	-11,303	-18,029
The Asian North	1991 – 1995	-464,801	109,816	-574,617	21,963	-114,923
	1996 – 2000	-159,749	62,602	-222,351	12,520	-44,470
	2001 – 2005	41,978	77,736	-35,758	15,547	-7,151
	2006 – 2008	30,235	70,968	-40,733	23,656	-13,578

As it is represented in table 2, for the last 18 years the population dynamics in the Russian North was basically determined by the migratory population decrease. Negative migration dynamics is characteristic both for the European and the Asian North. However the Asian North, in comparison with the European North, had the stable positive natural increase at the mentioned period of time.

For each period of the North territories' development a specific approach was characteristic. For example, the migration policy developers of the 1920-s and 1930-s believed that after the population "attraction" to the

northern areas the most part of it will stay to live and work in the North. In this plan the experience of the migratory policy, got at the period of the New Economic Policy by the Karelia Republic government and by the Transport and Industrial colonization complex of the Murmansk railway is of interest. In 1923 the Murmansk railway got at its disposal the territory of 3.3 million hectares along the route from Petrozavodsk to Murmansk for the period of 10 years. The colonization department of the Murmansk railway and the Transport and Industrial colonization complex of the Murmansk railway developed active economic activities on this under-populated territory. The main part of takings in the colonization road fund was fine payment for wood. The main part of funds was spent on land-utilization, amelioration, and immigrants' needs.

At first there were some doubts, whether there would be the migrants wishing to move to the uninhabited northern territory. However the number of those who wished to settle on the colonization grounds outnumbered the opportunities to accept them. The experience showed, that the most enduring immigrants were the persons who had arrived in search of a job and accustomed with the northern climate; 55.6% of the migrants were natives of the North-West area (Cherepovets, Petrograd, Novgorod, Pskov, and Murmansk provinces and the Karelian ASSR), including 35% from Karelia.

There was established a number of privileges for the migrants: they were exempted for 10 years from a compulsory military service; moving to the new residence was carried out at the expense of the colonization fund; all the migrants were given the right of free-of-charge deforestation for building needs, material and monetary loans were granted for house construction and ameliorative works. The loans were to be returned after two privileged years for 10 years with the equal annual payments without tax charge. At successful housekeeping one third of the loan could be transferred into the permanent loan. To tell the truth, the loans were rather small: in 1924 the average rate was 914 rubles for an economy; in 1925 the rate was 337 rubles, in 1926 about 500 rubles for a family.

Each resettled family was obliged to construct the house within the first two years, and before the house construction to pay the occupied lodging at its own expense. The potential migrant should have some capital for settling on a new place. The construction of a house demanded from 1 thousand to 2.5 thousand rubles to be spent. As a rule, the houses included the living space of 10x12 m and consisted of two halves, one of which was let out. By the end of 1920s about 75% of all migrants lived in their own houses and only about 3% had not started house construction. For the successful housekeeping a migrant should have a horse or a cow, agricultural and trade equipment. In practice, cattle were about 46%, small livestock – about 42, horses – only 9% of arrivals.

A migrant in Karelia was in heavy conditions from the very beginning. He came to the place where there was neither habitation, nor roads. In the migrants' settlements the inhabitants arranged markets, built bath-houses; in 1920s the accent was made on the point that a migrant could stay in the severe conditions of the North. Therefore each new house constructed by a colonist, was considered as "a new step to the economical and cultural development of the region" [1, pp. 33-36].

The experience of formation of the northern territories' population in 1930s is worth mentioning. In 1930 G. Yagoda stated the idea of the North colonization and enormous natural resources' development by prisons' and camps' foundation, and also by means of colonization settlements. The streams of the compulsory migration preceded more realized since 1931, in view of the purposes and tasks of the colonization policy's realization. Henceforth in the labor force's balance "special contingent" played an important (in some economic programs the main) role. The population arrived in such a way, was infringed in the civil rights and could not leave the place of "registration". However after the term of banishment expired, convicts intended to return to their native

places. The local party bodies, concerned with the convicts' opportunity to leave and to aggravate the situation with the labor force at forest harvesting operations, with a view to attract such type of settlers to manufacture, suggested to force house construction with granting free-of-charge forest products, to sell them cattle for a reduced price, to hold the political and educational work through schools [2, pp. 27, 79]. The reaction of the Central Executive Committee of the USSR towards such state of affairs was prohibition for the persons restored in the civil rights to leave their settlements; they were just allowed to change jobs and addresses within the limits of the administrative area. We shall note, that at the beginning of the North development the party bodies began to realize, that the measures of economic and other character are necessary for the population fastening in the areas of economic development.

The problem of the population fastening in the Northern areas was also important during the following years. It was understood that solving the problem of inter-district manpower redistribution and creating constant settled population in the re-developed areas of the North, Siberia and the Far East depend on various factors. Speaking about influence on migration, Professor L.L. Rybakovsky marked, that "the important element of control is the mechanism of influence on the migration processes. The central place in it belongs to studying the factors of population migration" [3, p. 132]. We shall consider this moment in detail.

In the Demographic conceptual dictionary in definition "factors of migration" it is marked, that "factor" (in translation from Latin) means "doing", "making". The concept "factor" is used to define the driving force of any process or phenomenon. It has double meaning, both the factor of statics and the factor of dynamics. It means that factors are determinants of a level or development of any phenomenon. Such division is especially important for the demographic analysis where the historical (temporal) and geographical (spatial) cuts are considered. For the theory of factors two points are fundamental: a) the factor, being an objective reality, doesn't exist per se, but in interrelation with the phenomenon which it influences, b) it is a component of those conditions among which it operates. The entire surrounding environment (both natural and social) is united by one concept called living conditions. Among them we can mention the conditions which influence difference processes, and which are the factors of these processes. *Factors* are certain components of the objective conditions, their part, not the whole thing. The set of these components is determined by the phenomenon essence. In this sense factors are secondary. To be or not be to different components of the conditions surrounding a person, entirely depends on the nature of concrete phenomena and processes. For example, the climatic conditions are the factor of population's migration and death-rate, but they are not the factor for birth-rate and divorces. Conditions are always richer, wider and more diverse, than factors; for conditions are general set, and factors are their subset. As against factors a reason is what causes consequence or action. A reason means the phenomenon which action causes, determines, changes, produces or entails other phenomenon. A reason precedes an action.

Factors don't influence a phenomenon directly, they influence mediately, through consciousness, through a person's mentality. For the social phenomena the factors and the reasons are logically arranged into the ternary scheme: factors - reasons - phenomenon. Here a reason is an intermediate between a factor and an action. Human behavior (including in the migration sphere), is determined by the internal system of needs and by the environment, i.e. by the subjective and objective components in their organic interrelation. The existing variety of factors' sets with their division in importance can be explained by the distinctions in hierarchy of people's needs. The sequence and the measure of change of the territorial or lodged distinctions are entirely determined by the population's attitude towards them, by the structure of its needs [4, pp. 316-317].

All factors can be divided into invariable or permanent factors (climate, location, etc.); temporary or slowly varying factors (structural factors, territories' development, etc.) and variable or changeable factors (directly or indirectly) during a rather short period of time. As a matter of fact, they are regulators of the population migration.

It is obvious, that factors should be considered not concerning the population migration as a whole, but, following the points of the theory of the three-staged migratory process, they should be analyzed either at the first stage (mobility formation), or at the final stage (new settlers' habitation). Such approach is caused by the fact that the factors' sets at the first and at the third stages are not the same. The point, that absolute factors' values, whether they are in the areas of leaving or in the places of migrants' settlements, don't influence migrations, but their regional levels' differentiation, also repeats. And the orientation of this differentiation can abruptly vary.

Factors of the population migration – primary and minor – both in the previous planning-regulated system, and in the market conditions, don't operate separately, but jointly, just changing their importance in different places and at different times. It concerns both internal and external, both voluntary and compelled population migrations though the factors' sets can be different in all cases. The exception is only made for the compelled migrations, where the legal factor is dominating.

In the migrations' control system, where influence is directed on the adjustable factors, four directions are usually mentioned:

- legal factors – laws and other normative acts making a legal field within the framework of which migration regulation is carried out;
- economic factors are mainly financial expenses for attraction, property losses' indemnity and migrants' arrangement, including budgetary and off-budget means;
- organizational factors and informational propaganda.

According to these four directions both federal and regional migration programs are usually formed. In many respects their efficiency is determined by the fact, so far as these programs take into account the value of the subjective factor.

Table 3. Allocation of the migrants at the age of 14 years and older, according to the circumstances, which caused the address change, in the Northern regions, which territories completely belong to the Far North and to the districts compared to them, in 2005 and 2008, %

Reasons of the address change	Migrants on arrival							
	2005*				2008 *			
	The Russian Federation	The North of Russia	The European North	The Asian North	The Russian Federation	The North of Russia	The European North	The Asian North
All reasons of departure	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- in connection with studies	8.8	9.8	15.5	6.2	7.3	8.8	15.2	5.5
- in connection with work	10.4	23.0	13.6	28.8	10.7	25.5	14.7	31.1
- return to the previous address	15.4	17.8	20.3	16.3	10.8	12.3	13.9	11.5
- because of the interethnic relations' aggravation	0.4	0.1	0.1	0.2	0.2	0.1	0.1	0.1
- because of the criminogenic situation's aggravation	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
- ecological ill-being	0.2	0.1	0.1	0.1	0.2	0.3	0.1	0.4
- discrepancy to the natural and climatic conditions	0.3	0.2	0.1	0.3	0.3	0.3	0.2	0.3
- the reasons of the private character	59.3	45.0	45.2	44.9	63.0	48.3	50.8	47.1
- other reasons	5.1	4.0	5.1	3.2	7.4	4.4	5.0	4.0

* The Russian Federation population and its migration in 2005. Statistical bulletin. – M., 2006. – Pp. 106-108.
** The Russian Federation population and its migration in 2008. Statistical bulletin. – M., 2009. – Pp. 99-101.

It is possible to observe how the migration factors operate in practice (by the example of the reasons of the population arrival or leaving in the regions of the North). We shall start analyzing with the reasons according to which the population comes to the North to live and work *(tab. 3)*.

Among the set of the arrival reasons, offered to the migrants, first of all they chose the reasons of "private character" (48.3%); every fourth chose the reason "in connection with work" (25.5%); "return to the previous address" ranks third (12.3%), and "in connection with studies" ranks fourth (8.8%). The reasons of arrival to the Asian North coincide with the reasons of arrival to the North of Russia in general. The European North has a different rank of the reasons' importance. The reason "in connection with studies" ranks second (15.2%); "in connection with work" ranks third (14.7%); "return to the previous address" ranks fourth (13.9%). As the European North is considered to be more habitable, people come here more to study, and less to work.

It is a well-known fact, that non-realized needs induce the population to change either the job, or the address, or even both things simultaneously. Therefore the second step on the studying the population's migration mobility is studying the reasons according to which the population leaves the North *(tab. 4)*.

According to the departure reasons it is possible to draw the following conclusions. There are only four main reasons of departure from the Russian North: 1) the reasons of "private character" – 56.0%; 2) "return to the previous address" – 12.6%; 3) "in connection with studies" – 12.3%; 4) "in connection with work" – 12.1%. In the Asian North the reason "in connection with work" ranks third, and "in connection with studies" ranks fourth. The European North has its distinctive set of the departure reasons. The general reason of "private character" ranks first – 58.1%; "in connection with studies" ranks second – 14.7%; "return to the previous address" ranks third – 10.5%; "in connection with work" ranks forth – 9.6%.

Table 4. Allocation of the migrants at the age of 14 years and older, according to the circumstances, which caused the address change, in the Northern regions, which territories completely belong to the Far North and to the districts compared to them, in 2005 and 2008, %

Reasons of the address change	Migrants on leaving							
	2005*				2008 *			
	The Russian Federation	The North of Russia	The European North	The Asian North	The Russian Federation	The North of Russia	The European North	The Asian North
All reasons of departure	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- in connection with studies	9.1	11.7	14.1	10.0	8.1	12.3	14.7	10.8
- in connection with work	10.8	12.2	9.9	13.7	10.7	12.1	9.6	13.6
- return to the previous address	16.0	16.3	14.5	17.6	11.6	12.6	10.5	13.9
- because of the interethnic relations' aggravation	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
- because of the criminogenic situation's aggravation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- ecological ill-being	0.2	0.2	0.3	0.2	0.2	0.4	0.2	0.5
- discrepancy to the natural and climatic conditions	0.3	1.0	0.9	1.2	0.3	1.0	0.9	1.1
- the reasons of the private character	58.5	53.6	55.0	52.6	61.9	56.0	58.1	54.8
- other reasons	5.0	5.0	5.3	4.7	7.2	5.5	5.9	5.2

* The Russian Federation population and its migration in 2005. Stat. bull. – M., 2006. – Pp. 109-111.
** The Russian Federation population and its migration in 2008. Stat. bull. – M., 2009. – Pp. 102-104.

It is possible to conclude, that just as before, scientific community and experts face the question on the mechanism of the population formation in the areas of the new economic development, and managing subjects face the problem of providing them with human resources. The experience shows, that in the new market conditions the former rather effective methods of the population's attraction to the country's northern areas do not operate. The exception belongs to such territories as the Usinsky area in Komi Republic and Hanty-Mansijsky Autonomous District (Yugra) in the Tyumen area. "But all these are the areas, where there is powerful resourceful and economic base (oil, gas, nickel, diamonds, appetites), the spots of the comparative well-being among huge amount of suffering territories" [5, p. 26]. Today it is necessary to define, what factors it is possible to influence on so as to develop new economic areas with the smaller economic and social costs, so as to support the population in the developed and still having the important strategic value areas of the North, Siberia and the Far East.

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Social development of rural areas as agriculture stability factor

The essence and factors of agrarian sector stability are considered in the article. The analysis of social sphere of the Vologda rural territories is carried out as well. The basic directions of quality improvement of rural life are defined. The experience of realization of the pilot project «Development of social potential of rural settlements» is reflected.

Stability of agriculture, social sphere, rural territory.

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Fluctuations of agricultural production volume affects greatly on the level of food supply, the condition of food and light industry, rates of gross product growth, volumes of budget incomes and other socio-economic indicators. Agriculture development is a necessary condition for reproduction of population; it is the basis of the country's historical and cultural potential preservation. Ensuring of stability and development of the agrarian sector is the primary task of the whole system of economic relations.

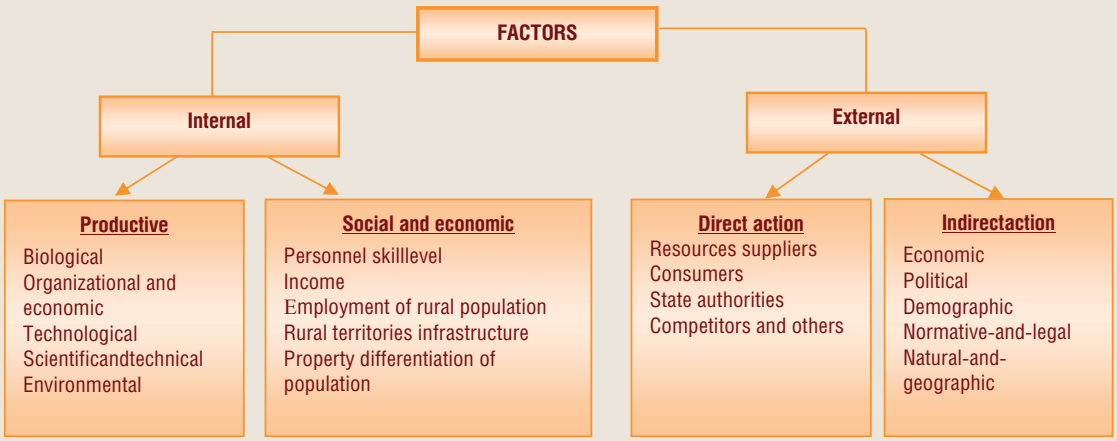
In our opinion, stability of agriculture means the ability of agro-sector as social and economic system to keep the activity indicators within the acceptance limits for a long time. When is the condition of agriculture considered stable? It is obvious that the answers to the question can be different, because the stability of the system should be considered relative to its ability to do the target purpose and the latter can be formulated in different ways and depend on the situation in the branch. For example if the target purpose is "to produce such volume of agricultural products that ensures high level of payback", this is one situation. If the target purpose is "to produce agricultural products which meet the highest indicators of quality", that's quite another situation. We support the following economists: L.I. Abalkin, A.D. Nekipelov, V.L. Makarov, I.G. Ushachev, A.P. Zinchenko, V.V. Miloserdov, A.V. Petrikov, A.N. Semin, S.S. Sulashkin who consider that it is possible to speak about the stability of agro-sector only if the following conditions are fulfilled:

- natural productivity of agricultural lands and high productivity of cattle and poultry are maintained for a long time;
- there is no dilapidating environmental impact within the limits of natural capacity of ecosystem;
- social stability, high standard and quality of life are secured;
- for a long time the agriculture organizations have possibility to work on the principles of expanded production;
- such condition of material and technical basis that makes it possible to compete with other agriculture organizations.

Domestic scientists present different criteria of agricultural stability classification in their works. Thus, N.K. Vasilyeva [3] divided them into two blocks: internal and external *(fig. 1)*.

It should be marked the industrial and social-and-economic groups out the internal factors that depend on the processes which take place in the agro-sector. The first group is directly

Figure 1. The factors of agriculture stability



linked with the output of agriculture products. This group includes biological, scientific-and-technical and technological factors. Lately their role has increased considerably. It is obvious that the possibilities to minimize the negative influence of adverse weather conditions, to increase the crop yield and the livestock yield, to reduce the cost per unit and to increase the labor productivity depend much upon the volume of up-to-date scientific-technical achievements which are used by the agricultural organizations. Therefore, being based on adoption of advanced scientific-technical achievements the intensification of production makes it possible to increase the agriculture stability considerably. Forming of modern organization farming structure also contributes to it. Precise allocation of aims, tasks, rights and responsibilities among subdivisions and workers makes it possible to run the production efficiently. So, it is the pledge of stability.

Social and economic factors have an impact on the stability of agro-sector as well. It is obvious that agricultural enterprises can't work efficiently and stably without the workers who have up-to-date knowledge of agronomy, veterinary science and pedigree cattle. It is impossible to achieve success without skilled economists who can carry out financial and economic analysis and reason the adopted decisions from the social and economic and environmental efficiency. Thus, the level of sector stability depends to a large extent on competence and professionalism of agriculture workers.

In addition to that the provision of the agriculture enterprises with experts (especially with young personnel) is determined to a large extent by the income level of rural population; by the degree of development of social, engineering and road-and-transportation infrastructure.

Along with the internal factors the external factors exercise a significant influence over the agro-sector stability. The following factors should be observed among them: regulation of proportion of prices for the products of different sectors of agro-industrial complex; the size of government support; the measures in export and import policy; the opportunity and conditions of agricultural stock market; the availability and quality of material and technical resources. The group of external environment factors which determine the agriculture stability can include the changes of macroeconomic characteristics in the country (inflation and tax level, refinancing rate, exchange rate etc.), the political stability, the changes in normative legal regulation.

This research makes an emphasis on the study of social development of village of the Vologda region, which did not manage to be solved in days of market transformations. What of them are the sharpest?

The statistical analysis makes it possible to affirm that over 19 years the demographic problems of village become more acute considerably. The number of rural population reduced by 86,8 thousand people (18,6%). There are no dwellers left in one forth out of 8 thousand settlements

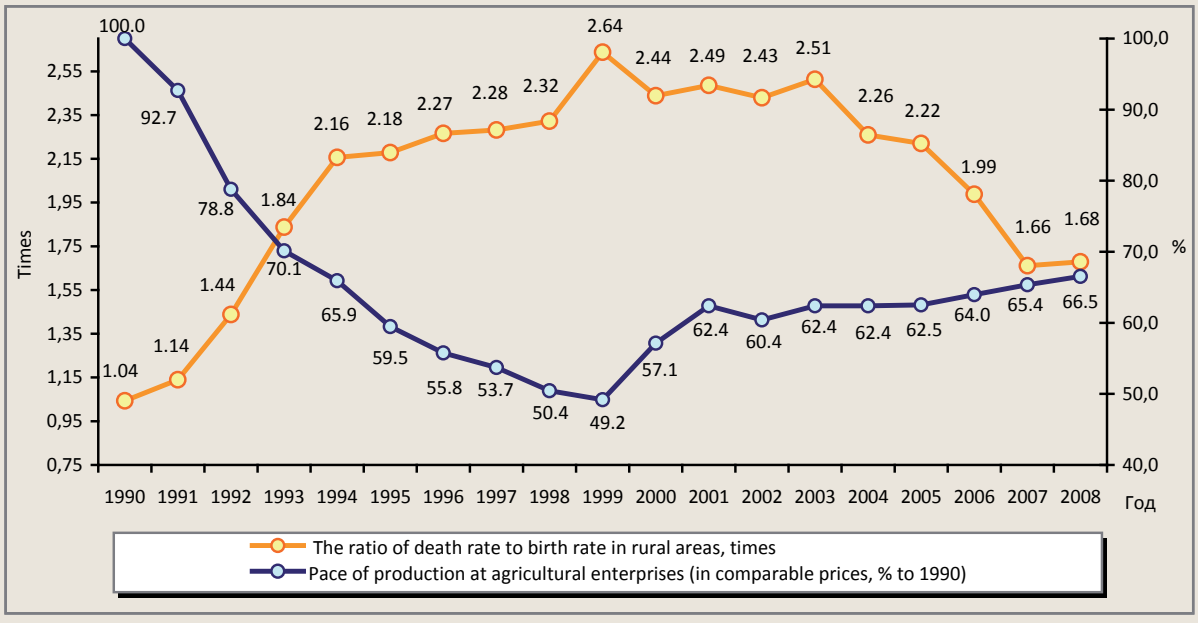
of the Vologda region. So, one can state the fact of depopulation of the rural territories and economic devastation of the area. To a certain degree it has a negative effect not only on the condition of agro-sector but also on the possibility of preservation of cultural heritage of the region, its originality and national identity.

There is threatening situation with extreme death-rate in the countryside. While in 1990 the death rate was 1,04 times higher than birth rate, from 1994 to 2005 the number of dead persons in the villages and settlements of the Vologda region was 2 – 2.6 times more than the number of born persons *(fig. 2)*. In some certain years this indicator in the countryside was 1.3 – 1.5 times more that such indicator in the urban territories. Negative demographic situation has led to reduction of agrarian sector's labor potential which became one of the factors of agricultural production rates decrease. As is shown in figure 2 the increase in the gap between the number of born and dead in the country during 1990 – 1999 was accompanied by agricultural production decline.

At the present time the main part of rural population (more than 53%) – is people of retirement and preretirement age. Young generation is seeking to find job in the town and to move close to the district center where the level of social sphere development is higher than in the village (or in the outlying districts). "There are remarkably little young people among the members of personal subsidiary plots", A.V. Golubev writes. "Fattening the cattle in their peasant households, parents do their best to push out their children from the village to the town... There is no continuity as a tendency in transferring the personal subsidiary plots from fathers to children" [4, p. 14].

According to the data of All-Russian research institute of agriculture economics only 17% of rural school-leavers want to cast in their lot with village. After graduating the agrarian institute of higher education only 7% of students are ready to work in the rural areas under any conditions. About one fourth of young experts is ready to go for work to the rural area provided that they have comfortable dwelling and high salary, and 45,5% are not about to connect their life with village at all. Keeping such attitudes of mind and spreading them among rural youth undoubtedly put the village's future at risk and make the problems of social and economic development of the rural areas and the problems of agro-sector stability more acute.

Figure 2. Excess of death rate over birth rate in a rural areas and dynamics of manufacture of agricultural products in the Vologda region



The process of reduction and disintegration of the settlement system caused weakening of social infrastructure potential because of decline of financial basis, its content and development. Over the years of market transformation the narrowing of the village social sphere was keeping high rates. The number of schools in the districts of the region was reduced by 244 (32.1%) in 2008 in comparison with the year of 1990. As a result the pupils from out-settlements have to spend 1.5 – 2 hours a day to get up to school from their place and back (5 – 9 km).

The provision of the rural educational establishments with laboratory equipment, educational supplies, textbooks and instructional technologies is still an acute problem. It is obvious that in the poorly equipped schools the students can't get proper education which is necessary for entering and studying at the higher educational establishments of our country.

One more negative tendency has been formed in the rural area - health-care agencies are being closed down. For the last 19 years the number of village first-aid stations decreased by 207 (25.3%) in the region. In the region there were only 95 hospital beds per 10 thousand rural people in 2008 while in 1990 there were 160 hospital beds. In 2008 in the rural area the number of doctors was 2.1 times lower and the number of nurses was 1.2 times lower comparing with the urban area. Sometimes it is necessary to go 70 – 100 km in order to take out a tooth.

The network of cultural and leisure-time institutions has suffered great losses in the period of market-style reforms. The number of clubs and recreation centres has been reduced by several times, the number of libraries – by almost 20% *(tab. 1)*. The opportunity to give the countryman access to the funds of central and regional libraries and to visit the theaters and exhibitions is still rather theoretical than practical because of road-and-transportation, financial and other difficulties.

Lack of housing is another factor which makes the rural areas more unattractive for youth and undermines the stability of agricultural production. The volumes of housing introduction in the rural area decreased much at the beginning of 1990s and stayed at the low level for a long time *(tab. 2)*. The execution of the target programme "Social development of the village" makes it possible to improve the situation in the sphere of housing construction in the rural area in 2007 – 2008. However, per 100 people in the rural area there were 25,4 sq. m. of housing introduced in 2008 that is more than by 2 times less than in 1990 and by 26.4 sq. m. less than in the towns of the Vologda region.

The level of improvement of agricultural housing facilities remains poor. According to the statistics data only 31% of it is equipped with running water, 21% – with sewage system, 20% – with central heating and only 14% - with hot running water.

About a half of roads in the rural area needs partial repair and great additional maintenance costs. Under the conditions of population reduction and great dispersion of settlements the

Table 1. The condition of social infrastructure in the rural areas

Indicator	Year					2008 to 1990, in %
	1990	1995	2000	2005	2008	
Number of kindergartens	937	486	387	353	325	34.7
Number of dailyeducational organizations	760	757	712	575	516	67.9
Number of village first aid stations	818	759	696	674	611	74.7
Numberof clubs and recreation centres	1,090	888	789	741	301	27.6
Number of mass libraries	799	711	685	666	637	79.7

Table 2. Deployment of dwelling houses in the Vologda region, sq. m. per 1 resident

Area	1990	1995	2000	2005	2008	2008 to 1990, in %
Rural area	0.52	0.15	0.09	0.16	0.25	48.6
Urban area	0.51	0.39	0.17	0.26	0.52	102.0

Table 3. The basic indicators of household budgets of theVologda region (peramember of household a month at the average), roubles

Indicator	Urban area			Rural area		
	2006	2007	2008	2006	2007	2008
Disposable resources	*10,727*	*10,255*	*13,009*	*5,564*	*7,372*	*8,678*
including gross income	*7,453*	*9,466*	*11,747*	*5,288*	*6,858*	*8,152*
including in the families with two children under 16 years	4,546	7,646	10,722	3,708	4,527	6,023
Consumersexpenditure	*5,976*	*7,065*	*9,171*	*3,700*	*4,284*	*5,566*
including the food costs	1,969	2,266	2,865	1,626	1,812	2,521

principle of financing of municipalities per capita by allocation of funds to road maintenance has aggravated the problem of preservation of transport infrastructure still more. For the lack of good roads it is difficult to do visiting forms of medical, cultural, consumer and trade services of population. Many settlements have no bus service in spring and autumn. The agriculture commodity producers expend much money on recovery of the expenses connected with highways maintenance and with rise in the cost of transportation.

Of course, if the comparative analysis of social sphere development in the village in 1990 and at the beginning of the XXI century would be carried out, it is necessary to notice that at that period of time there were positive tendencies as well. For example, fixed location phones, mobile communication, satellite TV and Internet came into service in many villages and settlements of the region, the transport connection with the district and region centres improved, the range of goods became wider in retail chain. In some certain settlements there were projects of engineering infrastructure put into operation and there was supplying with gas. However there is still a lot to do.

Low living standards of the population remain one of the most urgent problems in the country. Its urgency is proved by the data of the Centre of All-Russian monitoring of rural social and labour sphere of All-Russian research institute of agriculture economics, according to them two thirds of rural people believe low income to be the main problem of the village [2]. The results of sample survey of the Vologda region government statistics service give us a possibility to say that in 2008 the disposable resources1 per one member of household in the rural area were 8,678 rubles, that is 1.5 times lower than in the urban area *(tab. 3)*. Gross income of the family with two children under 16 years was 6,023 roubles in the rural area and 10,722 roubles in the urban area. At the same time the food costs in the structure of expenditures for the consumptive use of households were 45.3% in the rural area and only 31.2% in the urban area. While in 2008 the disposable resources of the urban dwellers of the region were by 2.8 times higher than the level of living wage, in the rural area this ratio was no more than 1.8 times.

High poverty level of the rural population of the region can be explained by low income of agricultural organizations (the principal economic players), their poor financial condition and lack of possibility to pay proper salary to the worker. The retrospective analysis makes it possible to say that while in 1991 the material remuneration in agriculture was 92% out of the average economic index, in 1995 it was 57.3% and in 2008 – 68.5%.

The analysis of backlog of social development of village of the Vologda region can be continued, but it's more important to define the ways for solving the problem of social development of the village and to understand what steps are necessary to increase the standard and quality of rural life. During our researches we have come to a conclusion about necessity of realisation, first of all, of some measures of organizational and economic character.

[1] The disposable resources of households are a sum of monetary funds which are at households' disposal to ensure their expenses and to make savings as well as the cost of foodstuff in kind and the cost of privileges in kind.

The following organization and economic measures are necessary:

Firstly, when solving the problem of rural territories development it is necessary to overcome the departmental disconnectedness. Today neither of the departments of the Russian Federation develops the rural territory in an integrated way. M.E. Nikolaev, a deputy chairman of Council of the Federation of the Federal Assembly of the RF, notices truly that "everybody develops the rural area separately: one develops the rural economy, another develops education, local self-government or health care. So here in the same settlement we can develop production and "optimize" i.e. close the school and to transfer culture, libraries and sport under the charge of municipalities..." [6]. Therefore in the first place it is necessary to work out some unified approach to the rural territories development on the state level.

Secondly, it is necessary to introduce the sections concerning the rural area into the state and regional programmes and strategies of long-term and middle-term development of the economic and social sectors. The academician A.V. Petrikov stressed time and again that it hasn't been done so far: "if you look through the health care and education programmes – there is no rural part" [7].

Thirdly, the main (base) settlements which perform the function of service centres for a group of settlements should be marked out in the human settlement pattern. It is obvious that the authorities won't support and won't be able to support the development of social and economic potential in all rural places because of limited financial resources. In this connection it is important to search rural area and to fix those territories where the measures for increasing the social potential will give essential positive effect. Meanwhile it should be considered that the implementation of these projects mustn't reduce accessibility of social services for the rest of rural people.

Fourthly, the heads of rural settlements and the staff of the Department of municipality development should help to form new institutions of civil society in rural areas – such organizations which can skilfully develop a system of relationships between households, authorities and business having ensured the protection of economic and social interests of different groups of population. Socially active citizens and their communities with the assistance of authorities, business and independent mass media are able to do a lot to restore and develop rural society and rural territories. It is the man or rather the group of initiative and active people capable of consolidating people who must be the principle resource of development.

Fifthly, one should increase the level of financial and economic independence of local self-government authorities in order to perform the functions of maintenance and development of road, communications and other objects which are in settlement administration charge. This task can be solved by changing the standards of budget and taxation legislation.

Sixthly, it is necessary to carry out the complex of measures to increase the agricultural organizations revenue performance. Only in this case they will be able to modernize the production, to improve the labour conditions, to increase the level of wage, stability and attractiveness for young experts. It is necessary to carry out the complex of measures to diversify the rural economy. To give tax preferences and easy credit to the rural enterprises which are engaged with trade and consumer services, agro-tourism, handicrafts and agriculture produce processing. To solve the problem of agriculture production distribution by creating the consumer and supply cooperatives and it will create an extra impulse for development of personal subsidiary plots and to a certain degree it will help to reduce the level of rural unemployment.

Seventh, we need to cancel the debts of agriculture commodity producers who invest money in development of engineering, social and road-and-transportation infrastructure of rural area, to compensate the standard costs for maintenance of nonproduction projects which are on balance of the agriculture organizations.

To solve the problems of development of social sphere in the country, to improve life quality and economic activity of rural population the regional authorities need to take active practical measures. Thus, as a result of implementation of measurements within the project "Development of social potential of rural settlements" the pilot territories' socio-economic situation has improved. In the Novlenskoye settlement of the Vologda district, the economic basis of which is composed by three large agricultural cooperatives (collective farms of "Novlensky", "Ilyushinsky" and "Nefedovsky"), a general practitioner's office was opened, as a result sickness rate has declined, and birth rate has twice increased compared with 2005. A sport playground for children, a stadium and a training hall were built which allowed to increase population's inclusion in sports from 12 to 30%. Development of roadside business is active in the settlement. The main result of the project is the formation of active life position among the population, strengthening of healthy lifestyle and family values, development of projects joining business, power and citizens. This experience shows that the development must be started with the rural people themselves, their conscience of necessity of changes.

At the All-Russian conference "Innovation development of rural territories" in March, 23 – 24, 2010 the deputy governor of the Vologda region N.V. Kostygov noticed that some other measures to solve the problems of rural area are being realized in the region. However for cardinal change we need some state approach. All authorities must understand that social development of rural territories and increase in agrarian sector efficiency – they are not only the basis of food security but also national security, growth of well-being of all population of Russia. The state government must face the rural area and mustn't realize half measures hastily but it must conduct the reasonable and complex policy of development of rural economy and rural territories.

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