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FACTS, TRENDS, FORECAST

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ECONOMIC AND SOCIAL CHANGES: FACTS, TRENDS, FORECAST

A peer-reviewed scientific journal that covers issues of analysis and forecast of changes in the economy and social spheres in various countries, regions, and local territories.

The main purpose of the Journal is to provide the scientific community and practitioners with an opportunity to publish socio-economic research findings, review different viewpoints on the topical issues of economic and social development, and participate in the discussion of these issues. The remit of the Journal comprises development strategies of the territories, regional and sectoral economy, social development, budget revenues, streamlining expenditures, innovative economy, and economic theory.

Federal State Budgetary Institution of Science Vologda Research Center of the Russian Academy of Sciences (VolRC RAS), which existed as Vologda Scientific Coordinating Center of Central Economic and Mathematical Institute of RAS until March 2009, is situated on the territory of the Vologda Oblast. V.A. Ilyin, Doctor of Economics, Professor, Honored Scientist of Russia, is the permanent director of the Institute. A lot of great scientists have played an important role in the formation and the development of ISEDT RAS as a scientific institution such as: academicians D.S. Lvov, V.L. Makarov, V.I. Mayevsky, A.D. Nekipelov, Y.S. Osipov. Everything that has been done before and is being done nowadays by the personnel of the Institute, it would be impossible without the constant support of the Vologda Oblast's Government and city leaders.

The formation of the scientific personnel with an active life position, a great demand for Institute's investigation, academic community's support of the new journal published by ISEDT RAS, which combined efforts of the economic institutes of RAS in the Northwestern Federal District, and furthermore development of international ties have become the main outcomes of the last years.

MAIN RESEARCH DIRECTIONS

Due to the Resolution № 96 by the Presidium of Russian Academy of Sciences dated from March 31, 2009 VolRC RAS carries out investigations in the following fields:

- problems of economic growth, scientific basis of regional policy, sustainable development of territories and municipalities, and transformations of socio-economic space;
- regional integration into global economic and political processes, problems of economic security and competitiveness of territorial socio-economic systems;
- territorial characteristics of living standards and lifestyle, behavioral strategies and world view of different groups of the Russian society;
- development of regional socio-economic systems, implementation of new forms and methods concerning territorial organization of society and economy, development of territories' recreational area;
- socio-economic problems regarding scientific and innovative transformation activities of territories;
- elaboration of society's informatization problems, development of intellectual technologies in information territorial systems, science and education.

INTERNATIONAL TIES AND PROJECTS

In order to integrate scientific activities of the Institute's scholars into global research area, international scientific conferences are held on a regular basis; they result in cooperation agreements with different scientific establishments:

2007 – Cooperation agreement is signed with Institute of Sociology, of the National Academy of Sciences of Belarus , Center for Sociological and Marketing Investigations at the "International Institute of Humanities and Economics" (Belarus, 2008).

2008 – Protocol of intentions is signed with Alexander's Institute at the Helsinki University (Finland, 2008).

2009 – Cooperation agreement is signed with Center for System Analysis of Strategic Investigations of NAS (Belarus, 2009).

2010 – Cooperation agreement is signed with Institute of Economics of the National Academy of Sciences of Belarus (Minsk, 2010).

2011 – Cooperation agreements are signed with National Institute of Oriental Languages and Civilizations (Paris, 2011), Institute of Business Economy at Eszterhazy Karoly College (Hungary, 2011), Republican research and production unitary enterprise "Energy Institute of NAS" (Belarus, 2011). Protocol of intentions are signed with Jiangxi Academy of Social Sciences (China, 2011), Research and Development Center for Evaluation and Socio-Economic Development and the Science Foundation of Abruzzo region (Italy, 2011).

2012 – Cooperation agreement is signed with Center for Social Research at the Dortmund Technical University (Germany, 2012).

2013 – Cooperation agreement is signed with Jiangxi Academy of Social Sciences (China, 2013).

July 2013 – The application for research performance by international consortium involving ISEDT RAS within the 7th Framework Programme of European Community.

2014 – Cooperation agreement is signed with Jiangxi Academy of Social Sciences (China, 2014).

NEW PUBLICATIONS OF VolRC RAS

Ilyin V.A., Povarova A.I. *Public Administration Efficiency. 2000–2015. Contradictory Outcomes – an Expected Result: Monograph*.

While Analyzing the Past, to Think about the Future. Under the scientific supervision of Doctor of Economics, Professor V.A. Ilyin.

Ilyin V.A. *Public Administration Efficiency: Chief Editor's Point of View.*

Strategy and Tactics of Implementation of Socio-Economic Reforms: Regional Aspect: Proceedings of the Seventh Research-to-Practice Conference, Vologda, Russia, December 17–19, 2015.

Shabunova A.A., Guzhavina T.A., Dement'eva I.N., Kozhina T.P., Lastovkina D.A., Afanas'ev D.A. *Regional Civil Society: Development Dynamics: Monograph*.

Global Challenges and Regional Development in the Mirror of Sociological Measurement: Proceedings of the Online Research-to-Practice Conference. Vologda, March 14–18, 2016.

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EDITORIAL

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What Will Putin Bequeath to His Successor in 2024?

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Abstract. In accordance with the title of the journal Economic and Social Changes: Facts, Trends, Forecast, in the editorial article we analyze objective and real trends and facts in Russia's domestic and foreign political and socio-economic life. Trying to distance ourselves from a subjective viewpoint, we rely in our analysis on the assessments given by experts from different fields of knowledge (economists, sociologists, public figures, etc.), as well as on a long-term database of sociological data, formed on the results of our own observations for the period since 1996 up to the present time. For more than 20 years now, every two months, we analyze the data of a sociological monitoring, which shows that there are significant and largely positive changes in the President's foreign policy, but the dynamics of the domestic socio-economic situation in Russia are stagnant: during the period from 2000 to the present time, the key issues of concern to people have not changed, and the relevance of many of them has even increased. The reason for this lies primarily in the public administration system, the effectiveness of which is hindered by the dominance of private economic interests of individual elites over the national need for social justice and dynamic development of the standard of living and quality of life. On the eve of Vladimir Putin's

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fourth presidency the number of those who find the current socio-economic and political situation in Russia satisfactory becomes fewer, despite the fact that the President enjoys a high degree of support. In this situation, the government and the future President will face new challenges, the solution to which will be crucial not only for the future of Russia, but also for the preservation of its integrity as an independent sovereign state.

Key words: national security, public administration efficiency, social and economic development, quality of life, oligarchic capitalism.

The history of development of the Russian state shows that strategic thinking is the most important quality that determines the competence of government agencies and the effectiveness of the entire administration system. Any decisions that determine national security and competitiveness of the country become timely and long-term only when those who make them have the ability to foresee how the public, the national and world economy, international political establishment, etc. will react to these decisions.

Specific events and crucial historical periods that the Russian state had to overcome in the course of its evolutionary development (the Time of Troubles, the Russian Revolution of 1917, perestroika, etc.) make this obvious truth particularly relevant for our country, where over the past 17 years there emerged a clear hierarchical structure of the power vertical, with the President at the top. Therefore, the priorities of the political program of the future head of state should deal not only with the current pressing issues, but also with strategic guidelines of the future. Back in 1997, L.I. Abalkin wrote in this regard: "The ratio of tactics and strategy can be transformed as the ratio of statics and dynamics, to which completely different approaches are applied: statics is the problem of division between the center and regions, between national defense and health, between science and environment, etc. And if someone gets more, then it is only due to the fact that someone else gets less. That is, of all the rules of arithmetic, we use only two – to take away and divide. **As soon as we move to the strategy, to dynamic problem-solving, then, in principle, a solution according to which everyone gets more is possible. Not at the expense of each other, but by increasing material volumes, increasing efficiency, and resource saving"[1].**

The ability to make strategic decisions depends on how much a person is able to see the whole picture rather than individual facts and events. And the general picture emerging in the 21st century (in politics, economy, etc.) is that the capitalist system and liberal ideology are becoming obsolete. They cease to meet the requirements of modern society and they respond to the objective challenges of the future less and less effectively. Many scientists whose authority is recognized worldwide (I. Wallerstein, R. Collins, M. Mann and others) are skeptical about the prospects of the capitalist system of values oriented toward the growth of consumption to solve such a global challenge as the depletion of planetary resources and suggest that "capitalism cannot flourish, if the institutions are not reformed, employment restored and environmental, health and other problems somehow resolved..." [1].

The growing need for social justice, equal opportunities, and dynamic development of the quality of life not only for a narrow group of "privileged" individuals, but also for the general population, makes capitalism choose: either to transform itself toward social values or give way to them completely. However, behind any system of values there are countries and elite groups

[1] Abalkin L.I. Strategy and tactics of social and economic reforms at the present stage (a speech at the plenary session of the First Russian research-to-practice conference "Strategy and tactics of social and economic reforms", Vologda, January 22–24, 1997).

("carriers") lobbying its interests, and when the human factor is "engaged", then the natural and objective historical processes face subjective obstacles such as the confrontation of the ruling establishment and the unwillingness to recognize that the world is on the threshold of a new stage of its development that requires comprehensive and system changes in society, ideology, and administration.

This confrontation of global elites leads to phenomena such as the refugee crisis and the intensification of international terrorism (caused by the aggressive policy of the United States in the Middle East), the split of current territorial and economic entities (withdrawal of the United Kingdom from the European Union), global financial crises, etc. In other words, the signs of a decline of capitalism have already reached such a stage of their manifestation, when it is not necessary to be a great expert to see them; it is enough just to recall the main world events covered in the mass media.

For Russia, one of such events in recent months was the so-called "Kremlin list", released by the U.S. Treasury Department in January 2018[2]. If we do not see the general trend, then the "Kremlin list" itself is an insignificant phenomenon, but in the general picture it is another signal of "increasing pressure of global elites on the national elites", the process that has been going on for many years and that "is based on a simple fact: in the post-capitalist future, the public pie will be not enough to feed everyone, this very future will be not enough. And it concerns not only the "bottom" and "middle", but also the "top"[3]. The "Kremlin list" is the first step toward overthrowing the Russian government. For some, this list is a simple list of names of people close to the Kremlin; some of our inexperienced politicians call this list a phonebook. In fact, the list is the first blow, which will inevitably be followed by a second one after a certain period of time"[4].

Experts point out that in this situation "the elite, which associates itself with "Barvikha Luxury Village" and which will give up everything for this "Barvikha Luxury Village", will lose everything... so the most important and necessary condition for victory is as follows: **the elite must associate itself with the society, of which it is part"[5].**

> "Only those ruling elites who will have a powerful magic weapon – the unity with their people will enter the post-capitalist (postcatastrophic?) world. Only the elites who identify themselves with their countries, **who are rooted in their culture and share the same values, interests and goals with their people will get a ticket to the future in the conditions of the impending crisis and war of all against all"[6].**

However, in the system of public administration built after the collapse of the USSR, national interests have never been the priority of elite groups. On the contrary, oligarchic capitalism became its essential attribute; it was formed with the help of "a deliberate policy of the state mainly by distributing state property by the government into private hands or by creating quasi-monopolies that are subordinate to the private interests of elite groups" [2, p. 8].

Today capitalism for the few is in fact the main reason why actual changes in the country occur only in those issues that the President himself considers as priority. First of all, it is strengthening the country's defense capability (reviving the military-industrial complex) and building a rigid hierarchy of the system of public administration; of course, these are the most important and

[2] The "Kremlin list" is a list of persons that are likely to be subject to U.S. sanctions. The list contains 210 names. Of these, 114 are high-ranking officials and heads of state-owned companies, and 96 oligarchs.

[3] Fursov A.I. The one who wins shall live. *Gazeta "Zavtra",* 2018, January 22. Available at: http://zavtra.ru/blogs/elita_-_hhi

[4] Prokhanov A. Defense consciousness. An enemy at the gate. *Gazeta "Zavtra"*, 2018, February 7. Available at: http://zavtra.ru/blogs/oboronnoe_soznanie_vrag_u_vorot

[5] Fursov A.I. The one who wins shall live. *Gazeta "Zavtra",* 2018, January 22. Available at: http://zavtra.ru/blogs/elita_-_hhi

[6] *Ibidem*.

> For half a century, especially since the Brezhnev times, a succession of self-deceptions has been haunting us. One and the same cycle: stagnation-crisis-stagnation. Our share in the world economy is decreasing... The system of official-oligarchic capitalism was considered doomed back at the beginning of the 20th century, at the time of Jack London and his novel "The Iron Heel". Its birthmarks are low productivity and systemic corruption. And we are still holding on to it... Russia needs a new civilizational project headed toward the future. It is impossible to fight for a decent future while armed with a shield from the Middle Ages or with missiles from the Soviet era"[7].

strategic tasks for ensuring national security, but not the only ones of we speak about promoting socio-economic development and providing social stability in the country.

The key issues to be implemented in the course of socio-economic development (in particular, those set out in the Presidential Decrees of May 2012) were entrusted to the Government of Dmitry Medvedev; **which under the oligarchic capitalism actually meant "letting things run themselves".** The editorial articles, in which we analyze actual facts and trends every two months and give expert assessments on the main problems of internal and external development of Russia, clearly show that **during all the six years of Vladimir Putin's third presidency the key tasks to address the country's domestic problems were not implemented: from year to year the ruling elites are confronted with the same questions, experts talk about the Government's inertia in the implementation of national interests; the need for more decisive actions to nationalize the elites on the part of the President becomes more and more urgent...** *(summary extracts from all the 24 editorial articles published in 2012–2017 are given in the Appendix)*.

The Government's ineffectiveness in exercising its direct responsibility to provide for Russia's national interests is clearly seen in the

> "The result of a long (about 10 years) period of low economic growth was the stagnation of the standard of living and the lack of investment incentives for business. In general, it can be stated that the entire range of risks of medium- and long-term socio-economic development increases, and less and less resources remain at the disposal of the authorities to deal with those risks" [3, p. 24].

dynamics of the standard of living and, in particular, the current state of affairs concerning social inequality. In 2012–2017, "average per capita income of citizens at the rate of the ruble to the US dollar decreased from 730 to 480; average monthly wages – from 860 to 600 US dollars. **In other words, for five years, the income of citizens expressed in US dollars decreased 1.5-fold.** The drop in household consumption expenditure was comparable: it fell from 406 to 260 US dollars in five years per household member per month"[8]. At the same time, simultaneously with the decline in the standard of living of "ordinary Russians" the number of billionaires and their personal well-being in the country continues to increase: in 2011–2016, their number in Russia increased from 60 to 96 people, and the average welfare by one billionaire increased from 153 to 230 billion rubles. In 1990–2015, the share of income of the richest 10% of Russians increased by 20 p.p. (from about 25 to 45%), while the share of income of the poorest 50% fell by 13 p.p. (from 31 to 18%). Some experts [4, p. 3, 4] point out that **the level of social inequality in Russia in 2015 corresponded to that in 1905.**

Thus, social inequality in Russia continues to increase, as well as people's dissatisfaction with the effectiveness of public administration and their well-reasoned doubts that the ruling elites are guided in their activities by national interests and the interests of achieving social justice rather than the motives of personal enrichment.

[7] Kirpichev V. Consolation instead of development. *Literaturnaya Gazeta,* 2018, January 24. Available at: http://lgz.ru/article/-3-4-6628-24-01-2018/vzamen-razvitiya-uteshenie/

[8] Bashkatova A. Russians have lost their consumer potential. *Nezavisimaya Gazeta*. Available at: http://www.ng.ru/economics/2018-01-31/1_7162_potencial.html

"Today the Russian state has no money... Its funds are empty. The accumulations have been exhausted. There is money in the hands of billionaires who keep them in the offshores, and securities of America. These untold riches are the result of shameless exploitation of the Russian people who are put on the brink of poverty and extinction. To return all this money to Russia, to direct it to development, to provide a breakthrough with this money – these are urgent tasks of the Kremlin, Putin's tasks"[9].

An important criterion of public administration efficiency consists in public opinion assessments measured with the help of sociological research. Therefore, analyzing the trends in the development of the domestic situation, we rely largely on the existing sociological base[10].

During all presidential terms of Vladimir Putin (2000–2017), more than 100 "waves" of monitoring were conducted. Their results, first, allow us to say that the most pressing issues of concern to people (low income, high inequality, corruption, etc.) are of a long-term and aggravating nature: "By 2017, compared with the beginning of V. Putin's first presidency (2000), there has been a significant decrease in the relevance of problems such as high crime rate, unemployment, dismissals, lack of spirituality, wild burst of immorality, delays in payment of wages and pensions, harassment on national grounds... But the urgency of the most acute problems has not weakened; on the contrary, it has even increased: in 2000–2017, the proportion of people concerned about the problem of inflation increased from 45 to 57%; low standard of living – from 51 to 54%; stratification of the population into "poor" and "rich" – from 28 to 39%; corruption – from 15 to 24%. **Thus, there have been no positive changes in the last 17 years with regard to the most important problems of people's concern: the issues of social justice, property and social stratification, and poverty have become even more acute"** [5, p. 13].

"The way of studying the world of public opinion that would present an alternative to what George Gallup suggested many years ago, has not been invented so far"[11].

Second, the results of sociological assessments show that the question "What kind of state are we building?" refers not only to the Government, but also to the President, **who not only serves as the chief arbitrator in the current political system, but also acts as a guarantor of national security,** which was recorded in the National Security Strategy in 2015.

That is why, among the various aspects of the President's work the success of his actions to boost the national economy and the welfare of citizens regularly receives lower assessments than the success with which he deals with the issues related to the strengthening of Russia's international status, establishing order in the country and strengthening the democratic foundations of society *(Insert 1)*. Moreover, the negative trends are noted by the representatives

"The state policy of the Russian Federation in the field of national security is implemented by concerted action of all elements of its support system under the leadership of the President of the Russian Federation and with the coordinating role of the Security Council of the Russian Federation" [6].

[9] Prokhanov A. Defense consciousness. An enemy at the gate. *Gazeta "Zavtra",* 2018, February 7. Available at: http://zavtra.ru/blogs/oboronnoe_soznanie_vrag_u_vorot

[10] VolRC RAS carries out the public opinion monitoring since 1996 once every two months. The volume of the sample population is 1,500 people 18 years of age and older in Vologda, Cherepovets, and in Babayevsky, Velikoustyugsky, Vozhegodsky, Gryazovetsky, Kirillovsky, Nikolsky, Tarnogsky and Sheksninsky districts. The representativeness of the sample is ensured by the observance of the proportions between the urban and rural population, the proportions between the inhabitants of settlements of various types (rural communities, small and medium-sized cities), age and sex structure of the Oblast's adult population. The method of the survey is a questionnaire poll by place of residence of respondents. Sampling error does not exceed 3%.

[11] A poll about polls: why and what for? *VTsIOM Press Release,* 2016, no. 3241, November 11. Available at: https://wciom.ru/index.php?id=236&uid=115943

of socially vulnerable groups (people with low income, pensioners), the middle and top-income groups, and also by young people *(Insert 2)*.

The latter category (people 18–30 years of age) deserves special attention, because over time it is continuously supplemented by new members, and in the 17 years that have passed since the beginning of the first presidential term of V. Putin its composition has changed significantly. Nevertheless, according to the results of the research, the assessment of the President's success in solving the material problems of the population has deteriorated significantly among people in the age group 18–30: on average, for the period from 2000 to 2003, negative assessments were given by 46% of its representatives, in 2012–2017 – by 55% (an increase by almost 10 p.p.).

Thus, the current course of economic development needs to be changed for two reasons.

First, because the current economic growth rates actually mean the loss of Russia's position in geopolitical competition. The historical experience of our country shows that in such cases this loss becomes a real threat to national security (in order to eliminate a potentially powerful enemy, geopolitical competitors used the weakened state of both the Russian Empire and the Soviet Union). In the 21st century, international relations are strained to the limit, the distribution of anti-Russian sentiment continues to dominate in the information policy of the United States that still preserves its status as an international leader, and, according to experts, so far there we cannot expect any positive changes in this issue: "In 2017, it became clear that normalization of relations with the West is not expected for a long time, because the basic anti-Russian attitude of Western elites, rather than negotiation and compromise, becomes the essence of international politics"[12].

Second, the current growth rate of the Russian economy could satisfy the population during the period of adaptation to the consequences of the crisis-ridden 1990s, but the era of "stabilization" has strengthened the middle class and naturally led to an increase in the level of needs. As a result, during the third six-year presidency of Vladimir Putin, there has been an increase in the need for changes: during the period from 2012 to 2017, the proportion of Russians who believe that changes and reforms in the economic and political life of the country today are more important than stability increased from 28 to 44%. The share of those who hold the opposite view decreased from 72 to 56%.

Nevertheless, the current political elite does not intend to change anything in the course of economic development. According to experts, "the dismantling of capitalism requires a left turn, but the Russian elites – these "children" of the 1990s, the offspring of criminal redistribution and Yeltsin's betrayal – do not want to hear these steps, they are afraid"[13]. It is therefore quite natural that society shows interest to all the new faces in the political arena, in particular to the presidential candidate from the Communist Party Pavel Grudinin whose "sudden appearance could mark not only the emergence of a new face, but also a kind of demonstration designed to be a prologue for a new consensus... It may be a signal for the beginning of the "change of generations" in the elites. The change is related not to the age, but rather it is a change in the ideological sense, i.e. it marks the beginning of a process that will make the 1990s elites and everything related to them fade away"[14].

"Tunnel vision" of the current elites was demonstrated on January 29, 2018 at the Gaidar Forum, after which experts pointed out that "the Gaidar Forum today is not a discussion platform, it actually represents one point of view and this point of view is obsolete... the Forum of this year

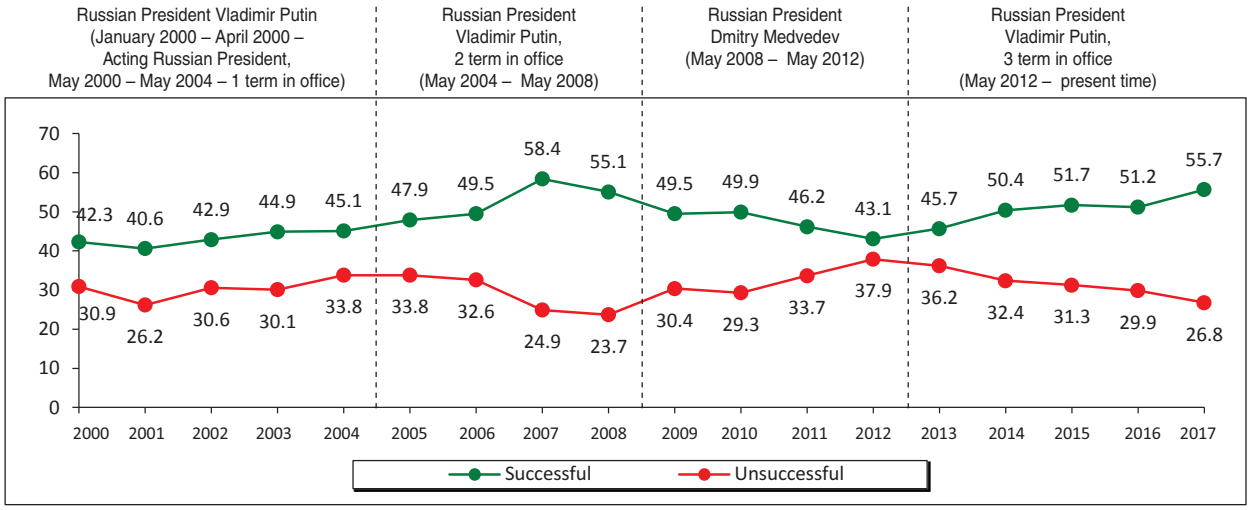
[12] Gurova T., Skorobogatyi P. Why Putin is doing this. *Zhurnal "Ekspert"*, 2017, no. 50 (1056), December 11-17. Available at: http://expert.ru/expert/2017/50/zachem-putin-delaet-eto/

[13] Fursov A.I. The one who wins shall live. *Gazeta "Zavtra",* 2018, January 22. Available at: http://zavtra.ru/blogs/elita_-_hhi

[14] Kochetkov A. Around "Project Russia". *Literaturnaya Gazeta,* 2018, January 17. Available at: http://lgz.ru/article/-1-2-6627-17-01-2018/vokrug-proekta-rossiya/

Insert 1

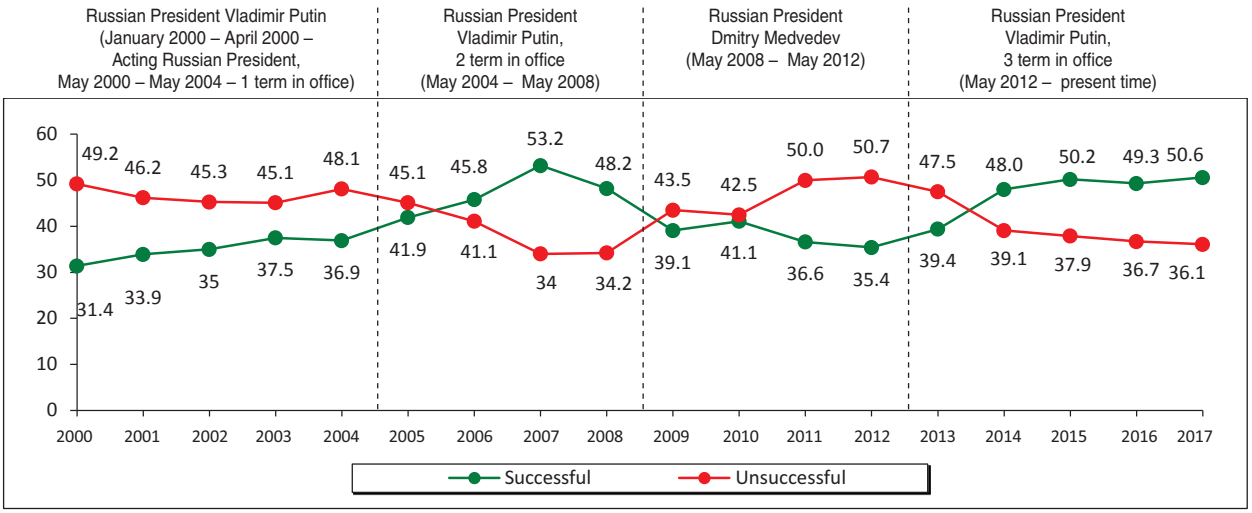
In your opinion, how successful are the RF President's efforts to strengthen Russia's international standing? (percentage of respondents)



In general, in 2000–2017, the proportion of people who consider the President's work to strengthen Russia's international positions to be successful increased by 15 p.p. (from 42 to 57%). The share of positive assessments throughout 2000–2017 was higher than the share of negative ones.

During Vladimir Putin's third presidential term (2012–2017), the share of positive assessments of the President's efforts to strengthen Russia's international positions increased by 14 p.p. (from 43 to 57%), and the share of negative judgments decreased by 9 p.p. (from 38 to 29%).

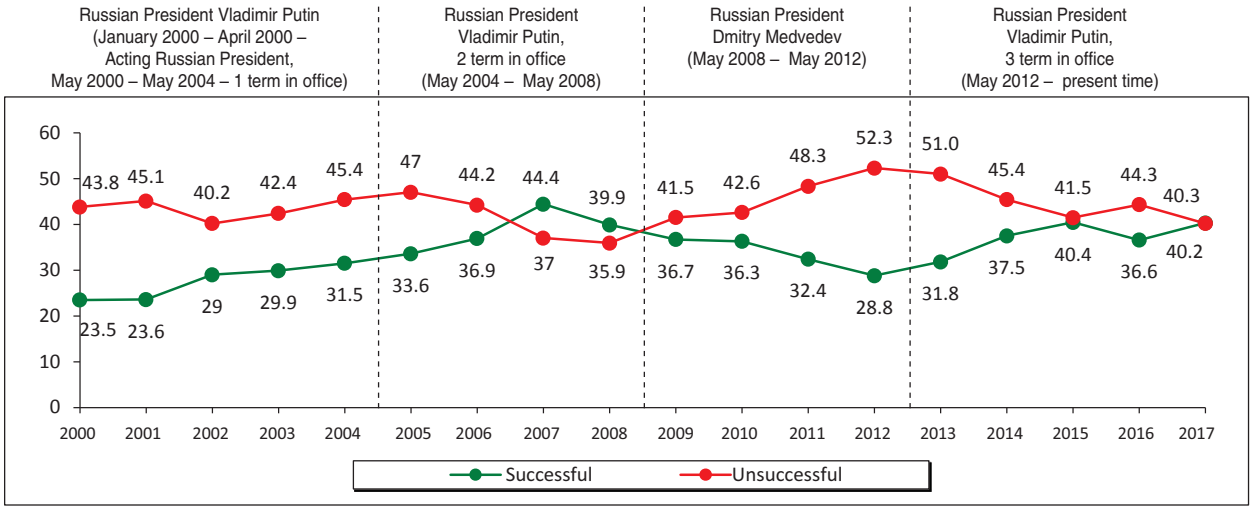
In your opinion, how successful are the RF President's efforts to impose order in the country? (percentage of respondents)



In 2000–2017, the share of those who positively assessed the work of the head of state on establishing order in the country increased by 20 p.p. (from 31 to 51%). The proportion of negative assessments decreased by 12 p.p. (from 48 to 36%).

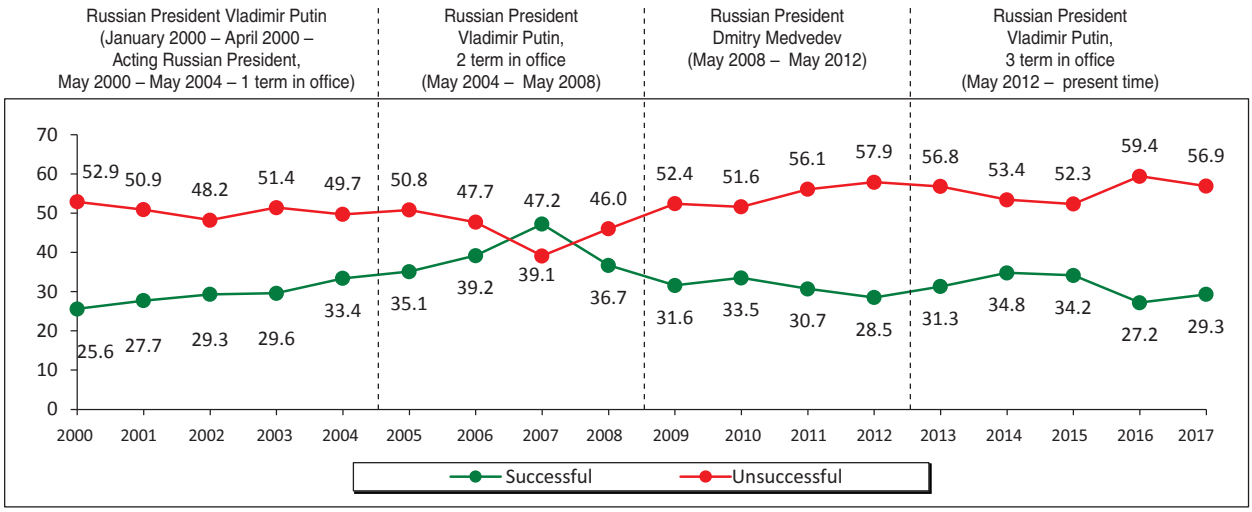
In 2012–2017, the proportion of positive ratings increased by 16 p.p. (from 35 to 51%), the proportion of negative judgments decreased by 14 p.p. (from 51 to 37%).

In your opinion, how successful are the RF President's efforts to <u>protect democracy and strengthen citizens' freedoms?</u> (percentage of respondents)



In 2000–2017, the proportion of people who positively assess the President's work to protect democracy and strengthen the freedoms of citizens increased by 16 p.p. (from 24 to 40%), and during the third presidential term of Vladimir Putin – by 11 p. p. (from 29 to 40%).

In your opinion, how successful are the RF President's efforts to <u>ensure economic growth and enhance citizens' welfare?</u> (percentage of respondents)

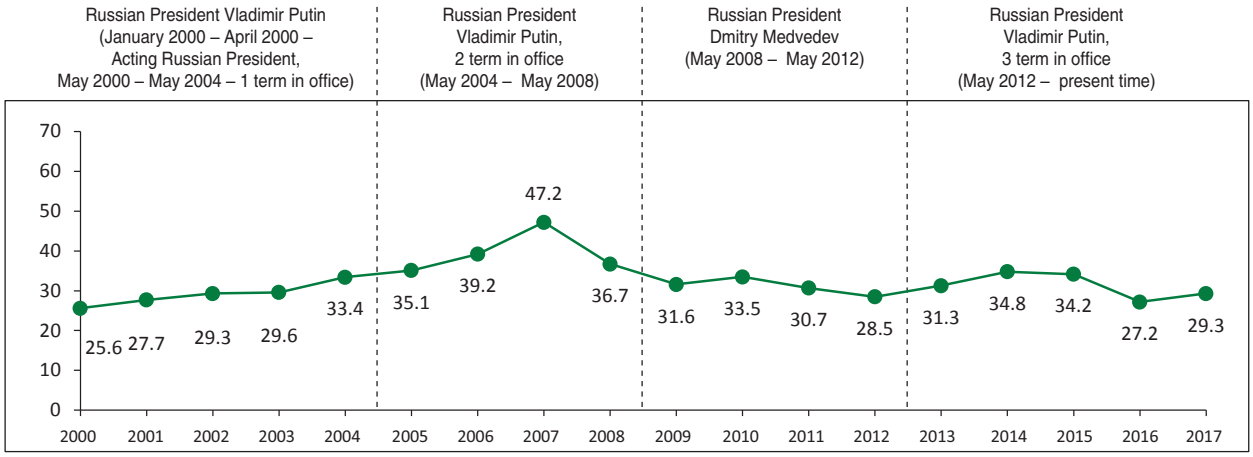


In 2000–2017, the proportion of people who believe that the President is successfully coping with the problem of economic recovery and growth of welfare of citizens did not change (26–29%). While since 2007, there has been a gradual decline in the proportion of people sharing this opinion (for the period from 2007 to2017: by 18 p.p., from 47 to 29%).

It should also be noted that throughout the period from 2000 to 2017 (with the exception of 2008), the share of negative judgments about the President's work to address the material problems of the population was higher than the share of positive characteristics.

Insert 2

In your opinion, how successful are the RF President's efforts to ensure economic growth and enhance citizens' welfare?
(answer "very successful, rather successful", percentage of respondents)



In your opinion, how successful are the RF President's efforts to ensure economic growth and enhance citizens' welfare? (answer "very successful, rather successful")

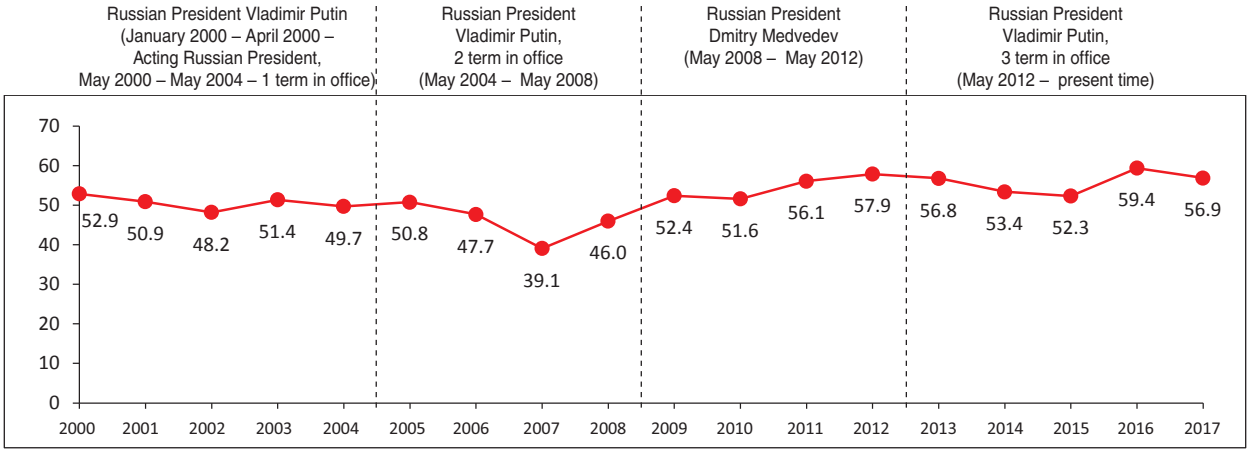
Socio-demographic groups	Average for the period…*				Dynamics + / –, 2012–2017 to…		
	2000–2003	**2004–2007**	**2008–2011**	**2012–2017**	2008–2011	2004–2007	**2000–2003**
Sex							
Men	29.5	40.1	33.1	30.5	-3	-10	**+1**
Women	26.9	37.7	33.2	31.2	-2	-7	**+4**
Age							
Under 30	34.5	43.2	33.8	30.6	-3	-13	**-4**
30–55	26.0	38.7	32.0	30.5	-2	-8	**+5**
Older than 55	25.1	34.9	34.3	31.7	-3	-3	**+7**
Education							
Secondary and incomplete secondary	27.7	36.5	30.7	28.3	-2	-8	**+1**
Secondary vocational	26.5	38.9	33.7	31.1	-3	-8	**+5**
Higher and incomplete higher	29.9	41.3	35.0	33.4	-2	-8	**+4**
Income groups							
Bottom 20%	23.6	36.1	28.5	22.1	-6	-14	**-2**
Middle 60%	27.1	38.6	33.7	31.5	-2	-7	**+4**
Top 20%	35.1	46.7	37.1	38.5	+1	-8	**+3**
Territories							
Vologda	30.1	36.5	32.5	28.6	-4	-8	**-2**
Cherepovets	26.3	41.1	32.3	34.0	+2	-7	**+8**
Districts	27.9	38.7	33.8	30.4	-3	-8	**+3**
Oblast	28.0	38.7	33.1	30.8	-2	-8	**+3**
Total number of changes in 14 groups and in the Vologda Oblast in general					0 / -7	0 / -15	+10 / -1

* The polls are carried out once every two months among residents of the Vologda Oblast older than 18 years of age. During each of these periods, 24 "waves" of the monitoring were conducted. The table shows average data for each period.

On average, in 2012–2017 (President Vladimir Putin's third term in office), compared to 2000–2003 (his first presidency), the proportion of people who positively assess the President's work to boost the economy and enhance the welfare of citizens increased in 9 out of 14 socio-demographic groups. However, this growth can hardly be called significant: first of all, the share of positive judgments increased among residents of Cherepovets (by 8 p.p., from 26 to 34%) and people older than 55 (by 7 p.p., from 25 to 32%).

Reduction in the proportion of positive judgments about the work of the President to solve material problems of the population is registered among people under the age of 30 (by 4 p.p., from 35 to 31%).

In your opinion, how successful are the RF President's efforts to ensure economic growth and enhance citizens' welfare?
(answer "without much success, completely unsuccessful", percentage of respondents)



In your opinion, how successful are the RF President's efforts to ensure economic growth and enhance citizens' welfare? (answer "without much success, completely unsuccessful")

Socio-demographic groups	Average for the period…*				Dynamics + / –, 2012–2017 to…		
	2000–2003	**2004–2007**	**2008–2011**	**2012–2017**	2008–2011	2004–2007	**2000–2003**
Sex							
Men	52.0	47.2	52.7	57.1	+4	+10	**+5**
Women	50.1	46.5	50.5	55.3	+5	+9	**+5**
Age							
Under 30	46.1	41.4	49.9	54.6	+5	+13	**+9**
30–55	53.7	47.4	53.2	57.0	+4	+10	**+3**
Older than 55	50.2	50.6	50.0	55.8	+6	+5	**+6**
Education							
Secondary and incomplete secondary	48.6	47.0	49.4	56.8	+7	+10	**+8**
Secondary vocational	51.2	46.8	52.0	55.6	+4	+9	**+4**
Higher and incomplete higher	53.8	46.5	53.2	55.9	+3	+9	**+2**
Income groups							
Bottom 20%	51.2	47.9	53.8	62.1	+8	+14	**+11**
Middle 60%	53.3	48.0	51.2	56.3	+5	+8	**+3**
Top 20%	49.3	41.9	52.7	51.1	-2	+9	**+2**
Territories							
Vologda	51.4	48.5	50.2	57.3	+7	+9	**+6**
Cherepovets	55.0	46.6	59.5	56.8	-3	+10	**+2**
Districts	48.5	46.1	48.0	55.1	+7	+9	**+7**
Oblast	50.9	46.8	51.5	56.1	+5	+9	**+5**
Total number of changes in 14 groups and in the Vologda Oblast in general					+13 / -1	+15 / 0	+12 / 0

* The polls are carried out once every two months among residents of the Vologda Oblast older than 18 years of age. During each of these periods, 24 "waves" of the monitoring were conducted. The table shows average data for each period.

On average, for the period from 2012 to 2017 (President Vladimir Putin's third term), compared to 2000–2003, (his first presidency), the proportion of people who consider the President's actions to boost the economy and enhance the welfare of citizens to be unsuccessful has increased in the majority (in 11 of 14) of socio-demographic categories. In particular, among people under 30 – by 9 p.p. (from 46 to 55%); among the poorest 20% (their own assessments) – by 11 p.p. (from 51 to 62%). There have been no positive changes in any of the groups.

The growth of the share of negative assessments on average for 2012–2017 is observed in comparison with Vladimir Putin's second presidential term (2004–2007) and Dmitry Medvedev's presidency (2008–2011).

was more ambitious. But the desire, or rather the unwillingness, to change economic policy is becoming increasingly obvious. This policy is already being praised as ideal. At the current Forum, many have said that everything is fine and we just have to wait for something. But what we should wait for? It is a new level of candor. Here we can consider the intention not to change anything in the economic, monetary, information and educational policy"[15].

It is noteworthy that at the Gaidar Forum no permission to speak was granted, for instance, to Boris Titov – a presidential candidate who has his own alternative view on how to ensure stable growth of the Russian economy and a specific program of action developed by experts from the Stolypin Club. At the same time, the Forum showed that if the "image of Russia's future" in the minds of top-ranking officials was and remains rather vague and looks like the "preservation of the current situation", then they are more than confident in their personal future. "The reports of the ministers showed their desire to remain in the government for the next presidential term. The proposals made by Anton Siluanov and German Gref can be regarded as some items of the program of the future government"[16]. Although no official announcements were made concerning either the victory of Vladimir Putin in the election or the fact that he would continue the existing course of development and support the "greenhouse" conditions for oligarchic capitalism or preserve the positions of officials themselves.

In the basic scenario, the Ministry of Economic Development expects a 2.1% growth of Russia's gross domestic product (GDP) in 2018, in 2019 – a growth by 2.2%, in 2020 – by 2.3%. According to the forecasts of the Central Bank of the Russian Federation, economic growth in 2018 will be in the range of 1.5–2.0%, in 2019 – 1–1.5%[17]. Meanwhile, according to the representatives of the Stolypin Club, "an annual growth of **4–5% of GDP** is optimal for the country... At this rate, by 2025, Russia's GDP per capita will be about 55% of that in the U.S. by purchasing power parity, and in 2035 – 67%. This means that the economy will grow not only in quantity but also in quality, it will become more diverse and resistant to external market fluctuations, and all this will lead to a significant strengthening of the ruble exchange rate... **Currently this growth is still not guaranteed – it has been marked, but it may remain weak"**[18].

The lack of understanding of the specifics of current regularities in the Russian economy or simply ignoring them is manifested in specific management decisions of the Government. For instance, the decision to raise the minimum wage toward the subsistence level from May 1, 2018, according to Minister of Labor Maxim Topilin, "will reduce the proportion of the population with incomes below the subsistence level from 13–14% to 10–11%"[19]. However, due to the high level of employment in the shadow economy, wage growth in Russia does not always lead to income growth. For example, "last year, real wages increased by more than 3%, the year before – by 0.8%. And real incomes in the past year, and the year before, were still declining"[20].

The most important reason for criticism, according to experts, is that "the real **problem is being deliberately neglected; instead, it is discussed whether to equalize the two formal indicators that have nothing to do with the real situation of citizens**. The official subsistence level is too low. And when, thanks to the increase in the minimum

[15] Sergeev A. The heirs of Gaidar rely on the administrative resource. *Nezavisimaya Gazeta,* 2018, January 19. Available at: http://www.ng.ru/economics/2018-01-19/1_7154_heirs.html (assessment of K. Babkin, Co-Chairman of the Moscow Economic Forum).

[16] *Ibidem.*

[17] Rosstat reported the growth of Russia's GDP by 1.5% in 2017. *Interfax*. 2018. February 1. Available at: http://www.interfax.ru/business/598085

[18] Ivanter V.V. It is time to pick up speed. *Rossiyskaya Gazeta,* 2017, February 13. Режим доступа: https://rg.ru/2017/02/13/viktor-ivanter-krizis-konchilsia-no-gosudarstvo-v-dolgu-pered-naseleniem.html

[19] Bashkatova A. The Government preserves poverty. *Nezavisimaya Gazeta,* 2018, February 8. Available at: http://www.ng.ru/economics/2018-02-08/1_7168_poverty.html

[20] *Ibidem.*

wage, official statistics registers a sharp reduction in poverty, the actual number of the poor in the country will not decrease. **The indicators will improve on paper, and in reality it is more appropriate to say only that the people balancing on the verge of poverty will move to the category of the poor. As for the officials, after obtaining a more positive statistical summary, they will no longer have to raise this painful topic in their speeches"[21].**

Today, the question of Russia's future is becoming particularly urgent. A new political season is upon us. The majority of experts have no doubt that Vladimir Putin will be re-elected for a fourth presidency. But it will be his last six-year term, which means that it will be a period that determines the condition in which Russia will pass to the President's successor: whether it will be a period of successful completion of long-term and strategic objectives, or it will be the next stage in the continuation of the existing course of development, with the preservation of the capitalism for the few, the "hands-on" approach to public administration and the ongoing "lulling" rhetoric of the government against the backdrop of lagging behind geopolitical competitors and deterioration in the dynamics of the standard of living and quality of life of the population.

The first scenario requires the President to take decisive action to nationalize the elites. However, we see no tangible prerequisites for this so far. Over the last years we could observe that Putin's very careful and "gentle" hints that the money should be returned home and that "they should stop idling around in California and other similar places abroad"[22] have no greater effect than the directions he set out in the Address to the Federal Assembly and even the Decrees of May 2012: both are executed in imitation mode or are not executed at all. This means that only specific and clear measures can change the situation.

In mid-2016, the Government reported that with regard to the May Decrees of the President, "about 70% of the total number of the orders were fulfilled and 88% of the number of orders that had to be fulfilled to date". However, the results of examination by the All-Russia People's Front show that "out of the 162 expert opinions on the government reports about the withdrawal of the relevant instructions from the control, it was expedient to take off the control over execution of only 24 of the instructions. **The rest have not been executed to a certain extent"**[23].

The measures that are being taken today are of a discrete nature: they do not aim to change the system as a whole, but are taken against specific individuals, who primarily exercise their powers at the regional, rather than federal, level. For example, the cases of corruption and high-profile arrests[24] are certainly important events especially for the population (so it is no coincidence that the anti-corruption campaign becomes a "red line" for the programs of different candidates, including Putin himself). **However, this has more effect than efficiency. Because without changing the system itself, the anti-corruption policy measures often resemble tilting at windmills.**

Even if the U.S. has created quite real and extremely uncomfortable conditions for the offshore companies of Russian oligarchs, there arises a legitimate question: what prevents the Russian President to do the same and to pay attention to the reasonable advice of experts?

[21] *Ibidem.*

[22] Transcript of Vladimir Putin's meeting with his election agents (Moscow, January 30, 2018). Available at: http://putin2018.ru/press/putin-vstrecha/u/economics/17/05/2016/573a034a9a7947d18967193a

[23] Volkova O., Nikol'skaya P., Tkachev I., Mogilevskaya A. The promises of the third term: how the May Decrees of the President are being executed. *Website of RBC*. Available at: http://www.rbc.ru/economics/17/05/2016/573a034a9a7947d18967193a

[24] The latest of such high-profile corruption scandals was as follows: in January 2018, the mayor of Makhachkala Musa Musaev was arrested: he was accused of exceeding his authority in allocating land to a private company. After that (in February 2018), Acting Prime Minister of Dagestan Abdusamad Gamidov, his deputies Shamil Isaev and Rayudin Yusufov were detained: they were accused of embezzlement of budget funds; in addition, criminal proceedings were launched against the chief architect of Makhachkala Magomedrasul Gitinov (he was accused of abuse of office and inflicting damage in the amount of four million rubles).

"If we look at our government and at several arrested governors, let us make it clear: after all, they were given the regions and the work of their residents to be responsible for. And the radical measures that are being taken today in Dagestan, the arrests of high officials – more likely, **it is not a systematic fight against corruption. Because corruption starts, alas, not in Dagestan, or in Kamchatka, or in Khanty-Mansi Autonomous Okrug... When embarking on a way to combat corruption, Putin must begin with the Kremlin, for all the officials who were arrested in Dagestan today, have the protection in Moscow"**[25].

"It is necessary at any moment to adopt a law under which any property that is not transferred to normal jurisdiction and located in the offshore zone, is ownerless and by definition subject to nationalization. Similarly, any property that has not been withdrawn from offshore before January 1, 2018 shall be declared ownerless and shall be confiscated free of charge to the account of the state"[26].

The answer is quite obvious and natural: under the rule of capitalism for the few, such drastic decisions aimed against "those in power" (who are supported by the forces of the collective West) turn into a real threat to the political status of the President himself. And the oligarchic-comprador elite is well aware of this, so we can again and again observe the "financial wars" of major corporations (often requiring the intervention of the President himself) against the backdrop of crisis phenomena in science and education and the abolition of flights for ordinary Russians; another Gaidar Forum is going to be held, at which incumbent officials openly present their views on the problems and prospects of the Russian economy, and experts once again state that they have neither the former nor the latter... "Putin's team is well known to everyone, it has not changed during all the years of his term in office. The ideas advocated by this "team" are also well known...all attempts to identify Russia with Putin, and Putin with Russia, this very ideology of "liberal monarchy" is totally unacceptable, primarily because it condemns our country, our people to total dependence on "the power vertical", all the floors of which are filled, according to Deputy Prime Minister Arkady Dvorkovich, with such socially responsible businessmen like his friend Sergei Polonsky and, apparently, such non-corrupt officials like Alexei Ulyukayev; and Anatoly Chubais is probably the model of perfection in this regard. **So it's not about Putin...it's about the "elites" that screen themselves behind Putin, using him as a guarantor of their inviolability and the safety of all assets and bonuses that they acquired in the 1990s, while participating in the looting of our country"**[27].

The situation is exacerbated by the fact that over time, the dominance of the interests of the elite groups can undermine the entire system of public administration, which V. Putin was building during his presidential terms. Today, the system of public administration is built so that the President is its central link providing a balance of interests of different elite groups. The many steps that Vladimir Putin has to take with the use of a "hands-on" approach support his image in the eyes of broad layers of the population. However, experts point out that at the end of V. Putin's third presidency this system is showing more signs of instability and "with a high degree of probability it will continue to disintegrate during the first years after his re-election... The distance between Putin and the elites will grow, as well as people's concerns and discontent with the political functionality of the President within the country. Remaining more and more often alone with the military and intelligence services, **Vladimir Putin risks losing his informal status**

[25] Ivashov L. The fight against corruption should begin not in Dagestan, but in the Kremlin! Available at: https://publizist.ru/blogs/108984/23242/-

[26] Delyagin M. The U.S. issues Russian oligarchs an ultimatum to repeat the year 1996. Available at: https://topwar.ru/127675-ssha-stavyat-rossiyskim-oligarham-ultimatum-dlya-povtoreniya-1996-goda.html

[27] Shevchenko M. And the power is the people's... *Gazeta "Zavtra"*, 2018, no. 4.

as a political leader of the oligarchs close to the government; and the key representatives of these oligarchs will very soon begin to play their own game, vigorously "privatizing" state functions, increasingly neglecting both the interests of the President and his very existence"[28].

Thus, we see that on the eve of Vladimir Putin's fourth presidential term the situation in the country looks different, but it is no less difficult than 15 years ago, and in every aspect, too: in terms of compliance with the conditions of geopolitical competition, in the possibilities of establishing order in the system of public administration, and in the possibilities of preserving social stability. In the early 2000s, the main condition for ensuring national security was to overcome the complex crisis of the 1990s (in fact, the preservation of the country). The President coped with this task quite successfully. He managed to fulfill his main historical mission – to move the country away from the edge of the abyss and to provide conditions for the adaptation of the Russian society to the new, post-Soviet conditions of existence.

However, today both the logic of global trends and the critical domestic agenda that was developing for many years dictate the need to take the next step, to carry out the country's transition to a new stage. Therefore, before his fourth presidential term starts, the head of state has another task – to ensure dynamic and sustainable economic growth, raise the standard of living, improve the quality of life, and address issues of social justice. This is a different task, but it is equally important for preserving and ensuring Russia's future.

To implement it, the President will need a new team, which will put national interests rather than personal ambitions at the forefront of its national security strategy; the President will need people with new ideas, new concrete proposals and a qualitatively higher level of moral responsibility for their implementation. Because it is impossible to make effective management decisions of this kind "without developing an idea of the future nature of the society that will be implementing the new socio-economic model. And it will be very difficult for the Russian elite to develop this idea, because its vital interests are still focused on preserving the current system" [2, p. 9].

> "The system of administration has reached such a degree of degradation that it resents any attempts to complicate it with both centralized directives and systemic innovations. In fact, it has lost its integrity, and some of its fragments began to serve the interests of influential clans and foreign centers of influence... As a result, the country strays from the trajectory of economic growth, falling into a stagflation trap, and "those in charge" receive astronomical revenues and hide in offshore jurisdictions" [2, p. 9].

In the early 2000s, there were resources that allowed the government to consolidate society successfully, despite the existence of economic problems and external threats. The country's economy and its geopolitical status were restored virtually "from scratch". It was possible to say that all the troubles of that time were due to such a situation, and the society showed sympathetic understanding of the problem. But today these resources are exhausted. **"It is necessary to develop mechanisms that would limit and suppress the interests of social groups, which generate a deviation from the vector of social development dictated by the requirement of social progress. It will be necessary to overcome the existing unconditional domination of excessive self-serving social and group interests of the Russian elite over social ones. Such dominance is the main reason for the actual lingering conservatism of state policy and for the enormous obstacles to economic modernization"** [2, p. 7].

There is no doubt that the President sees the full range of problems accumulated in the administration system and realizes his responsibility for their solution. In particular,

[28] Stanovaya A. What dangers the fourth term holds. *"Echo of Moscow" radio station*. Available at: https://echo.msk.ru/blog/planperemen/2133710-echo/

> "In order to bring the system of economic development management in line with the targets set by the President of Russia, it is necessary to restore its core: the mechanism of direct responsibility of all regulatory bodies and their officials for achieving the target parameters of socio-economic development of the country should become cross-cutting in the management system. It is necessary to start with federal authorities..."[7]

experts say that the delay of the next Address to the Federal Assembly prepared by teams led by Anton Vaino, Dmitry Peskov, and Maxim Oreshkin is due to the fact that the President is not satisfied with its initial version, the fact indicating his deep understanding of the importance of this document at this historical stage of Russia's development. "Society expects government to make some changes, some serious positive reforms, and Putin can not declare them... Obviously, the Kremlin is not satisfied with the current draft versions of the Address. And it is unclear when the new ones will be prepared. Anyway, whatever they might say, there is still a sense that it has been already said before. And since it is difficult to talk about real problems, they will have to promise manna from heaven once again. However, we do not want it to be done in the conditions of degraded economy and social sphere, because it is obvious that what awaits us is unpopular reforms rather than grouse in champagne"[29].

Will the President have enough political will to adopt tough decisions? This question, which remained open throughout Vladimir Putin's third presidential term, will apparently be the major one in the next six years.

For the time being, many experts express rather pessimistic views on the subject, suggesting that Russia is likely to have "a scenario of extension of the liberal model, a scenario of balancing on the threshold of sustainable development" [8, p. 669]. However, the President still has every opportunity to refute their views.

Returning to L.I. Abalkin (whose quote opens this article), we note that in 2007 he said: **"For a long time in Russia, as well as around the world, the question of what Vladimir Putin will leave to his successor is being discussed. Time is running fast, but it is still enough to bequeath him a National strategy as a way toward a new economy. Within its framework, Russians will get a reliable idea of the future and of what awaits their children and grandchildren"** [9, p. 12].

In the 10 years that have passed since then, there have been no changes in the system of public administration, and the question of the "National strategy as a path to a new economy" has become even more critical. Time is running inexorably, and on the eve of Vladimir Putin's fourth presidential term, it is increasingly difficult to say that we have enough time left...

We shall see, six years will pass quickly...

[29] Gorbachev A. Putin will rewrite the Address by the end of February. *Nezavisimaya Gazeta,* 2018, February 6. Available at: http://www.ng.ru/politics/2018-02-06/1_7166_putin.html

Appendix 1

Editorial articles on public administration efficiency published in 2012–2017

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
2012		
1(19), February 2012	To the political cycle results	Will "new" V.V. Putin lead the country (and himself, in the first place) to a new level of social and political management, which he had spoken in his election speeches and articles about and that most voters had believed in? It would possible to judge that by the real steps of V.V. Putin in the first year of his third presidency in the Russian Federation.
2(20), April 2012	Bifurcation of a new political cycle	*Tretyakov V. The citizens have something to worry about. Literaturnaya Gazeta, 2012, no. 12–13 (6363), March 28:* "…There is a feeling that everything will go on forever. Sometimes it seems that Putin gives in to the pressure of a losing party. It seems that this text, like a magnifying glass, collects all the questions in the same focus. It is a focus of the choice that will or won't be made by Putin in the coming weeks". There is not much time before the inauguration of the President of the Russian Federation on May 7, 2012. What will Vladimir V. Putin choose?
3(21), June 2012	Expectations of the results	There are fundamental questions of development strategy of country's economy which, according to the opinion of reputable experts, should be submitted for President's consideration in the near future… Vladimir Putin will have to master these well-known policy tools of the modern state. Otherwise, he will not be able to solve his own program objectives of economic modernization and transfer it to an innovative path of development; he won't be able to provide business with long-term loans, ensure the growth in labor productivity, support economic and creative activity of the population, reduce a poverty rate and social inequality, as well as he will not be able to improve the competitiveness of the national economy.
4(22), August 2012	Dynamics of the RF Presidents' activities approval by the region's population	*Glazyev S.Yu., Lokosov V.V. (Assessment of the critical threshold values of the indicators of the state of Russian society and their use in the socio-economic development management. Bulletin of the Russian Academy of Sciences, 2012, vol. 82, no. 7, p. 600.)*: "Actual self-estrangement of the ruling elite from the society and depriving the overwhelming majority of citizens of exercisable rights to participate in management processes impede the feedbacks between the society and the state. The latter conforms to the oligarchic interests and becomes a tool of receiving the administrative markup by a corrupt bureaucracy, protected from liability to the society thanks to the existing political system".
5(23), October 2012	Anxious expectations	*Salutskiy A. (New Putin. Literary Gazette. 2012, no. 39 (6386), p. 3):* "If Putin is able to become such a high moral authority, then everything in Russia will go with a run. It he is still overnice to solving personnel problems, considers all the possible side interests too vigilantly and, in fact, shares his supreme authority with anyone, the people won't recognize him as a tsar and the voters, who elected him to be the President, will call for a vote of confidence".
6(24), Dec. 2012	On the difficult way to strong civil society	Government's ignoring of traditional moral and ethical values, as well as the breach of the principles of social justice do not promote the development of civil society. The regions and, therefore, Russia in general, do not use the potential of civil society that is an important tool for increasing the efficiency of state management, ensuring sustainable economic growth with the continuous improvement of living standards of most people in the country.

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
2013		
1(25), February 2013	Page unturned	The solution of the main problem of the early 1990s – unfair privatization – and it is the base in large part of political clans, will require system measures for not only "convincing" the members of the Government, but also improving moral climate in the country; and it should be done without destroying the capacity of the state, more than 45 million electors of Vladimir V. Putin voted for this. The President Vladimir V. Putin could not turn over the page of unfair privatization in 2012. It is 2013. We waited for a longer time. But the RF President Vladimir V. Putin should not stop, it is necessary to pull this thorn out of the soul of a Russian citizen. We must turn over the page!
2(26), April 2013	Anxious expectations remain	*Putin V.V. (at the closed meeting with the Government in Elista on April 16, 2013):* "…Let's raise the quality of our work. It ought to be done! If we don't do it, it will have to be admitted that it is either me working inefficiently or it is failing to do your job properly. Take notice that, judging by the current situation, I, personally, lean toward the latter. I think it's clear. No one should have any illusions". Such an unambiguous reaction of the President to the performance results of the Russian executive power in the post-election year clearly indicates the graveness of the current situation and expresses a high degree of anxiety on the part of the Head of State concerning the future of his obligations to his voters. Those very obligations, the fulfillment of which will ensure the enhancement of the quality of life, the quality of government, the quality of the development of civil society and, ultimately, the competitiveness of the country.
3(27), June 2013	National and regional security: a view from the region	Summing up the assessment of the report by the Ministry of Economic Development, it is necessary to note that no significant measures aimed at the development of the economy and revenue potential of the budget were adopted at the federal level in 2012. Traditional methods of fiscal system management through the continuous introduction of amendments into the existing legislation are unable to solve the systemic problems anymore. In this regard, it is necessary to take measures for the significant adjustment of economic policy; the key and priority measures should be aimed at overcoming the offshore nature of the Russian economy. And that will be a serious step in the enhancement of national and regional security.
4(28), August 2013	Modernisation issues of Russia's regions	In an open letter to the RF President Vladimir V. Putin, Academician Zh.I. Alferov pointed out: "The struggle for the preservation of the RAS is not only a struggle for the future of Russian science; it is a struggle for the future of the country. And we really wanted to fight for this together with you"18. Will the President have enough strength to fulfil his election program? Is Vladimir V. Putin ready to run for 2018 Presidency to head the Russian Federation again? ...Anxious expectations remain.
5(29), October 2013	New agenda and state management efficiency	Undoubtedly, the overwhelming majority of Russia's citizens will support the implementation of the ideas set forth by the RF President at the Valdai International Club, the ideas that are associated with the rule of national values and social ethics in the life of all the population groups. Examples of real actions in addressing these issues should be provided by the vertical of power in its purification from "the quasi-colonial element of the elite – those determined to steal and remove capital, and who did not link their future to that of the country, the place where they earned their money" *(Putin V.V. Speech at the session of the Valdai International Discussion Club on September 19, 2013).*
6(30), Dec. 2013	What does the coming day hold for the country?	Under the influence of oligarchic corporations, it organizes the work like a circular firing squad. It is this style that has led the dynamics of the national economy development to the recession. In our opinion, the President should not only remind the political elite of the necessity to execute the formal decisions; he should also force it to do so, and eliminate the "quasicolonial part of the elite". 2014 should not become the year of missed opportunities for the RF President V.V. Putin with regard to the implementation of strategically important state tasks on modernization of the country, set out in the pre-election articles and stipulated by the Decrees dated May 7, 2012.

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
2014		
1(31), February 2014	Time factor	Speaking at the Valdai Discussion Club, the President pointed out that the political course should be focused on major social values, moral consensus in the society; but it is possible only with the nationalization of the elite. "We must return the elite and its money back in Russia, place their capital under state control, and solve tax issues, abolishing the flat scale; thereby, we must actually take the subsoil under the control of the state. After that we must begin to accumulate funds for a comprehensive recovery of the country's economy, defining the main ways of its development" *(Isaev A. Elite should be nationalized. Literaturnaya Gazeta, 2014, no.6, February 12–18.)*. And here the time factor will be crucially important for implementation of V.V. Putin's new political course.
2(32), April 2014	From the Chief Editor	If we speak about the next intermediate stage, it seems that for V.V. Putin it could be May 7, 2016, when two-thirds of his presidency expire, and by this time it is extremely important for the President to update the political elite, by eliminating the influence of its "quasi-patriotic" part4 , to introduce considerable changes in the government team through ideologically compatible professionals, who work to achieve the common ultimate goal – to fulfil the strategic tasks set out by President V.V. Putin that are aimed at the country's development by 2018, and at the same time to adjust socio-economic mechanisms so that the electorate would see the moving of the state towards social justice, the rule of law for all the population groups, and that the voters would feel a gradual improvement of the quality of life in their family, city, and country.
3(33), June 2014	Russia must go its own way	In the recent years, students and followers of Academician D.S. L'vov have been developing his ideas about the need for an active role of the state in economic management and give well-grounded recommendations on the enhancement of public administration efficiency. This position has a detailed substantiation in the scientific report of Academician S.Yu. Glazyev ("About the purposes, problems and measures of state policy for development and integration", Moscow, January 29, 2013), and in a new report by the Russian Academy of Sciences "Russia on the way to a modern, dynamic and efficient economy", edited by Academicians A.D. Nekipelov, V.V. Ivanter, and S.Yu. Glazyev, where many reasonable proposals in relation to economic policy are put forward. But let us face it: if an efficient administration model is not established, these proposals will remain on paper.
4(34), August 2014	Scientific analysis of global challenges for Russia (on the article "How not to lose in the war" by Academician S.Y. Glazyev)	*Putin V.V. (A meeting with members of political parties represented in the Russian Federation State Duma, Yalta, August 14, 2014):* "…Regardless of the external political and economic situation, the most important thing for us right now, as always, are our internal affairs, our goals, concerns and objectives that are set before us by the people of Russia, the citizens of Russia. We must focus on resolving our national problems and challenges. Our future is only in our hands. We must ensure high-quality governance and work by political and civil institutions. And most importantly, we must provide high living standards for Russian citizens".
5(35), October 2014	The necessity of a new development cycle	Sociologists should convince the authorities of the necessity to obtain objective data on how the population perceives socio-economic and political transformations that take place nationwide and in individual regions. Sociology will be able to fulfill its function properly, when the system basis of the research is put in legal form, when there are efficient unified mechanisms for assessing public opinion on the effectiveness of state administration throughout the power vertical. Sociology will also benefit when the mechanisms are established for analyzing the results of the response, which is enshrined in law, at all the levels of power.

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
6(36), Dec. 2014	The year of tough decisions	Great concerns are raised with regard to the fact that these new guidelines set out by the President will be achieved if the current inefficient state administration system based on the extremely liberal financial-economic bloc of the Government is preserved, since "the vulnerability of Russia's finance was already evident during the crisis in 2008, and yet, five years after that, we continue to follow the same disastrous course" *(Editorial article "Again and over again". The Expert, 2014, no. 51.)*. 2015 will most likely be a year of tough decisions for the President, for the Russian citizens and for the country.
2015		
1(37), February 2015	Alarming trends	*Voevodina T. (Emergency brake of the market. Gazeta "Zavtra", 2015, no. 6, February.).* "I would like to support the President's remarks "are you crazy" and "this is not a serious approach to the matter" addressed to the Government; but I don't think they are crazy, and I believe they treat the subject seriously; they just set targets differently, they see Russia's future differently. Not like the President of the Russian Federation V.V. Putin sees it". The President set out his vision of Russia's future in the Decrees of May 7, 2012, and his voters still have trust in their President and believe he will fulfill the stated goals of improving the quality of life of all the segments of the population. However, for the first time last year there emerged certain alarming trends on several indicators of social well-being of the voters.
2(38), April 2015	Halfway to a fourth presidential term	We think that, taking into consideration Vladimir Putin's life experience, his 15 years of work in Russia's senior government positions, and the high level of trust of the voters, the President will be able to lead the country out of acute internal and external political problems to a new level of development, corresponding to the 21st century and the traditions of the "Russian world". To resolve this problem, Vladimir Putin has three more years of his third presidential term and another six years of the possible fourth term – a total of nine years. It would seem that there is still enough time, but it is a short period for serious and drastic changes in a country such as Russia. Time is inexorably shrinking, like a magic piece of shagreen. The President must implement all that is planned in time.
3(39), June 2015	Non-systemic solutions of systemic problems	More than two years have passed. The Government still consists of the same old carriers of ideas, that is why the Federal State Statistics Service registers clearly unsatisfactory results of national socioeconomic development. According to sociological centers, the level of support of the President's performance reached its historic maximum of 89% in June 201511. But what will happen, if the same people in the Government with the same old ideas and the same performance results continue to bear responsibility for the efficiency of public administration in Russia???
4(40), August 2015	Economic policy pursued by the Government is still inconsistent with the interests of the majority of Russia's population	Loyal attitude to the authorities today in many respects rests on the feeling of hopelessness – no one wants to go back to the 1990s, and therefore the faith in the leader under which the country stood up against difficulties is preserved; the faith is supported by the hope that it will be possible to find an effective way of economic development. However, its prospects still have a high degree of uncertainty. There still remains the outrageous socio-economic differentiation that is always accompanied by an unsatisfied need for social justice and by social tensions. Apparently, 2015–2016 will be a difficult period for the President and Russian citizens. It is therefore very important that the decisions taken by the head of state were timely and understandable for the Russians.

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
5(41), October 2015	Issues of Russia's transition to the new stage of its nation-building	Obviously, without solving key problems "at home, in our own country", the results achieved in the international political arena cannot have a solid foundation, so today, at the crossroads of a new stage of Russia's history, the main challenge facing the society, science and government is to bring national macroeconomic policy "in line with the common understanding of the principles of social justice and truth, and to make it useful for the development of the production sphere" *(Glazyev S.Yu. Outrageous inequality. Governmental policy is contrary to the interests of the people. Gazeta Zavtra, 2015, July 23.)*; to improve public administration for the purpose of restructuring the economy on the principles of vertical integration; to fight corruption, to undertake real action to reduce outrageous social inequality and all that really hinders the realization of the presidential program and complicates the pursuit of an independent sovereign policy
6(42), Dec. 2015	Public administration efficiency and the aggravation of public health issues	How long will be the patience of the President and the entire Russian society? Especially when we consider the imminent change of the political cycle... Can the Government realize that its 2008 fiscal and monetary policy has led to the stagnation of the economy, and in the future it may throw the Russian society backward by ten years and return it back to the level of the 1990s? Can the ruling elite understand that it would be disastrous for the country in the current geopolitical conditions? Or will Russia find the political will to reorient its economic policy in the interests of wider population rather than narrow oligarchic groups? This ultimately will determine the future of Russia and its national security and competitiveness in the coming decades.
2016		
1(43), February 2016	National Security Strategy 2015 – a step towards the new phase of Russia's development	It is still unknown what the next step of the head of state will be; but we believe that the strategical activities aimed to nationalize the elites have been going on for many years throughout Vladimir Putin's presidential terms. Its purpose is to form a ruling class, which itself will maintain the framework of competition policy… Vladimir Putin has taken responsibility for comprehensive support of priority directions of state policy in the sphere of national security (including economic development, increase in the standard of living and quality of life), thus he has made a new significant step toward the strengthening of the Russian statehood in the process of its transition to a new stage of development.
2(44), April 2016	President Vladimir Putin's third four-year term: contradictory outcomes – an expected result	The next two years until the 2018 presidential elections may become a transition to a new stage of development of the Russian society. The stage which was talked about after the "Crimean spring" and which was delayed as a result of economic problems that have befallen the country in recent years. How long will this transition period be? Will it be completed in 1–2 years (that is fast enough from a historical point of view) or will it require much more time? It will depend on how Russia can stay on the path chosen 15 years ago. And it will also depend on the actions of the head of state: whether he will be able through active work, to implement the provisions laid down in the National Security Strategy of 2015 and move to a mobilization version of the new industrialization, without which it is impossible to reduce the widening gap between the economies of the leading countries and Russia.
3(45), June 2016	State Duma Election 2016. Economic policy of the President assessed by the people	People's support, which the President of the Russian Federation still has, opens a "window" of opportunities for the implementation of measures aimed at improving the efficiency of public administration in the new political season. But how long will the trust of the population in the head of state remain high? Will it be possible to use the foundation of people's support for the purpose of restoring order in the management system and ensure its conformity with the interests of national security? The answers to these questions depend on the President's political will.

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
4(46), August 2016	The ruling elites: a problem for Russia's national security	… Public administration should create conditions facilitating the comprehensive and systematic solution of key challenges of national security at all stages of development of the Russian statehood. What will be the response of the President to the growing need for improving the quality of life and social justice in society? To what extent will Russia's historical experience in ensuring the functioning of the system of administration be taken into account? Today these questions are becoming a cornerstone of national security, because for Russian society they have acquired the nature of lingering expectations. The first months of work of the State Duma of the 7th convocation will have to show determination in the actions of a new political elite in achieving national interests and first and foremost – in the implementation of the main needs of the population, which will be essential for ensuring national security and subsequent competitiveness of Russia in the 21st century without twists and turns like those in the history of the 20th century.
5(47), October 2016	Russian President got a constitutional majority in the State Duma of the Seventh Convocation	Tactical achievement does not eliminate strategic uncertainty. The victory of the current government in the State Duma election confers on it the responsibility for solving the two most difficult issues – the withdrawal of the economy from a state of "sluggish depression" and the formation of a new ideological paradigm of spiritual and moral development… The ruling elite has no more or less weighty opposition, which could become an obstacle to the making of administrative decisions that the elite considers necessary. The only obstacle is inside it – it is a confrontation between "the statists" and the liberals who defend their own interests and the interests of the "collective West"… A crucial role in this confrontation will belong to the head of state, to his political will and the talent of strategic planning. Perhaps this will become a key factor that will affect the choice of Russians in March 2018 during the election of the President of the Russian Federation.
6(48), Dec. 2016	Thirteenth Address of President Putin to the Federal Assembly of the Russian Federation: transformation of power as a point for discussion	The answer to the question what prevents the President to overcome the resistance of the liberal bloc of the Government that is manifested in the failure to fulfill his May decrees and the key objectives of the National Security Strategy is still open. In the conditions when the United States and key European countries have already made the choice of their national leaders, when their team has been formed and ready to proceed with the implementation of their national interests, the need for increased responsibility and systemic transformation of the ruling elite in Russia becomes the most important factor in its national security.
2017		
Vol. 10, Issue 1, February 2017	One year left before the fourth presidential term	The general conclusion regarding the most probable future of the Russian society can be expressed in one sentence – "it is in a fog" *(Gorshkov M.K., Petukhov V.V. Russian Society and the Challenges of Time. Book Four. Moscow: Ves' Mir, 2016. P. 345.)*. It is hard to disagree with such expert evaluation of the present and the future of the Russian society taking into account the economic and social policy pursued by the ruling elites and ineffective for large parts of the population, the policy leading to the decrease in the standard of living and quality of life as a result of reforms in education, healthcare and housing. Sociological surveys show that Russian citizens are very concerned about the ongoing internal reforms and their own uncertain future. President Putin as the national leader, who actually has a constitutional majority in the Federal Assembly, has the opportunity to set a clear and understandable direction for pulling the country out of this sticky and enclosing liberal "fog".

Journal's issue	Title of the article	Essence (the last – second to last paragraph) of the article
Vol. 10, Issue 2, April 2017	What a shame…	*Prokhanov A. (Vipers, repent! Gazeta "Zavtra", 2017, March 22.):* "God forbid, if one day there might be something similar to Bolotnaya Square and Poklonnaya Hill joining forces..." The country is tired of the "ugly" stories and is now waiting for the President to take decisive action.
Vol. 10, Issue 3, June 2017	Significance of the thesis "Cadres decide everything" as applied to modern Russia	*Sulakshin S.S., Bagdasaryan V.E., et al. (Does revolution await Russia? Russia's transition to a post-liberal model (algorithm and scenarios. Moscow: Nauka i politika, 2016. Pp. 669–670):* "Therefore, the latest historical process in Russia has taken a more definite shape. If we consider it from the qualitative aspect, we will not find surprising the most likely conservative options, according to research. This scenario implies the prolongation of the liberal model, and it is balancing on the threshold of sustainable development...". Whether these pessimistic forecasts of experts will be implemented, or whether Russia will be able to fully realize all of its advantages in the competition – these are priority issues on today's agenda, and a key condition for its successful solution is the political will of the President, the major person responsible for the efficiency of personnel in public administration.
Vol. 10, Issue 4, August 2017	Development of Civil society in Russia in conditions of "capitalism for the few"	Further development of civil society and improving the quality of public administration in Russia, in our opinion, depend largely on two circumstances: first, the dynamics of international political events, which (in case of any force majeure event like the Ukrainian crisis or a new round of the Cold war 2.0.) may require priority attention of the President to the issues of foreign policy; second, answers to the questions: will the President maintain the role of "regulator" of the processes occurring in the internal political life in the country? Will he be able to ensure the quality functioning of public administration system in order to implement national interests and national security? Does he have enough political will, personal strength and strategic thinking in order to not get bogged down in a swamp of political intrigue, corruption schemes and behind-the-scenes games, which accompany the construction of "crony capitalism"?
Vol. 10, Issue 5, October 2017	The President's unfinished work. Public administration system is not ready to function without manual control	The last (or, speaking more accurately, the final) six-year presidency of Vladimir Putin in the framework of the current legislation will need to complete the process of nationalization of the elites, which will make it possible to switch off manual control mode in many respects. Thus, this final term in office will ultimately provide an answer to the question whether the period of Putin's presidency has been a period of lost opportunities or it was the reign of a talented leader who due to his personal qualities and with the help of manual control facilitated the country's transition to a new stage of development since the collapse of the Soviet Union, through the painful and long adaptation of society to post-Soviet conditions, the transition to a state that is a center of the multipolar world and confirms this status not only in the international political arena, but also in the dynamics of the standard of living and quality of life of its people.
Vol. 10, Issue 6, Dec. 2017	"Crony capitalism" – a source of social inequality in modern Russia	… Like any other resource, the support that people show toward the head of state is not unlimited: it depends on how the key needs of the population are reflected in legislation and in administrative decisions of the authorities. According to the latest nationwide sociological research17, in society there is a growing need for change. The value of stability is increasingly giving way to the values of development. It is possible to realize this demand only if there is an effective system of public administration aimed to implement national interests; therefore, overcoming of "crony capitalism" is the main condition for Russia's transition to a new stage of its historical development.

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SOCIO-ECONOMIC DEVELOPMENT STRATEGY

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Population Quality and Regional Economy: Direct and Indirect Correlation*

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Abstract. The article presents informative analysis of the place and role of population quality in the country's socio-economic development. The study has two major objectives: to determine the dependence of quality characteristics of the population on purely economic factors, and assess the extent and nature of the impact of the population quality on economic development. We present an extended author's description of the category "population quality" which includes the following aspects: economic activity, demographic processes, physical health, cultural potential, social health, educational potential, attitude to the environment. Ten statistical indicators out of 63 were selected and substantiated using correlation analysis within these aspects describing quality characteristics of the population. The information framework of the research includes data from the Federal State Statistics Service on 83 constituent entities of Russia for 2014. Based on selected indicators we conducted cluster analysis which helped classify elped the regions including and excluding economic factors. The obtained results of regions' grouping by quality characteristics of their population identified the impact of the following two factors on homogeneity of regions in clusters: economic development and geographical position. We provide a substantial analysis of the groups of regions; demonstrate their distinctive features and their strengths and weaknesses. In order to analyze the influence of population quality on the economic development we carried out regression analysis. The economic development was characterized by GRP per capita. The population's quality indicators serve as regressors. The significant factors are GRP per employee and the level of economic activity. The calculations confirmed the hypothesis about the weak influence of social indicators of population quality on the economic development. This result in no way diminishes the importance of improving population quality insignificant for the economy; it once again emphasizes that, in addition to economic, there are other goals of human development.

Key words: population quality, region, quality characteristics of the population, economic development, cluster analysis, regression analysis.

Introduction. The final goal of the research is to develop a system of measures to influence the region's socio-economic system contributing to the improvement of the quality of its population, the objective of the article is a separate, initial and mandatory stage of achieving the ultimate goal – fullest possible understanding of qualitative characteristics of the population in Russian regions and their correlation with the level and nature of the regional economy.

In the regional context this problem might not be relevant for countries with small populations and areas but in our country with 146.3 million people of more than 190 nationalities and ethnic groups and the area of 17.1 million km^2, not only individual differences between people, but also significant regional features are expected to take place.

Both foreign and domestic literature pays much attention to the populations' quality of life and its regional distinction. However, the goal of the state is not only to ensure the population's high quality of life; it is also responsible for its qualitative characteristics. At times, improving the quality of life causes negative processes in the population's behavior. For example, it is known that the increase in per capita income – an important indicator of the quality of life – from a certain point begins to negatively affect the qualitative characteristic of the population such as its natural increase. Without diminishing the importance of addressing the economic problem of improving

the quality of life we aim to demonstrate the importance of the surpa-economic goal of social development – improving the population quality.

In purely economic studies population appears in the form of human resources (ability to work) and human capital. If we want to assess the population more precisely than from the economic point of view, we turn to the concept of population quality, or human potential [1]. It should be noted that in recent years, the concepts of human capital and human potential are often equated, which in our view is wrong for two reasons. Human capital as a type of capital is aimed, firstly, to generate income; secondly, it is characterized by its main parameter – economic efficiency. Consequently, the concept of human capital can not express social goals of the state which involve the development of an individual beyond the scope of economic interests. On the contrary, human potential is the entire population realizing their abilities in all spheres of life, rather than just in the economy. The qualitative characteristics of human potential reflect the quality of the population itself.

In a vast range of issues related to human development, in this article we distinguish one aspect – analyze the correlation between population quality of the population, on the one hand, and the level and nature of economic development, on the other hand. This analysis is aimed at addressing two problems: first, determine the dependence of qualitative characteristics of the population on economic factors and, second, assess the degree and nature of the impact of population quality on economic development. The research is performed at the regional level.

Materials and methods. Since the set objectives involve quantitative comparisons, it raises the issue of numerical measurement of population quality and its qualitative characteristics [2–12]. The population quality is studied in seven ways: economic activity; demographic processes; physical health; cultural potential; social health; educational potential; population's attitude to the environment. We analyzed statistical books[1] and selected indicators related to qualitative characteristics of the population. There were 63 of such indicators, but as a result of the correlation analysis the following 10 indicators were left: GRP per 1 employed in the economy (labor productivity), (unit of measurement – thousand rubles/person); level of population's economic activity (%); innovation activity of organizations (%); natural decline/increase (per 1,000 people); life expectancy (years); share of the employed with higher and secondary vocational education (%); average number of viewers per 1,000 people, number of visits to museums per 1,000 people, number of newspaper issues per 1,000 people; share of reported crimes (number of crimes per 100,000 people); share of drug addicts (people per 100,000 people); number of air samples exceeding MAC, in % of the total number of studied samples. The last indicator at first glance evaluates environmental quality, but works [13; 14] demonstrate that it at the same time characterizes the population's environmental behavior.

In the future, when analyzing and interpreting the results we should remember that the population quality is only studied within the framework of the selected 10 indicators, and understand that they do not fully reflect this quality. Regional statistics impose significant

[1] *Healthcare in Russia. 2015: statistical book*. Rosstat. Moscow, 2015. 174 p.; *Environment protection in Russia. 2016: statistical book*. Rosstat. Moscow, 2016. 95 p.; *Russian regions. Socio-economic indicators. 2014: statistical book*. Rosstat. Moscow, 2014. 900 p.; *Russian regions. Socio-economic indicators*. 2016: *statistical book*. Rosstat. Moscow, 2016. 1326 p.

restrictions on the completeness of accounting all aspects of the population quality: the characteristics of the population quality which are difficult to measure such as, for example, moral and psychological differences, were excluded from analysis, as well as characteristics whose assessment approaches have already been developed but are missing in official statistics – for example, the quality of education.

It is difficult to visualize the real values of these indicators, their similarities and differences across 83 regions (in 2014). It is advisable to first divide the regions into homogeneous groups by population quality and then analyze the differences between these groups and its determining factors.

The fact that adequate convolution of 10 quality indicators of population quality with the aim of finding a single composite index is still unachievable was also taken into account. Although the weighting factors for the convolution are being designed, it is difficult to believe that it is possible to estimate the relative importance of indicators such as life expectancy and the share of drug addicts, natural increase and crime rate. In this regard, it seems appropriate to preserve the entire range of selected indicators in the analysis of population quality in the regions.

The preference among various methods of grouping was given to cluster analysis where the criteria clustering, i.e. selected indicators for analysis, are not aggregated and remain in the form of characteristics of the obtained groups of regions.

Cluster analysis is carried out using hierarchical agglomerative (unifying) methods which lead to the construction of a hierarchical structure of enclosed clusters [15–18]. At the same time, at the first (lower) level, all data are represented as separate clusters; at the last (upper) level – all data are combined into one cluster. In particular, we used the method of single link (nearest-neighbor method), either the usual Euclidean distance (clustering with ten characteristics) or Manhattan distance (clustering with seven parameters) served as a measure of proximity.

Reducing the dimension of the studied objects – from 83 regions to the number of clusters – will help address the first objective: identify factors affecting the qualitative characteristics of the population.

The initial results of cluster analysis are presented in [19; 20]. In this article, the study is continued through using information of 2014, as well as review of all 83 Russia's constituent entities, rather than 76 as it was done before. The time period under review is due to the fact that as of September 2017, information on GRP indicators was published by the Federal State Statistics Service (Rosstat) only for 2014, although GDP indicators are already available for 2016[2].

Research results. The results of regions' clustering according to ten mentioned characteristics of population quality according to data for 2014 are presented in *Table 1* (Federal districts are separated from each other by dimming). We formed 9 clusters from 83 constituent entities with different number of regions included in each cluster. The largest cluster is Cluster 1 consisting of 34 regions mainly in the Central and Volga Federal districts. The second largest cluster is Cluster 4 including 23 regions mainly in the Siberian and Far Eastern Federal districts. Clusters 3, 5, 6 and 9 are small, each consisting of 2–3 regions with strong specific features related to their economic development. Clusters 2 and 8 are primarily united on a territorial basis: the include neighboring regions.

[2] *Russian regions. Socio-economic indicators. 2016: statistical book*. Rosstat. Moscow, 2016. 1326 p.

Table 1. Results of regions' clustering by 10 characteristics of population quality

1 – (34)	2 – (9)	3 – (2)	4 – (23)	5 – (3)	6 – (3)	7 – (1)	8 – (6)	9 – (2)
Belgorod Oblast	Voronezh Oblast	Moscow	Komi Republic	Nenets Autonomous Okrug	Republic of Dagestan	Samara Oblast	Tyumen Oblast (excluding AO)	Magadan Oblast
Bryansk Oblast			Vologda Oblast		Republic of Ingushetia			Chukotka Autonomous Okrug
Vladimir Oblast		Saint Petersburg	Murmansk Oblast					
Ivanovo Oblast	Rep. of Adygea		Novgorod Oblast		Chechen Republic		Altai Republic	
Kaluga Oblast	Rep. of Kalmykia			Khanty-Mansi Autonomous Okrug (KhMAO)			Republic of Buryatia	
Kostroma Oblast	Krasnodar Krai		Udmurt Republic				Tyva Republic	
Kursk Oblast	Rostov Oblast		Perm Krai	Yamalo-Nenets Autonomous Okrug (YaMAO)			Zabaykalsky Krai	
Lipetsk Oblast	Kabardino-Balkar Republic		Kurgan Oblast				Sakha (Yakutia) Republic	
Moscow Oblast	Karachay-Cherkess Republic		Sverdlovsk Oblast					
Orel Oblast	Republic of North Ossetia-Alania		Chelyabinsk Oblast					
Ryazan Oblast	Stavropol Krai		Republic of Khakassia					
Smolensk Oblast			Altai Krai					
Tambov Oblast			Krasnoyarsk Krai					
Tver Oblast			Irkutsk Oblast					
Tula Oblast			Kemerovo Oblast					
Yaroslavl Oblast			Novosibirsk Oblast					
Rep. of Karelia			Omsk Oblast					
Arkhangelsk Oblast			Tomsk Oblast					
Kaliningrad Oblast								
Leningrad Oblast			Kamchatka Krai					
Pskov Oblast			Primorsky Krai					
Astrakhan Oblast			Khabarovsk Krai					
Volgograd Oblast			Amur Krai					
Rep.of Bashkortostan			Sakhalin Oblast					
Mari El Republic			Jewish Autonomous Oblast					
Rep. of Mordovia								
Rep. of Tatarstan								
Chuvash Republic								
Kirov Oblast								
Nizhny Novgorod Oblast								
Orenburg,								
Penza Oblast								
Saratov Oblast								
Ulyanovsk Oblast								

Even with the simplest look at the clusters' composition demonstrates the influence of the territorial factor on regions' division into groups. If avoiding the influence of this factor of one or two regions in each Federal district is not considered a contradiction, then only regions of the Northwestern Federal district being in Clusters 1 and 4 is a significant region's' heterogeneity.

Table 2 presents cluster centers and highlights highest (in bold type) and lowest (underlined) center values for each indicator. At the same time, several clusters rather than one were distinguished as extreme values of indicators in cases where they were very close.

In the largest clusters – 1 and 4 – the centers do not demonstrate highest or lowest values (except the lowest natural increase in Cluster 1). This is natural as the more regions there are in a cluster, the more diverse it is.

The highest population quality in terms of four indicators – life expectancy, share of employees with higher and secondary vocational education, level of cultural development and environmental behavior – is in Cluster 3 consisting of Moscow and Saint Petersburg. This cluster ranks second in terms of GRP per one employed and level of innovation activity.

Cluster 9, consisting of the Magadan Oblast and Chukotka Autonomous Okrug, also leads in four indicators: it demonstrates highest values of the level of economic activity, innovation activity, natural increase and share of drug addicts. However, Cluster 9 is characterized by lowest life expectancy.

Cluster 6 consists of 3 regions – republics of Dagestan and Ingushetia and the Chechen Republic – and is the most controversial due to the fact that it has nine out of ten indicators characterized by extreme – from highest to lowest – values. In terms of population's natural increase, life expectancy, and crime rate, this cluster is the most prosperous. At the same time, it is the least prosperous in terms of three economic indicators, as well as in the share of employees with higher and secondary vocational education and environmental behavior.

Cluster 5 – Nenets, Yamalo-Nenets and Khanty-Mansi Autonomous okrugs – has the highest GRP per one employee many-fold higher than similar indicators in other clusters

Table 2. Cluster centers obtained by 10 indicators of human potential based on information for 2014

Indicator	Cluster								
	1	2	3	4	5	6	7	8	9
GRP per one employed	360.7	277.9	905.5	472.8	**2269.3**	275.8	470.4	429.2	704.6
Level of economic activity	52.8	49.0	56.2	53.4	56.7	45.7	54.4	47.5	**65.4**
Innovation activity	10.5	7.1	18.2	9.4	6.0	5.7	5.4	8.5	**24.8**
Natural increase	-6.1	-2.7	-2.9	2.5	0.4	**4.9**	-5.2	**4.4**	**4.4**
Life expectancy	70.2	72.5	**75.3**	68.6	69.7	**75.9**	69.4	67.2	64.6
Higher + secondary vocational education	54.9	56.8	**72.2**	52.5	55.7	43.3	65.8	55.2	52.4
Culture	745	344	**3411**	567	298	85	532	361	316
Crime rate	1313	1075	1269	2010	1490	**379**	1622	2218	1936
Drug addiction	136.6	191.3	227.2	260.9	196.1	132.2	646.6	135.2	**79.7**
Share of air samples	1.1	1.0	**0.2**	0.8	7.8	8.3	0.5	8.0	1.7
Note. Calculated by the authors.									

Table 3. Classification of constituent entities by 7 social characteristics of population quality

1 – (23)	2 – (16)	3 – (12)	4 – (2)	5 – (3)	6 – (3)	7 – (1)	8 – (8)	9 – (15)
Belgorod Oblast Bryansk Oblast Vladimir Oblast Ivanovo Oblast Kaluga Oblast Kostroma Oblast Kursk Oblast Lipetsk Oblast Orel Oblast Ryazan Oblast Tambov Oblast Tver Oblast Tula Oblast	Voronezh Oblast Moscow Oblast Kaliningrad, Murmansk Oblast Rep. of Adygea Rep. of Kalmykia Krasnodar Krai Astrakhan Oblast Rostov Oblast Kabardino-Balkar Republic	Smolensk Oblast Yaroslavl Oblast Rep. of Karelia Komi Republic Arkhangelsk, Vologda Oblast Novgorod Oblast Mari El Republic Udmurt Republic. Perm Krai Nizhny Novgorod,	Moscow Saint Petersburg	Nenets AO Jewish Autonomous Oblast Chukotka Autonomous Okrug	Republic of Dagestan Republic of Ingushetia Chechen Republic	Samara Oblast	Tyumen Oblast(excluding AO) Khanty-Mansi AO (KhMAO) Yamalo-Nenets AO (YaMAO) Altai Republic Republic of Buryatia Tyva Republic Zabaykalsky Krai Sakha (Yakutia) Republic	Chelyabinsk Oblast Republic of Khakassia Altai Krai Krasnoyarsk Krai Irkutsk, Kemerovo, Novosibirsk, Omsk, Tomsk oblasts Kamchatka, Primorskii, Khabarovsk krais Amur, Magadan, Sakhalin oblasts
Leningrad Oblast Pskov Oblast	Karachay-Cherkess Republic Republic of North Ossetia-Alania	Kurgan Oblast						
Volgograd Oblast	Stavropol Krai							
Rep.of Bashkortostan Rep. of Mordovia Chuvash Republic Kirov Oblast Orenburg, Penza Oblast Saratov Oblast	Rep. of Tatarstan Ulyanovsk Oblast Sverdlovsk Oblast							

and regions. However, this cluster is the worst in terms of innovation activity and environmental behavior.

The isolation of the Samara Oblast, which alone is included in Cluster 7, is associated with the unprecedented high share of drug addicts.

The value of innovation activity is minimal in clusters 5, 6 and 7. This is understandable in terms of clusters 6 and 5, where the modernization process of extractive sectors is slow. But the situation in the Samara Oblast is not very clear: this is probably the consequence of the shortcomings of the innovation activity indicator itself, which is estimated simply by the share of enterprises implementing any type of innovation.

Since the three economic indicators under review, though characterizing population quality, depend on other factors as well – natural resource reserves, sectoral structure, etc., of particular interest are the results of clustering carried out without considering these indicators. Cluster analysis has been conducted on 7 social indicators of population quality (*Tab. 3*).

Here, the regions of half of the federal districts were divided into a larger number if clusters than in the variant with 10 indicators. Thus, the regions of the Central, Volga and Ural federal districts were included in four clusters each (instead of three clusters before); the regions of the Northwestern Federal District – in five clusters (instead of four).

The clusters became more evenly filled: more than 10 regions are already included in four clusters, whereas previously they were included in only two clusters, containing in total almost 70% of the regions.

Three clusters remained unchanged: Cluster 3 (Moscow, Saint Petersburg); Cluster 6 (republics of Dagestan and Ingushetia, the Chechen Republic) and Cluster 7 (the Samara Oblast). During clustering without considering economic indicators, the Tyumen Oblast was joined by its autonomous districts – Khanty-Mansi-Yugra and Yamalo-Nenets. The Magadan Oblast and Chukotka Autonomous Okrug which were together earlier in Cluster 9, also became non-homogeneous in terms of 10 indicators.

When clustering on 7 indicators, both clusters' composition and their centers changed (*Tab. 4*). The "capital" cluster remained the most prosperous. It still has highest values of life expectancy, share of people with higher and secondary vocational education, level of cultural development and environmental behavior.

Table 4. Cluster centers obtained by 7 indicators of human potential based on information for 2014

Indicator	Cluster								
	1	2	3	4	5	6	7	8	9
Natural increase	-0.947	-0.283	-0.644	-0.243	1.004	**1.215**	-0.683	0.935	**1.404**
Life expectancy	0.071	0.689	-0.276	**2.070**	-2.195	**2.300**	-0.210	-0.624	-0.574
Higher + Secondary vocational education	-0.093	0.361	-0.261	**2.788**	-1.037	-1.788	1.781	0.266	-0.100
Culture	-0.132	-0.296	0.859	**4.842**	-0.594	-0.961	-0.182	-0.512	-0.218
Crime rate	-0.547	-0.525	0.433	-0.502	0.009	**-2.174**	0.161	1.009	1.004
Drug abuse	-0.606	0.170	-0.199	0.415	**-1.007**	-0.539	4.628	-0.161	0.939
Share of air samples	-0.290	-0.236	-0.383	**-0.574**	-0.381	2.027	-0.477	2.215	-0.400
Note. Calculated by the authors.									

Cluster 6 remained the leading one in natural increase, life expectancy and crime rate. At the same time, it is the worst, as in the pervious years, in terms of the share of the employed with higher and secondary vocational education, level of cultural development and environmental behavior.

It is natural to expect that the Samara Oblast would stand apart in this variant is an independent cluster due to a high share of drug addicts.

The Nenets and Chukotka autonomous okrugs and the Jewish Autonomous Oblast were united in Cluster 5 by the lowest indicator of life expectancy and, at the same time, the highest share of drug addicts.

Cluster 8, which was joined by two rich autonomous okrugs of the Tyumen Oblast excluding the economic indicators, still has the highest crime rate and the highest share of negative air samples, but it has lost its positive characteristics – leadership on natural increase (due to the joined autonomous districts).

In Cluster 9, which is completely new by composition and includes 15 regions instead of two as in previous calculations, the highest rate of natural increase and, conversely, its negative characteristic – the highest crime rate.

Clusters 1, 2, 4 large in the number of regions and federal districts included in it, have intermediate values of cluster centers by all indicators (except the lowest natural increase in Cluster 1).

Thus, analysis of results of clustering of regions by 10 and 7 qualitative characteristics of the population for 2014 carried out in 83 constituent entities, revealed common features of the regions united in each group, showed the advantages and disadvantages of each cluster and revealed the factors which caused their unification. The resulting grouping of regions according to qualitative characteristics of the population clearly demonstrated the impact of two factors on the uniformity of regions in clusters: economic development and geographical position.

The second objective set at the beginning of the article is to assess the role of population quality in economic development. To analyze the impact of population quality on economic development it is advisable to use regression analysis. Economic development as a dependent variable will traditionally be characterized by GRP per capita. All ten indicators of population quality and only seven social indicators are considered as independent, explanatory variables.

As a result of regression analysis carried out using the information for all regions separately for each year during 2008–2014, GRP per one employed and the level of economic activity measured as a share of economically active population in the whole population proved to be significant factors. The significance of these factors is undeniable and evident from analytical dependence: $y = x_1 x_2 l_{empl}$, where y – GRP per capita; x_1 – GRP per one employed; x_2 – level of economic activity of the population; l_{empl} – share of the employed in economically active population.

The remaining factors characterizing population quality are not among the most significant. Some of them – life expectancy, natural population increase/decrease, innovation activity – turned out to be significant (with a low level of significance) in one or two years of the entire six-year period under study. When analyzing the impact of only social indicators of population quality on the economic development, no significant factors were revealed at all.

Discussion. Initially, the authors imagined a more active influence of population quality on the economic development, especially its components such as educational and cultural level. Assuming that these factors turned out to be insignificant due to the strong influence on the economic development of the natural resource factor we distinguished only the processing regions from the whole set of regions. Among them were regions with the share of manufacturing industries in the economic structure exceeding 30%. There are 49 such entities. The regression analysis was repeated, but only for the selected processing regions.

As a result, the innovation activity factor was added to the list of significant factors when considering 10 indicators of population quality.

Expectations were met in regression analysis of processing regions only with social indicators of population quality – high impact on GRP was revealed with a high level of significance, as well as the share of the employed with secondary and higher education; with a lower level of significance – life expectancy. The cultural level was not included in the number of significant factors affecting the economic development, as well as crime rate, share of drug addicts, and population's environmental behavior.

The result does not reduce the importance of improving these indicators, which are insignificant for the economy; it is emphasized that, in addition to economic, there are other criteria for human development. The declaration of improving the population's quality of life as the primary state objective overshadow another equally important state objective – the development of an individual and improving population quality.

The proposed classification of regions by population quality is designed to attract the attention of the scientific community to the sometimes strong regional differentiation of the quality characteristics of the population. The feasibility of further research is seen in the importance of solving problems such as revealing the causes of the demonstrated differences and the search for possible mechanisms to improve population quality. The fact that improving the social characteristics of population quality does not provide direct economic dividends does not in any way diminish the paramount importance of this humane state goal and requires a special approach to the development and implementation of its social policy.

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Natural Resource-Based Industries of the Far East: New Drivers of Development

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Abstract. The goal of the paper is to study the manifestations of institutional innovations currently being implemented within the framework of a new development model for the Far East economy in the region's natural resource-based sectors; another goal is to study the areas of Russian-Chinese cooperation, which affect the current state and prospects of development of these industries. The study is based on the theories of resource-based economy, and spatial economy, including regional economy. The main scientific problem raised in the article is at the junction of the studies related to the evaluation of public policy efficiency, system effects of resource projects and their localization at the regional level under the influence of foreign economic factors. The novelty of the research consists in the fact that it formulates and implements the research task of joint consideration of institutional innovations and external factors determining the potential for the development of natural resource sectors in the Far East; thus, the research helps obtain new scientific knowledge in the field of spatial economics. The mineral resources, fishery and forest complexes are the objects of our study; they have been chosen due to the economic value of natural

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resources that form the basis for these industries. The article discusses the tools and forms of state support for the new development model of the Far East and their impact on the competitiveness of the industries selected in the framework of this model; the paper also analyzes how the economic agents working in these industries actually react to the preferential innovations. We show that the institutional decisions adopted in accordance with the new development model of the Far East begin to produce tangible results in the territories of the region. We consider new directions, mechanisms and forms of participation of Chinese state-owned and private business in the mineral raw materials, fishery, and forest complexes, and also the consequences of this participation both for the sectors themselves and for the economy of the Far East. The prospects for further research are associated with the task of measuring the positive and negative effects of the implementation of federal institutional tools of the new development model of the Far East for the economy of specific territories in the natural resource-based industries.

Key words: mineral resource complex, fishery complex, forest complex, Far East, institutional changes, Russian-Chinese cooperation.

Introduction

The fundamental constants for a long period of development of the Far East are as follows: natural resources as the basis of the regional economy, active participation of the state in regional development, and the focus on cooperation with neighboring Pacific countries and markets [1]. Within the framework of these economic constants it is possible to give a systematic assessment of the results and prospects of development of natural resource industries in the region. This approach is due to the fact that the natural resource potential and related activities are elements of both the natural and socio-economic system [2]. The changes taking place in the socio-economic system are reflected both in the current indicators of the natural resource sectors and in the long-term processes of environmental management.

Natural resources and their use (in the Far East of Russia, too), taking into account the influence of state participation and the external factor, have been the object of scientific interest of scientists and specialists for many years. Assessing natural resources, the sustainability of their use, and the role of the government in these processes are studied in many works [2; 3; 4; 5; 6; 7]. Regional studies in the field of natural resource management address the use of certain types of resources and the impact of public policies on it [8; 9; 10; 11; 12; 13; 14; 15], and the specifics of nature use in the regions bordering on China and experiencing an impact of such neighborhood [16].

The problems of environmental management through the prism of East Asian and Chinese influence are given much attention in the works of Far Eastern scientists. Environmental management systems in the Far East and in North-East Asia in the dynamics of the transformation of natural resource potential [2;17], the condition of the natural resource potential of the Far East in the Asia-Pacific Region in the long term [18], various aspects of possible interaction of the border economic systems of Russia and China, the functioning of certain segments of the resource sector under the influence of external demand [10; 19; 20] are the subjects of comparative studies.

The present paper considers three key natural resource sectors of the Far Eastern Federal District (FEFD)[1]: mineral resources,

[1] The terms "Far East", "Far Eastern Federal District" are used as synonyms in this article. The Far Eastern Federal District consists of nine constituent entities of the Russian Federation: Khabarovsk, Primorsky and Kamchatka krais; the Amur, Magadan and Sakhalin regions, the Republic of Sakha (Yakutia), the Jewish Autonomous Oblast, and Chukotka Autonomous Okrug.

fisheries industry and forestry. The natural resources of the Far East, which form the raw material basis of these industries, have been and remain Russia's "resource depository" in their reserves.

Thus, as of 2015, the Far Eastern Federal District possesses almost all Russian national reserves and almost 100% of diamond production, almost 100% of tin production and 92% of its reserves, about 45% of gold production and 33% of its reserves, 65% of silver production and 35% of its reserves, almost 80% of tungsten concentrate production and about 23% of its reserves, 100% of antimony production and 50% of its reserves [3]. Under all transformations of the reformation period, the role of the mineral resource complex of the Far East in the national economy only increased: the share of mining in the Far Eastern Federal District, except for fuel and energy, in the structure of the national industry increased from 11.8% in 1990 to 44.8% in 2016.

The resource potential of water and biological resources in the national exclusive economic zone in the Pacific basin is three million tons; in addition, Russia engages in industrial marine fishing in the ocean. The potential of aquaculture in the Far East is one million tons of finished products. The fishery complex in FEFD stably provides more than 60% of the total volume of harvesting of water biological resources in Russia and 58% of tax revenues to the budgets of all levels from the fishing complex of the country [3].

The Far East has the largest forest resources in the country: 295.2 million hectares are covered by forest (37% of the same figure for Russia). The wood reserve in FEFD is estimated at 20.5 billion m^3 or 24.8% of the total Russian reserves. However, the use of forest resources, unlike mineral and water-biological resources, is extremely low: out of 92 million m^3 of the estimated cutting area (annually permissible amount of logging) less than 20% is harvested, which does not correspond to the available resource potential. The reasons for this situation are the territorial inconsistency of the resource base and the zones of industrial harvesting and processing of wood, as well as the fall in demand for Russian timber in foreign markets [19].

Natural resources continue to be the basis of the economy in the Far East, which retains its raw materials orientation and focus on foreign markets. From the position of two other groups of fundamental factors in the development of the Far East – state participation and focus on external cooperation – in the last five years (2013–2017), their significant enhancement is noted. Thus, since 2013, a "new model" of development with a whole set of special institutional and economic regimes has been announced for the region at the level of the federal center. As for the orientation of economic cooperation of the region to the countries in APR, during the period under review it continues to "shift" toward China, which is determined by the general intensification of Russian-Chinese cooperation at the state level that receives additional stimulation since 2014. In fact, these changes become new factors in the development of the Far East and, of course, influence the development of basic sectors of the economy of the region, such as natural resource industries.

What is the current situation in key natural resources sectors? Does the target area of the "new model" of the Far East development include the support and stimulation of natural resource industries; what is the actual reaction to preferential innovations and the competitiveness of resource industries under this model? What are the new directions, mechanisms and forms of participation of Chinese business (public and private) in the resource sectors of the Far East? The goal of the present article is to find answers to these questions. The novelty of the research consists in the theoretical formulation and practical implementation of the research task of

joint consideration of institutional innovations and the external factor determining the potential for the development of natural resource sectors in the Far East, which ensures the increment of scientific knowledge in the field of spatial economics.

Research methodology and methods

The research is based on the theories of resource economy, spatial economy (including regional economy), and institutional economy. To implement the task of identifying the impact of institutional factors on the development of natural resource industries, a comparative statistical analysis of changes in the development indicators of these industries is used, which allows us to identify the changes taking place in them. On the basis of a system approach, we consider new forms and directions in trade and investment cooperation between Russia and China in the natural resource sectors in the Far East, which are under the influence of economic and institutional changes in the bilateral cooperation.

The information base of the research was made up of normative legal acts of the federal and regional levels, adopted in the last five years in the field of regulating the development of the Far-Eastern economy; statistical and analytical information from the websites of federal and regional authorities, containing the results of implementation of regional development tools; and analytical reviews of relevant domestic and foreign Internet publications.

Results of the study and their analysis

New development institutions and natural resource sectors of the Far East. New institutions for the development of the economy of the Far East are formed by a number of legislative, organizational and infrastructural innovations. In 2014–2017, twenty-two federal laws[2] containing legal aspects to create an institutional environment for the formation of a new model for the development of the Far-Eastern economy were adopted. This model is implemented by adding sections dedicated specifically to the Far Eastern Federal District to the sectoral state programs and sectoral strategies. That is, there is a division of responsibility between all federal ministries for the implementation of new tools under the general supervision of the Ministry for the Development of the Russian Far East.

The basic laws are as follows: "About the territories of advanced socio-economic development" (TAD) and "About the free port of Vladivostok" (FPV), which formed the basis for the formation of new instruments of modern state policy with regard to the Far East[3]. These tools include: priority connection of TAD to the objects of infrastructure at the expense of budget funds; establishment of preferential rates of rent payment for land use; preferential taxation of residents in TAD; reducing the administrative burden; the use of free customs zone procedures; preferential amount of insurance contributions to the payroll; accelerated procedures for obtaining a construction permit. At the end of 2017, eighteen TADs were created in eight regions (except the Magadan Oblast).

The *Table* provides information about investment projects in natural resources sectors, the initiators of which are registered as residents of the territories of socio-economic development. It is interesting to analyze what activities carried out in the natural resource sector (reproduction of the resource base, extraction of raw materials and their processing) are

[2] By the end of the year, 86 new enterprises will be operating in the Far East. Available at: https://minvr.ru/press-center/news/10681/?sphrase_id=211593 (accessed: 28.11.2017).

[3] About the territories of advancing socio-economic development in the Russian Federation: Federal Law No. 473-FZ of December 29, 2014 (as amended on July 3, 2016) (with amendments and additions entering into force on January 1, 2017); About the free port of Vladivostok: Federal Law No. 212-FZ of July 13, 2015; state program of the Russian Federation "Socio-economic development of the Far East and the Baikal region": approved by the Resolution of the Government of the Russian Federation No. 308 dated April 15, 2014.

Investment projects implemented in natural resources sectors within the framework of TAD

TAD, constituent entity of the Russian Federation	Investment project, initiator	Specialization
Fishery complex		
"Kamchatka", Kamchatka Krai	Shore base for processing marine biological resources, V.I. Lenin fishing farm Fish processing complex, OOO Gorod 415 and Korea Trading & Industries co., LTD Fish processing plant, fresh-water trout farm, OOO Rybnaya Dolina	Fish processing, reproduction of resource base New construction
"Beringovsky", Chukotka Autonomous Okrug	Plant for processing fish resources of inland waters, OOO Chukotrybpromkhoz	Fish processing Modernization
"Kangalassy", Republic of Sakha (Yakutia)	Commercial farming of the sturgeon, OOO NPO EKOR	Reproduction of resource base New construction
"Komsomolsk", Khabarovsk Krai	Fish processing production, construction of new capacities, OOO Torgovy Dom "Yukon"	Fish processing Modernization
"Nikolaevsk", Khabarovsk Krai	Plant for the production of canned salmon and waste recycling, OOO Eastern fish processing plant	Fish processing Modernization
Forest complex		
"Komsomolsk", Khabarovsk Krai	Far Eastern Center for Deep Wood Processing, Amur Timber Company, and Amur Industrial Center (all owned by RFP Group)	Timber processing New construction
"Amuro-Khinganskaya", Jewish Autonomous Oblast	Deep wood processing complex, Chinese company LLC Amurprom	Timber processing New construction
"Komsomolsk", Khabarovsk Krai	Pulp and paper mill, OOO Novaya Russkaya tsellyuloza	Timber processing New construction
Mineral resource complex (except fuel and energy resources)		
"Beringovsky", Chukotka Autonomous Okrug Zhilnoye gold and silver deposit, Kanchalano-Amguemskaya Square LLC Ruchei Sukhoi deposit, OOO INTEKhKOMS OOO Bering Zoloto OOO Rudnik Valunistyi OAO S/A Sever	OOO Vostok	Extraction of precious metals
	Geological exploration, production New construction	
	Mining of placer gold Modernization	
	Gold mining	
	Gold mining	
	Extraction of precious metals	
"Amuro-Khinganskaya", Jewish Autonomous Oblast	Mining and processing integrated plant on the basis of Soyuznoye graphite deposit, OOO Dalgraphite	Mining and dressing New construction

Source: our own compilation based on the Register of residents of the territories of advanced socio-economic development. Available at: http://erdc.ru/upload/reestr-tor.pdf (accessed: 30.11.2017).

supported in the framework of TAD. In addition, it is interesting to find out what investments are aimed at: at new construction or at the modernization of existing production; that is, whether the expanded reproduction is carried out within the new model of economic development or is it maintaining the existing level?

In the fisheries sector there are projects for the reproduction of fish stocks, and this is usually a new construction, and fish processing is carried out within the framework of modernization. In the forest complex, all wood processing projects are implemented as part of the new construction. In the mineral resource complex, all declared projects are focused on the extraction of raw materials (mainly precious metals).

The institutional mechanism "free port of Vladivostok" similar to TAD on the proposed system of benefits is also attractive for investors, despite the fact that it lacks such an important

tool as financing the construction of infrastructure objects at the expense of budget funds.

Within the framework of FPV, 13 fishing enterprises have been registered, whose activities are aimed at reproduction of fish stocks in freshwater and marine waters, sea farming, pasture fishing, processing of fish and other aquatic organisms, and logistics of fish products[4]. Ten timber enterprises located mainly in Primorsky Krai were registered by the residents of FPV. These are medium-sized newly created enterprises, whose main activity is wood processing.

In the Far East, it is also planned to introduce quotas on exports of unprocessed timber at reduced customs duties (from 25 to 6.5%)[5], a tool that combines sectoral and regional approaches. An enterprise can obtain such a quota provided that it processes at least 20% of harvested wood, with its subsequent increase to 35%. The total quota will amount to 4 mln m^3 of timber exports from the Far East; that is, the sales abroad at reduced duties will cover 60% of unprocessed timber. Outside the export quota, the customs rate on timber will remain at 25%, with a possible subsequent increase of up to 40% or more[6].

It can be concluded that governmental policy in the forest sector aimed to support primarily large companies contributes to changing its "size" structure by reducing the number of small enterprises and increasing the share of large ones. Also there is an intraindustrial redistribution of logging and wood processing segments in favor of the latter. This confirms a well-known thesis that the market structure is largely formed under the influence of economic policy of the government (subsidies, tax incentives, leasing of land) [21].

The issues dealing with the formation of added value are also relevant for the mineral sector of the Far Eastern economy. However, if before 2013, traditional tasks of state programs and federal target programs were formulated as follows "modernization of the resource sector", "increasing the complexity of raw materials processing" against the background of the original assumption that the region cannot compete with the APR countries for the production of high-tech industries, then the target task of the region's development in the logic of the "new model" of 2013 was formulated in a different way: "The Far East should become a competitive region with a diversified economy, whose structure is dominated by high-tech production with high added value"[7]. In fact, this implies abandoning the raw materials economy as a major type of development of the region and "pushing" the mineral sector of the Far East out of the "field" of special state support. What is the situation today? Do investment projects in the mineral sector implemented in the Far Eastern Federal District enjoy any preferences within the framework of the "new model"?

Preferential measures for mineral resource projects aimed to expand the mineral resource base (MRB) and search for new deposits that can ensure the dynamic development of the mineral sector of the region in the future were already provided in the "first package"[8] of the announced "new model". First of all, we speak about the introduction of a reduction factor

[4] Register of residents of the free port of Vladivostok. Available at: http://erdc.ru/upload/reestr-spv.pdf (accessed: 30.11.2017).

[5] Quota for the export of wood from the Far East will be tied to investments in processing. Available at: https://minvr.ru/press-center/news/10811/?sphrase_id=211586 (accessed: 02.12.2017).

[6] The forest bends under the quota. *Kommersant Newspaper,* 2017, September 6. Available at: https://www.kommersant.ru/doc/3403041 (accessed: 02.10.2017).

[7] State program of the Russian Federation "Social and economic development of the Far East and Baikal region": approved by the Resolution of the Government of the Russian Federation No. 466-r dated March 29, 2013.

[8] On amendments to parts one and two of the Tax Code of the Russian Federation in terms of stimulating the implementation of regional investment projects on the territories of the Far Eastern Federal District and certain constituent entities of the Russian Federation: Federal law 267-FZ of September 30, 2013.

for mineral extraction tax (MET) for 10 years: from 0 in the first two years to 0.8 in the last two years of ten-year tax holidays (with a step of 0.2 every two years). In this regard, a new category of taxpayers who could use such privileges – "a participant of the regional investment project" – was introduced. Obtaining such status required compliance with certain conditions (registration in the territory of the subject of the Russian Federation; absence of separate subdivisions in other territories; a certain organizational and legal form, etc.) and registration with a special Register. At this stage, only a small number of companies that implement investment projects at the gold deposits of the Far East – Ozernovskoye and Ametistovoye in Kamchatka, Svetloye[9] in Khabarovsk Krai, and some others – were able to enter the Register.

The impact of this incentive mechanism in the first phase of introduction of tax incentives was very limited. In our opinion, the reason lies not at all in the difficulties with "entering" the Regional Investment Projects Register. Given the fact that almost the entire effective mineral resource base in the region is distributed among subsoil users, mainly large companies, the chances of new players and the possibility of their registration as a special category of taxpayers are very small. In fact, there were no new participants to enter the Register. At the same time, the investment community in the mineral resources sector began to raise questions about clarifying the criteria for compliance of the new category of taxpayers and inclusion of "investors who began to implement their projects in the period immediately preceding the entry of the Law into force (January 1, 2014)" in this category [22].

In 2016, certain changes were made to the procedure for the formation of regional investment projects, and the result exceeded all expectations. Now, any investor who implements a project in FEFD (outside TAD and FPV) with a total investment of over 50 million rubles for three years may receive preferential treatment, including the mineral extraction tax privilege. This takes into account investments made since January 1, 2013. The declarative principle of obtaining tax privileges is introduced[10]. With such quantitative criteria for entering the regional investment projects, almost any mineral resource project becomes such automatically. However, in our view, the question of whether such an approach could stimulate the expanded reproduction of the mineral resource base in the Far Eastern Federal District remains open.

No less important mechanism of the "new model" of the region's development is state support for investment projects, the practical implementation of which can produce a significant effect for the Far East. To date, this procedure has not only been worked out legally[11], but it has already produced its first results. In 2015–2017, several stages of selection of investment projects for direct state support in the form of subsidies for the creation and reconstruction of infrastructure in the framework of investment projects were implemented[12].

[9] According to the estimated made by V. Neses, Head of the company Polymetall, the development of Svetloye is a low-cost project and a backup in case of depletion of the resource base... The company was going to develop Svetloye in any case. Support measures will reduce the tax burden of Svetloye in three times. Cit. ex.: Pasmurtsev V. Svetloye was given the "green light". The company Polymetall will receive benefits under the law on greenfields. *Kommersant Newspaper (Khabarovsk),* 2015, no. 130, July 23. Available at: https://www.kommersant.ru/doc/2773520 (accessed: 14.12.2017).

[10] Aleksandr Galushka: tax concessions will be granted to all investors in the Far East. June 2, 2016. Available at: https://minvr.ru/press-center/news/2133/?sphrase_id=223038 (accessed: 13.12.2017)

[11] On approving the technique for selecting investment projects planned to be implemented in the territories of the Far East and Baikal region: Resolution of the RF Government No. 1055 dated October 16, 2014; On amending the the technique for selecting investment projects planned to be implemented in the territories of the Far East and Baikal region: Resolution of the RF Government No. 503 dated April 28, 2017.

[12] Resolution of the RF Government No. 484-r dated March 23, 2015; Resolution of the RF Government No. 1339-r dated July 13, 2015; Resolution of the RF Government No. 1806-r dated August 27, 2016.

In the course of the selection, more than fifty projects in various sectors were considered and to date, 13 investment projects have been selected for state support. The maximum total amount of subsidies that the investors in the Far East can obtain is defined in the amount of 34 billion rubles, including in 2017 – 6.8 billion rubles, in 2018 – 4.8 billion rubles, in 2019 – 5.6 billion rubles[13].

The mechanism of direct state support for investment projects aimed to solve infrastructure problems is of a general nature and is not designed specifically to deal with mineral resource projects. It can be assumed that it could "work" toward the formation of a new sectoral structure in the Far Eastern region. However, in fact, nine of the 13 selected projects are expected to be implemented in the resource sector: eight projects in mining, and one – in wood processing. In general, the estimated support of resource projects is expected to be at the level of 90% of all budget funds allocated for these purposes (30.3 out of 34 billion rubles). That is, de facto mineral projects are still recognized as corresponding to the strategic development goals of the region and competitive for both private investors and the government.

The Chinese factor. China is a major partner for Russia's Far East in trade and investment cooperation, and this role has grown in recent years, especially in the natural resource sectors. The share of production of the natural resource sectors in the Russian Far East exports to China is almost 80% in recent years. In 2016, the main exports to China included minerals (32.8% of total Far Eastern exports), fish and seafood (26.1%), timber and timber products (19.2%)[14]. Chinese investors are also active in new forms of investment development of the Far Eastern Federal District: of the total amount of foreign investments declared for 2016 in projects implemented in the framework of TAD and FPV, China accounts for 88.4 and 99%, respectively.

As mentioned above, the natural resource industries of the Far Eastern Federal District are focused on the export of their products to varying degrees.

Fifty percent of the total production of aquatic biological resources is exported. Almost all goes to China, the Republic of Korea and, to a lesser proportion, in Japan. According to the Federal Customs Service[15], in 2013–2016, China increased its share in the physical volumes of Far Eastern exports of fish and other aquatic products from 59 to 63% (from 798.6 to 804.9 thousand tons), and its share increased to 70.7% in the first half of 2017. In value terms, this figure is lower, since China mainly specializes in the import of fish, rather than expensive crustaceans and molluscs: in the structure of Far Eastern supplies of aquatic biological resources to China, the share of frozen fish is more than 90%. The main imported fish species is Alaska Pollock: in recent years, from 75 to 82% goes from the Far East to China.

The exported Russian fish, first of all, Alaska pollock, in border areas of China goes to fish processing enterprises that create employment for local population. In the border province of Jilin (county-level city of Hunchun) there are 54 fish processing enterprises, and it is planned to create 25–30 new ones. The volume of fish processing in this area grew from one up to nine billion yuan in 2014–2016[16].

Taking into account the fact that frozen fish after its processing in Chinese enterprises is exported in significant volumes, it can be

[13] Resolution of the RF Government No. 718-r dated April 17, 2017. Available at: http://government.ru/docs/27317/ (accessed: 13.12.2017)

[14] Russian-Chinese dialogue: Model 2017: report no. 33/2017. Available at: http://russiancouncil.ru/papers/Russia-China-Report33.pdf (accessed: 30.11.2017).

[15] Foreign trade of the Far East. Far Eastern Customs Administration of the Federal Customs Service of Russia. 2017. Available at: http://dvtu.customs.ru/index.php (accessed: 20.11.2017).

[16] Fish shores. *Russian newspaper "Economy of the Far East",* 2016, no. 7033 (165), July 27. Available at: https://rg.ru/gazeta/dfo/2016/07/28.html (accessed: 30.11.2017).

concluded that China is interested in maintaining the raw materials orientation of the Far Eastern export of fish products.

The forest complex of the Far East supplies timber products to foreign markets by 90%. Its main market is China, whose role in the geographical structure of supplies began to increase from the beginning of the 2000s, sharply increased in the late 2000s–early 2010s (after Russia raised export duties on unprocessed timber), and retains its leading position at the moment.

The opportunities to increase Russian timber exports to China have increased recently, due to China's ban on commercial harvesting of timber in natural forests across the country since 2016, in order to restore forest cover damaged by extensive felling in the 1990s and 2000s. As a result, the country began to reduce its production of wood, which is planned to compensate for through its imports.

Russia, despite the decline in exports, remains in the group of the main suppliers of raw wood to China, and is also a leader in the supply of unprocessed timber: in the first half of 2017, its share in this market reached 46% compared to 33% in 2013 [23].

China is practically a monopsonist for the Far East: from 2013 to 2016, its share in the total value of exports of timber and its products increased from 72.6 to 81.7%[17]. According to the product structure, raw wood remains dominant and accounts for 67.6% of the total value of timber products supplies. This means that despite the policy aimed to change the commodity structure in favor of products with high added value, the policy that the federal center has been pursuing for more than 10 years, the forest complex of the region retains its raw materials orientation. The main product of wood processing – sawn timber, the volume of which it was managed to increase over the past ten years – is also a product of low processing, a semi-finished product, which Chinese woodworking enterprises turn into the final product.

Such a close link determines the dependence of demand for forest products and their prices on a single consumer, making the financial and economic situation of enterprises unstable. The fall in timber products prices in the Chinese market in 2012–2014, which negatively affected the already unstable financial and economic indicators of the forest complex of the Far East, confirms this thesis.

Investment cooperation between the Far East and China in the use of forest resources in recent years has begun to move gradually from the stage of intentions to the stage of real investment. This was facilitated by the creation of new forms of state policy for the development of the Far East. So far, these investments are sporadic and they are carried out in the projects with a high share of state support. A real example is the accession of the Russia-China Investment Fund[18] in the share capital of RFP Group, the largest timber company in the Far East. The involvement of a large Chinese company in the project guaranteed sales and possible preferences in comparison with other suppliers to the Chinese market[19]. It should be noted that attracting Chinese investments was facilitated by the fact that RFP Group enjoys many types of state support.

The mineral resource complex of the Far East is also becoming an area in which Russian-Chinese cooperation is intensifying. Already in the early 2000s, it was clear that such cooperation had an objective basis and was supported by certain institutional solutions, especially on the part of China. It was during

[17] Foreign trade of the Far East. Far Eastern Customs Administration of the Federal Customs Service of Russia. 2017. Available at: http://dvtu.customs.ru/index.php (accessed: 30.11.2017).

[18] The Russia-China Investment Fund was created by the Russian Direct Investment Fund and China Investment Corporation (CIC).

[19] RFP Group. Website of the Russian Direct Investment Fund. Available at: https://rdif.ru/Portfolio/5/ (accessed: 14.12.2017).

that period, in order to provide its economy with natural resources, China adopted a "borderless business" strategy, according to which it prefers to deal directly with the sources of raw materials rather than rely on the world market. Chinese companies were allowed to invest directly in the development of foreign producers in order to ensure the supply of necessary raw materials. At the same time, more than 50% of Chinese foreign investments were made in the mining industry of different countries. In the context of the implementation of such a policy, on the one hand, and the commodity nature of the development of the mineral sector of the Far East, on the other hand, China was seen as the most active partner in integration interactions in this sector of the Far East [24].

To date, in the mineral sector of the Far East, there are several joint Russian-Chinese projects at different stages of their implementation (from intentions to implementation) [10, 15, 16]. The ongoing projects include the participation of LLC Mining company Tonhua Mingbang (China) in the long-term program (2012–2021) of geological exploration of mineral resources in the Magadan Oblast (with total cost about three billion rubles) and the construction of Kimkano-Sutarsky mining and processing plant in the Jewish Autonomous Oblast.

The last project can be considered as an example of implementation of a new stage of China's mineral policy, the targets of which have undergone some significant changes[20]. In fact, the new models of cooperation recommended by the Directive document of the State Council of China, such as "a contract for the construction of an object + funding + operation", in the case of the development of iron ore deposits in the Jewish Autonomous Oblast, are already being tested[21].

If we evaluate the overall conditions for entering the mineral sector, the Chinese consider the following ones to be ideal: "obtaining the assets in full ownership or possessing at least 51%; ensuring the rights to the full or at least a 50% export of raw materials for further processing in their territory; manning of Russian-Chinese enterprises by Chinese labor force; using Chinese machinery and mining equipment in the extraction process"[22].

This approach was demonstrated, for example, during the negotiations in 2015 on the development of the Natalka Deposit on the Kolyma (with the reserves of 16 million ounces of gold). The Chinese side – China Gold company – presented itself as "a strategic player looking for control in the capital and in management". After that, the negotiations on the project went no further[23]. The key tasks in China's modern mineral policy are export of Chinese technologies and equipment for exploration and mining, creation of the relevant production facilities and zones abroad.

The mineral sector of the Far East is becoming an increasingly important platform for Russian-Chinese cooperation. Thus, in 2017, the Far East and Baikal Region Development Fund (FEDF) and the private Chinese holding Metropoly signed memorandums on the creation of two investment funds – for investing in mining, and for investing in infrastructure and construction. The target amount of the funds in 2017 will be one billion US dollars each. The share of FEDF

[20] One of the key documents defining the new tasks is the Directive of the State Council of May 16, 2015 "Guidelines of the State Council on the promotion of cooperation with foreign countries in the field of production capacity and production of equipment". Available at: http://ru.chhimg.com/article/27004. Issued May 18, 2015. (accessed: 05.04.2016).

[21] These issues are considered in detail in [10].

[22] "An Expert: we hope that the pit of 2014 in the gold market will be replaced by the bull of 2015". September 9, 2014. Available at: https://www.1prime.ru/experts/20141209/797619443-print.html. (accessed: 05.04.2016.)

[23] Dzumaylo A. "Russian platinum" with a Chinese accent. *Newspaper "Kommersant",* 2017, no. 146, August 11, p. 7. Available at: https://www.kommersant.ru/doc/3380368 (accessed: 11.08.2017).

is 10%, of partners from Asia – up to 80%, Russian investors are going to invest about 10%. Potential investment objects include 15 projects in gold mining with resources of 1.5 thousand tons of gold, two largest copper and gold projects of the Far East, and a number of other mineral projects[24].

All these examples show that Russian-Chinese cooperation in the natural resource sector in the Far East is "gaining momentum". And the question of what such cooperation brings – problems or opportunities, has not ceased to be relevant.

Discussion of the results

The study of the impact of new factors in the development of the Far East on the natural resource sectors of the region, of course, raises several discussion issues.

First of all, it is important to assess the consequences of the use of new instruments of state support in the Far East – both for the economic agents themselves operating in the natural resource sectors, and for the economy of the region.

Considering the use of an industry tool in the form of quotas for the export of raw wood from the Far East at reduced customs duties, it should be understood that the easing of the customs regime will extend mainly to large companies that have either already created or are in the stage of completing the creation of processing capacities. Small and medium-sized enterprises focused on the export of timber are unlikely to be able to take advantage of this privilege, so when restrictive duties are imposed, they will have to redirect the flow of wood to domestic consumers or leave the market. But will the processing production capacities be established in the Far Eastern Federal District in quantities equivalent to the harvested timber? A positive answer is possible if a project for construction of a pulp and paper mill will be implemented in the region; the mill will require about five mln m^3 of wood raw material, and this issue remains open.

Such regional tools of the new model of the Far East economy development (preferences in the framework of TAD and FPV, investment projects) are also used skillfully by large companies, which, as a rule, already have preferences from the government. For example, the forestry holding company RFP Group actively cooperates with federal and regional authorities in an effort to participate in all of the developed strategic documents of sectoral and territorial development. The investment project implemented by the company already has various federal privileges and receives additional preferences in the framework of TAD. And this occurs not only in the forest complex.

The question arises: what is the impact of all these preferences? Are there guarantees that the projects will be implemented by companies, and what will the people and the economy of the Far East get from their implementation? For example, in the framework of subsidies for timber enterprises of the Far East, almost two billion rubles[25] was paid in 2016 from the federal budget, while the amount of tax payments received in the consolidated budget of the Russian Federation in the same year amounted to only one billion rubles[26]. So far, the questions remain open.

Similar questions arise with regard to the mineral resource complex. In our view, the contradictory situation of direct budget support to mineral projects with the declared goal of abandoning the commodity economy is due to the application of assessment criteria and

[24] Metalinfo.ru. 2017. No. 2134211. March 31. Available at: http://www.dalvest.polpred.com/?cnt=195&fo=7%3Fcnt%3D79&ns=1&sector=5&page=2. (accessed 16.08.2017).

[25] Report on the goals and objectives of the Ministry of Industry and Trade for the year 2017 and the main performance results for the year 2016.Available at: http://minpromtorg.gov.ru (accessed: 02.08.2017).

[26] Data on the forms of statistical tax reporting for 2016. Federal Tax Service. Available at: https://www.nalog.ru/rn77/related_activities/statistics_and_analytics/forms/ (accessed: 01.12.2017).

indicators chosen by the management elite. Focusing on a non-measurable criterion of "compliance with the goals of strategic documents" and on a measurable indicator "the ratio of private investment to budget funds" will ensure the "victory" of resource projects (especially capital-intensive mineral resources) in the struggle for public funds for a long time.

It seems that there were certain developments in the logic of "improving" the tools to support investment projects that are not part of TAD and FPV, through "liberalization" and simplification of approaches to preferential treatment of regional investment projects. It is established that "... a fundamentally new model is introduced: the investor receives a benefit in the declarative order, after reaching a certain level of investment in the project, the benefit emerges upon investment by giving a notice. Thus, the law is able to increase the number of participants of regional investment projects"[27]. In fact, the "increase in the number of participants" becomes an effectiveness criterion for preferential treatment. But the incentives for expanded reproduction of small and medium business and for the development of regions, in our opinion, are only decreasing. The expectations of "tomorrow's happiness" and today's losses of budgets in the regions with mineral-raw-material specialization are already part of the conflict.

The "new model" of the Far East development formed at the federal level and the institutional decisions taken in this regard have created a situation when definite action is required at the regional level of government. The established institutions and mechanisms have been "launched", and the economic systems of the territories are beginning to produce real results based on the decisions taken at the federal level. The urgent task is to "catch" and measure all the effects (positive and negative) from the implementation of federal institutional solutions and tools of the "new model" of development of the Far East so as to apply the results to the economy of specific regions (on the example of resource projects).

The main scientific problem is at the intersection of several research areas, such as assessing the following aspects: governmental policy effectiveness, the role of natural resources in economic development, system-wide effects of resource projects and their localization at the regional level, "institutional externalities" and their internalization for different levels of public administration.

As for the "Chinese factor" in the development of the natural resource industries of the Far East, we can say that the proximity to China, on the one hand, allowed the natural resource industries to survive during the crisis by exporting their products, but, on the other hand, it also supports their raw materials orientation. For example, currently the Far East lacks the capacities for the production of fish products of deep processing, so the export of frozen fish to China is an optimal solution for the use of extracted resources in the current situation. The problem consists in the necessity to reduce raw material dependence on the Chinese consumer; the solution requires investing the money earned from export of raw resources in the own processing rather than in further expansion of the resource base, the available resources of which are close to depletion in the natural resource sectors of the Far Eastern Federal District [3].

Exporting raw materials instead of exporting the products of their processing leads to lower rates of economic growth, and this is a common problem for developing countries rich in natural resources (the so-called Dutch disease [7]). Russia and especially the Far East, with its geographical proximity to China, the world's largest consumer of basic raw materials, are

[27] New tax incentives were approved for investors in the Far East. Available at: https://www.newsvl.ru/far_east/2016/05/24/147716/ (accessed: 13.12.2017).

constantly tempted to receive "easy" money from the sales of available natural resources. But we must bear in mind that Russia's resource-based economy is too susceptible to changes in foreign economic and foreign policy factors[28]. Therefore, it seems that there is no alternative to the diversification of production of natural resource industries in the region.

As for the "balancing" of gains and losses of Russian-Chinese cooperation, such issues, only at the country level, were raised in a new World Bank report "A Rebalancing China and Resurging India: How Will the Pendulum Swing for Russia?" According to experts, "the likely changes in China's economy...will bring problems rather than opportunities for Russia". At the same time, at the national level (to form GDP), the problems will be much more important than at the level of households: "The decline in demand for raw materials in China could indirectly lead to a sharp decline in well-being and reduce the savings of Russian households throughout the country". The study indicated a positive opportunity of significant increase in foreign direct investment: "...It is especially true for the regions of the Russian Far East"[29]. But is it the raw materials sectors that should receive Chinese investments in the Russian Far East? Studies [25] show that, despite their importance in the regional economy, resource-based industries create a small number of "paths" and links that diversify and "fasten" the regional economy.

The research presented in the article addresses the scientific problem of assessing the positive and negative effects of implementation of institutional tools of state support for the development of resource-based regions, which determines its contribution to the development of theoretical and applied science.

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Evaluation of Water Bioresources Management Efficiency in Domestic Fishing Industry

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Abstract. Efficient use of natural resources is an integral part of sustainable development. Resource management efficiency criteria should cover all components of sustainable development: economic, environmental and social. The purpose for the study is to assess the possibility of applying tools for measuring natural resources management efficiency in relation to water biological resources. The most developed are methodological approaches to assessing the economic efficiency of resource management. Despite the importance of environmental assessment and the availability of the methodological framework, there still remain some gaps in data availability for analyzing the impact of the fishing industry on the environment. The specific features of natural resources extraction and processing are particularly evident in indicators of environmental efficiency of resource saving. The paper substantiates the importance of taking into account emissions of water bioresources, unreported fishing, technological losses in assessing water bioresources management efficiency. We calculated indicators characterizing economic efficiency of water bioresources management in Russia in 2010–2015: material efficiency, fuel efficiency, and resource efficiency. The increase in material and fuel efficiency indicates an increase in the economic efficiency of material cost in the fishing industry. The growth in resource efficiency was significantly less than the growth in cost indicators: the average growth rate was about 2 percent in six years. It is proposed to evaluate social efficiency taking into account the interests of both industry workers and consumers of fish and fish products. The obtained estimates of social efficiency indicate the redistribution of effect from consumers to producers, rather than increased efficiency. As a result of

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assessing the performance of indicators of water bioresources usage, the effect of resource decoupling in the fishing industry has not been revealed. The existing gaps in the availability of statistics on the impact of fishing on the environment impede full application of the impact decoupling method. In order to reveal the impact decoupling, is proposed to use the indicator of trawling time as an indirect indicator of environmental impact on the example of pollock fishery. The article focuses on information support of environmental, economic and social efficiency assessment of resource use in the fishing industry. The applied methods include quantitative description and data analysis: calculation of absolute and relative indicators, time series construction, correlation analysis, and comparative analysis.

Key words: water bioresources, fishing industry, efficiency, resource efficiency, eco-efficiency, decoupling.

Introduction

The issue of resource saving can currently be considered global. The WWF Living Planet Report 2016 notes that humanity began to consume 1.6 times more than our planet is able to sustainably reproduce [1]. A 58% decline in the global Living Planet Index (LPI) during 1970–2012 is a matter of great concern. During this period, LPI for freshwater species decreased by 81%, for marine species – by 36%. One of the main reasons for going beyond planetary boundaries is production of food on a scale leading to habitat degradation and overexploitation of natural resources, including: overfishing of water bioresources (WBR), which undermines the foundations of sustainable development.

The studies related to the issue of resource friendliness, primarily natural, or primary, creating the framework for life are carried out most often in the context of the concept of "sustainable development". At the same time, at all levels of administration, the transition of economic systems to sustainable development is directly related to resource saving: rising prosperity should be provided by fewer amounts of resources used and by reducing the impact on the environment.

Resource saving should be seen as a tool for ensuring the economic future of the society, as well as its environmental and social well-being. This approach has already been adopted by several international organizations. For example, the international Resource Efficient and Cleaner Production (RECP) Program aims to improve resource efficiency and reduce risks to human beings and the environment [2]. The three main areas of the program are consistent with the triad of sustainable development goals: economic production efficiency through rational use of natural resources; environmental management which involves minimizing the impact on the environment and nature, prevention of waste and pollutant emissions; human development through minimizing the risks to people and communities from enterprise activities.

In Russia, resource saving is also included in the list of strategic development goals [3, 4]. The list of main goals of the state environmental policy includes measures to reduce pollution from emissions, dumps and wastes, as well as reduce the share of energy and resource intensity of products and services. The goal is to ensure sustainable use of natural resources, involving renewable resources, such as WBR, primarily their sustainable use [5, 6].

Water bioresources play an important role in ensuring the country's food security: fish proteins comprise 10% in the overall balance of animal protein consumption, in the meat and fish consumption balance – about 25% [7].

The well-being of many inhabitants of coastal Russian territories, where fishing and fish processing enterprises are often settlement- and city-forming, depends on the efficiency of using WBR. In many areas of the Far East and the Far North production of WBR remains a major source of live support, particularly for indigenous minorities. Accordingly, rational use of WBR should be related to strategic goals of sustainable development of Russia's fishing industry.

To study the possibility of using theoretically justified tools for assessing the effectiveness of using WBR the following objectives were set: review the existing approaches to assessing the use of natural resources in general and to WBR; identify criteria for economic, social and environmental efficiency; quantify the indicators of performance; summarize the obtained results and identify the possibility of using decoupling in assessing the resource efficiency in the fishing industries.

Research methods and methodology

Considering the issues of resource saving at different management levels and for resources different in nature and type, the authors interpret the nature and content of the category "resource saving" in different ways [8, 9]. However, the researchers note that resource saving can not be considered only as saving raw materials. It is important to take into account their rational use – the use of resources which ensures the socio-economic development and reduces the burden on the natural environment, which, in turn, improves the quality of the natural environment as a human habitat [10].

Based on the concept of sustainable development we believe that the assessment of natural resource management, in addition to the economic and environmental aspects mentioned above, should take into account the social component of resource use. All these aspects cannot be covered by a single indicator; it is necessary to establish a system of indicators reflecting the triad of sustainable development.

Resource productivity as an integrated quantitative assessment of the economy at the international [11] and regional [12, 13] level is widely used in the scientific community. In the case of natural resources, their use efficiency and productivity are often used as synonyms. In the most general terms it is represented as the ratio of forward resource flows to backward resource flows of the economic system [14] or the correlation of the result with the costs providing it [15]. The indicators of resource efficiency calculated as the ratio of the used resources to GDP, are often called direct, other indicators indirectly reflect the results of resource saving [16].

Resource productivity can be calculated several ways. The first one is by using the performance index showing the amount of product's added value per one unit mass of resource input. The second – technical efficiency reflecting the ratio of production volume to the amount of used resources (both indicators are measured in real terms). The third – economic efficiency, i.e. the ratio of the cost of "inputs" to the cost of used forward resources in the production system. The third way of calculating resource productivity is often used as a synonym to material efficiency.

The integrating indicator of economic efficiency of using material resources including natural resources is production material efficiency. However, the indicator of material efficiency has a number of disadvantages. First, it does not take into account resource wastes and losses at different flow stages (from extraction to consuming). Second, the rate of material efficiency may change under the

influence of factors which are indirectly related to resource saving activities, for example, as a result of price fluctuations. Third, the most important drawback concerns the loss of the basic principle of determining economic efficiency – the comparability of the result with the costs which cause this result.

According to L.L. Kamenik [9], in order to eliminate these drawbacks it is possible to use the indicator of useful consumption of material resources: the numerator indicates the cost of useful resource consumption, the denominator – the cost of all used resources. This approach makes it possible to move from material costs efficiency to material resource efficiency.

Despite the obvious advantages of the indicator of useful consumption compared to material consumption, it has its disadvantages. First, the use of such an indicator requires appropriate accounting at all levels of administration. Second, complex and heterogeneous resources like WBR make assessment of applied resources even more difficult. Thus, if raw fish is processed some of its parts – trunk, hard roe, milt, and liver – have different cost many times higher than the cost of raw fish. It is quite possible that comparative efficiency of salmonid fillet production may be less than that of production of granular caviar due to higher consumption value of caviar. The paradox of assessment stems from the features of salmonids: the price of ungutted fish of several times less than the price of caviar inside.

Recognizing the identified drawbacks of the indicator of material efficiency and, accordingly, its aggregate indicators such as raw materials efficiency and fuel efficiency, we note that amid current domestic system of cost and result accounting it remains almost the only cost indicator assessing the economic efficiency of resource management.

To assess the efficiency of using WBR at the meso level it is necessary to use in addition to material efficiency which still reflects cost-effectiveness, the indicator of resource efficiency defined as the ratio of resources produced to gross value added (GVA) in comparable prices.

In addition, as noted by A.M. Vasil'ev, it is the growth of value added per ton of extracted bioresources that most fully reflects their rational use [16].

In many foreign methodologies, the role of key indicator of resource efficiency belongs to resource productivity is estimated as the ratio of economic result (GDP – *Gross Domestic Product*) to domestic material consumption (DMC). The use of this indicator as a key one has many drawbacks; according to experts, it is "not perfect, but practical" [17]. Its practicality consists not only in providing reliable long-term statistics, but also in the opportunity to visually reflect the effect of decoupling in the economy.

The concept of decoupling, describing the development where economic growth takes place without declining environmental performance, is based on the concept of eco-efficient economic growth. The term "eco-efficiency" was for the first time used in 1992 to characterize economic growth achieved by providing competitive goods and services which meet human needs and ensure the required quality of life by gradually reducing the impact on the environment and reducing the intensity of resource use throughout the whole life cycle of goods/services [19]. As a rule, eco-efficiency is quantified by the ratio of value added to the extent of environmental damage. To date, numerous variations of this approach have been proposed [20].

The practical and theoretical significance of eco-efficiency lies in the ability of this indicator

to combine productivity by two out of three axes of sustainable development: the environment and the economy. According to some researchers [21], despite the existing problems in calculating both environmental impact indicators and economic results, eco-efficiency can be a useful tool for entrepreneurs and politicians. The concept of decoupling is widely used by domestic researchers for assessing the environmental and economic efficiency of the regional economy [22, 23, 24].

When it comes to evaluating decoupling, *resource decoupling* and *impact decoupling* are generally distinguished [25]. In the first case one could speak of "dematerialization" of economy, increase in resource productivity, i.e. declining rates of primary resource use with the same economic result: larger volume of added value falls on a unit of the used resources. The impact decoupling reflects the growth of eco-efficiency and involves an increase in production with reducing negative impact on the environment with the extraction of natural resources.

Domestic scientists interpret the decoupling effect in indicators of environmental capacity, which reflect the costs of natural resources and pollution per unit of final result, usually GDP [26]. The first form of the indicators of environmental capacity – the costs of natural resources per unit of final output – reflects the efficiency of using natural resources at all stages of production process and corresponds to resource decoupling. The second form – specific values of pollution per unit of final product – demonstrates pollutant emission intensity, which corresponds to the decoupling effect.

Negative environmental impacts in the fishing industry arise from the destruction of the seabed during trawling, pollution of the water area with fuel. Poaching causes especially serious damage to WBR. Illegal fishing can reach 11–26 million tons per year, which is 12–28% of the world's annual catch [27]. Another global problem is the loss of fish at the field stage. According to experts of the Food and Agriculture Organization (FAO), 27% of unloaded fish is lost due to losses or spoilage between the stages of unloading and consumption. The third equally important issue concerns discarding of fish – about 8% of catches [28]. The real amount of catches of WBR is much higher than official data.

It is difficult to use the above estimates of WBR losses to analyze the management efficiency since such estimates are of a momentary nature, they often cannot be compared in dynamics due to different calculation methods used by experts. The current statistics of environmental protection at the macro level in our country to date does not cover all types of economic activity. Fishing industries and fish farming are not mentioned in terms of a negative impact on the environment neither by emissions of atmospheric pollutants, nor by waste water discharge, nor by waste generation and discharge.

The existing gaps in the availability of statistics in the fishing industry prevent the full use of the decoupling technique; it is necessary to continue working on the development of indicators. The possible indicators for assessing decoupling are WBR catches and manufacture of fish products compared with to consumption [29]. However, such an approach reflects the resources consumed, rather than the impact on the environment.

Taking into account the fact that the most significant fuel consumption is carried out at the time of the active part – trawling – we present the duration of trawling as a proxy

indicator of environmental damage from pollutant emissions. Based on vessel time budget provided by the sectoral monitoring system (Federal Fishery Agency – FAR) it is possible to determine the duration of trawling as an indicator of the negative impact on the environment: the less hours of trawling providing bigger catch fishing, the better are the fishing results. Accordingly, we suggest using the ratio of the catch amount to the trawling period as an indicator of eco-efficiency. Such an indicator is the closest to the indicators of industrial fishing efficiency in content [30].

The social efficiency of using WBR should take into account both the fishing industry itself and consumption. If the interests of the industry workers are considered, social efficiency can be reflected by the ratio of average wage in the industry to average wage in the country (industry wage lead factor) [31].

Social efficiency can also express the interests of consumers of fish products. With advanced increase in real income over growth, let alone the falling price of fish products, consumers will be able to conditionally receive additional "income" or benefit. In case of equal income and price growth, the index equals unity (no gain, no loss); in case of faster growth of consumer prices consumers "lose". The gain index of consumers of fish products is defined as the ratio of the growth rate of real disposable money income of the population to consumer price index for fish and fish products.

The specific features of extraction and processing of natural resources is particularly evident in the indicators of eco-efficiency of using WBR. Lack of complete and reliable information about the impact of economic activities on the environment seriously affects the accuracy of both environmental (waste efficiency, pollution intensity) and economic indicators (resource efficiency, material efficiency) of efficiency. Therefore, efficient use of WBR will be overestimated distorting the real trend of resource exploitation.

Discussion

The calculation of aggregated indicators of efficiency of using WBR has been carried out during 2010–2015.The choice of the time period is due to both availability of recent data and the need to take into account the comparability of individual indicators due to changes in the methodology of statistical accounting. The most significant for the research is the adjustment of data on the extraction of fishery products into line with the all-Russian classification of products by activity in 2010.

The economic efficiency of using material resources in domestic fisheries (*Tab.*) despite a certain slowdown in 2011–2012, tends to increase. In 2015, material efficiency was 31% higher than in 2010, both revenue and cost increased. However, revenue growth rates were ahead of the cost and material expenditures growth rates (with the exception of 2011 and 2012). This has affected the positive dynamics of material efficiency. The fuel efficiency

Performance of material efficiency and fuel efficiency in the fishing industry in Russia

Indicator	2010	2011	2012	2013	2014	2015
Material efficiency	2.79	2.61	2.44	2.60	2.92	3.65
Fuel efficiency	5.97	5.60	5.33	5.88	7.03	10.46
Source: calculated by the author according to the Federal State Statistics Service of the Russian Federation.						

increased especially noticeably – almost 2 times to the level of 2010. With the overall growth in material expenditures (by 3% during 6 years), the share of fuel expenditures in the cost structure decreased by 5%. The growth rate of fuel expenditures significantly lagged behind the growth rate, the cost, and material expenditures, which in general influenced the positive performance of fuel efficiency.

Assessment of the resource efficiency of WBR demonstrating how much gross value added is created using one unit of resource is shown in *Figure 1*. The performance of resource efficiency has a positive trend. In 2015, each harvested kilogram of WBR has brought the national fisheries 26 rubles of value added. On average, the annual growth rate of resource efficiency for the period under review was not more than 2%.

To identify the effect of resource decoupling in the fishing industry in Russia the following indicators are used:

• GVA created in fisheries reflecting the economic result (data provided to the prices of 2010);

• catch of WBR characterizing the used resources.

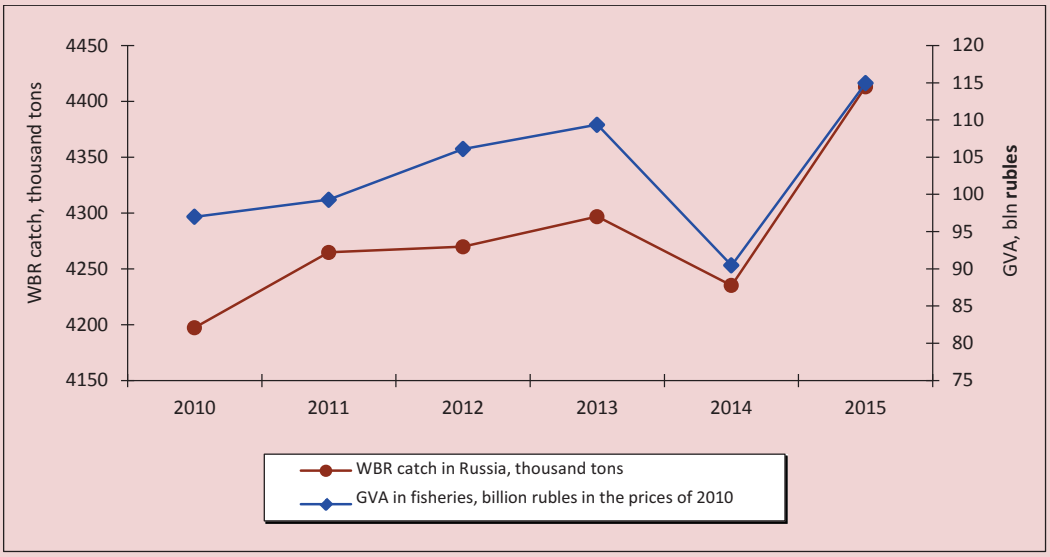
As can be seen in *Figure 2*, synchronous change in the economic result and WBR catch does not confirm resource decoupling in fisheries. The coefficient of correlation between these indicators is 0.84, which indicates a strong positive relations between WBR and production volumes.

The fishing industry demonstrates fluctuating trends in growth rates of WBR catch and GVA performance (*Fig. 3*), growth rates of WR catch exceed GVA growth rates in 2011 and 2014. Thus, no absolute resource decoupling has been revealed during the period under review. In some years – 2012, 2013, 2015 – relative resource decoupling is observed. Water bioresources detected during these periods are used most efficiently (see Fig. 1).

Figure 1. Performance of resource efficiency in the fishing industry in Russia, rubles/kg

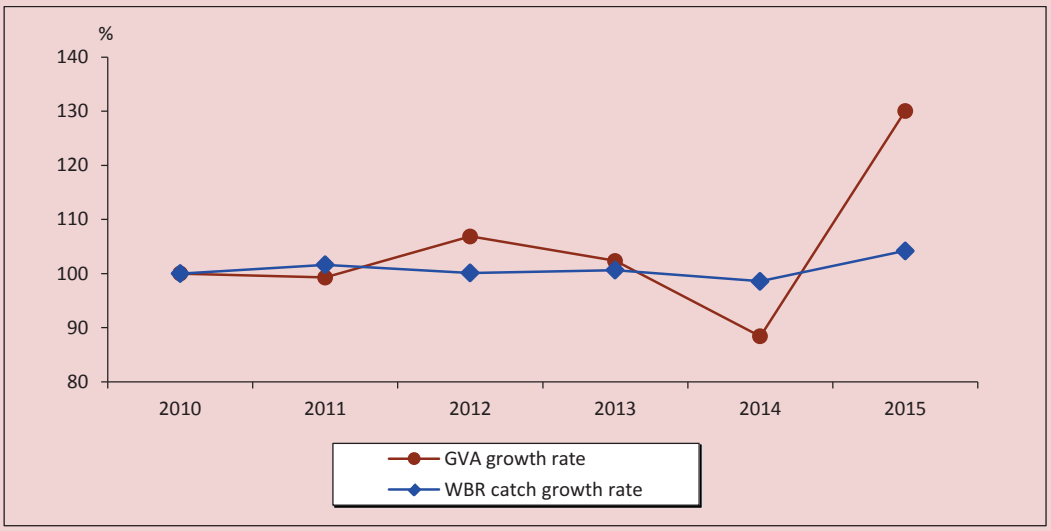
Source: calculated by the author based on: official website of the Federal State Statistics Service of the Russian Federation. Available at: http://www.gks.ru; FAR official website. Available at: http://fish.gov.ru

Figure 2. Performance of WBR catch and performance of GVA in fisheries in Russia, thousand tons



Source: compiled from: official website of the Federal State Statistics Service of the Russian Federation. Available at: http://www.gks.ru; FAR official website. Available at: http://fish.gov.ru

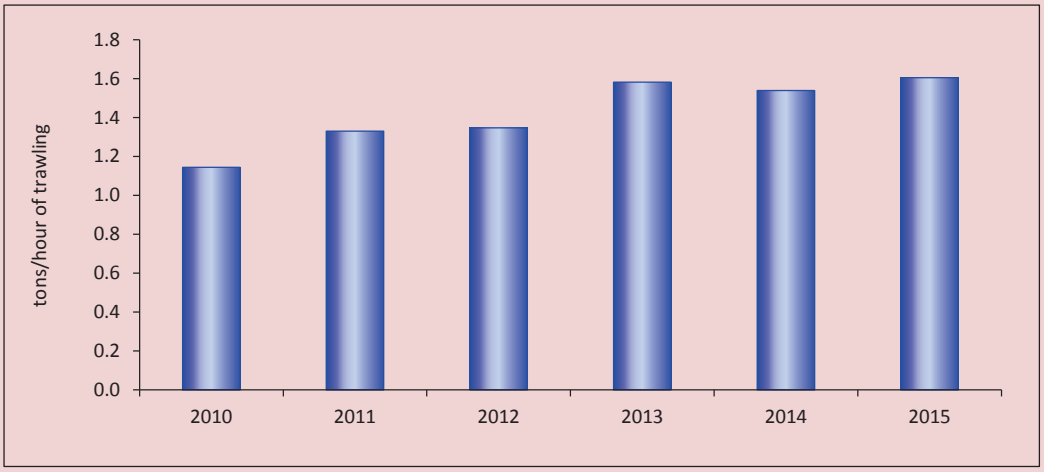
Figure 3. Performance of GVA growth rate in fishing and WBR catch in Russia, %



Source: calculated by the author from: official website of the Federal State Statistics Service of the Russian Federation. Available at: http://www.gks.ru; FAR official website. Available at: http://fish.gov.ru

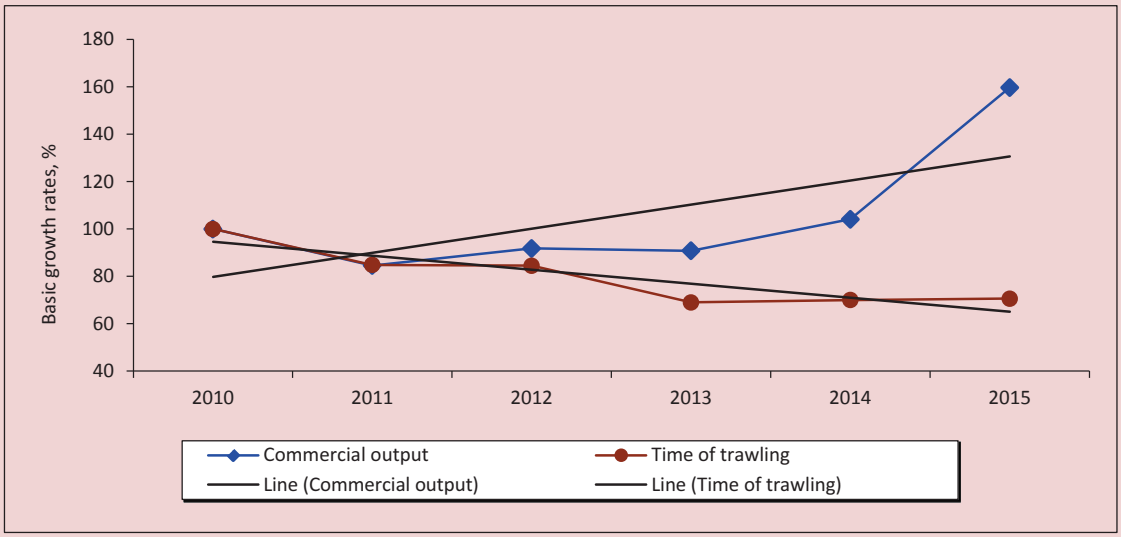
In order to study of eco-efficiency determined by the WBR catch produced per hour of trawling we use data on pollock fishing. It is pollock that for a long time has been the most significant object of fishing in Russia: its share in the total WBR catch is about 40%. As can be seen in *Figure 4*, over the past six years the eco-efficiency of pollock fishing has increased. In 2010, as a result of one hour of trawling 1.14 tons of pollock was extracted;

Figure 4. Pollock fishing eco-efficiency



Source: calculated by the author from: data of the sectoral monitoring system Federal Agency for Fisheries of the Russian Federation; FAR official website. Available at: http://fish.gov.ru

Figure 5. Ratio of growth rates of marketable pollock products to time spent on pollock trawling



Source: calculated by the author from: data of the sectoral monitoring system Federal Agency for Fisheries of the Russian Federation; official website of the Corporate Information Disclosure Center. Available at: www.e-disclosure.ru

by 2015, the catch increased to 1.6 tons. The growing eco-efficiency is provided mainly by the reduction in the absolute expression of the time of trawling.

The ratio of dynamics of basic growth rate (to the level of 2010) of the cost of marketable pollock products and the time spent on trawling (*Fig. 5*) help notice the effect of relative impact decoupling on pollock fishing. Since 2011, the growth of the economic result has been accompanied by the reduction in the time of trawling.

Assessment of indicators of social performance using indices (*Fig. 6*) provides both dynamic and normative analysis. If the index value reaches or exceeds unity (in the figure unity – "threshold level") we can talk about effective use of WBR in terms of the social component of industry development.

The indicator of potential benefit of fish products customers is beyond the threshold value. This is confirmed by overperforming growth rates of prices for fish products compared to the population's real income, which may also affect consumption which declined significantly in 2015. In that year, the wage lead factor in fisheries had the highest values. Note that growth rates of wages in fisheries exceed growth rates of WBR. At the same time, the production profile has changed significantly, which suggests the redistribution of the effect from consumers to producers through the price mechanism, rather than an increase in social efficiency.

Conclusion

It is advisable to analyze the performance of indicators of efficient use of WBR in domestic fisheries from the standpoint of economic, environmental and social components since 2010 due to limited data comparability. It is difficult to talk about trends over such a short period of time. However, the indicator of cost-effectiveness (material efficiency and fuel efficiency) demonstrate a fairly steady growth. The performance of other indicators is unstable; even if there is an increase as in resource efficiency, it is extremely insignificant. At the same time, a high level of correlation between

Figure 6. Indicator performance of social efficiency of using WBR in fishery in Russia

Source: calculated by the author from: official website of the Federal State Statistics Service of the Russian Federation. Available at: http://www.gks.ru

WBR and the amount of catch indicates teh predominance of extensive growth factors.

In order to assess resource decoupling we used generally accepted methods of research depending on the volume of WBR production and created GVA. The research results indicate that the absolute resource decoupling in fisheries is not revealed but in some periods it is possible to note relative resource decoupling.

The full use of decoupling as a tool for assessing environmental and economic efficiency in fisheries, as opposed to other industries, is limited by the availability of statistics. We propose an indicator of the trawling duration as a proxy indicator of the environmental impact. Analysis of the relation between the time of trawling and the cost of marketable pollock products in the case of pollock fishing helps draw an indirect conclusion about the growth of eco-efficiency of the fishery and identify the relative impact decoupling. We believe that fuel consumption in natural terms along with the cost assessment of fuel costs can be considered as one of the most promising indicators of environmental impact in fisheries.

It is important to bridge the gap between the theoretically justified indicators of eco-efficiency and the opportunities of practical calculation based on the existing statistical framework. In order to ensure effective management of resource use in fisheries, it is necessary to continue to improve the methodology for assessing the use of WBR.

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Scientific and Technological Potential of the Territories of Russia and China: Assessment and Development Prospects*

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Abstract. Russia and China are among the world's leading powers, and they exert significant impact on the world economy and the world's largest markets. In addition, these countries are global scientific centers and occupy leading positions in several branches of science. The intensification of cooperation between Russia and China in recent years is a reason for a growth of interest in studying their scientific and technological potential and finding possible points of interaction in this direction. The problems of socio-economic and scientific and technological development of both countries have much in common, and this fact also increases the interest in its comparative evaluation and the study of the experience of overcoming current problems. In this regard, the goal of the study is to assess the scientific and technological potential and identify areas of its development in Russia and China. Proceeding from the

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goal, the article studies theoretical aspects of scientific and technological development of territories and provides our own interpretation of the concept "scientific and technological potential" based on the combined option that unites the resource-based and effective approaches to this economic category. We develop a technique for comparative assessment of scientific and technological development of territories of two (and more) countries, allowing the regions to be ranked according to the level of scientific and technological potential on the basis of an integral index providing a comprehensive assessment of territories' potential. We also use the technique to assess the drivers of scientific and technological development of territories of the two countries and reveal the problems typical of both Russia and China. We present the results of systematization of the experience of their constituent entities leading in scientific and technological development; this experience proves that the government engages in systematic work to support the development of science and technology. In conclusion we emphasize once again the presence of a significant differentiation of scientific and technological development of regions in the countries under consideration. At the next stages of the research, we plan to develop a system of measures for all their subjects grouped according to the level of scientific and technological development.

Key words: scientific and technological potential, assessment technique, problems, differentiation, territories, development directions.

Introduction

Ensuring economic growth and improving the competitiveness of the country's economy on a global scale is impossible without developing scientific and technological potential. Only states stimulating and actively implementing scientific and technical activities become leaders in hi-tech branches of the national economy: it is reflected in the growing social and economic well-being of their population [1; 2; 3]. It should be noted that the increase in the main performance indicators of economic activity can be achieved through the existing scientific and technological reserves and spare resources of accumulated potential. Russia and China is not an exception in this case. Being in the list of actively developing countries, they set scientific and technological development as strategic priorities. This issue is particularly relevant amid the need to achieve rapid socio-economic development.

The relations between Russia and China are of vital importance in the foreign policy of both countries. In modern conditions, they are becoming key partners both economically and geopolitically. In recent years, they have concluded numerous cooperation agreements in various fields including science, education and technology. At the same time, the steps taken in this direction are still fragmented and not systematic. One of the reasons for this is that there are differences in approaches to the management and promotion of scientific and technological activities, in public policies, as well as in the level of technological development and their resource base.

To determine possible growth zones and arrange interaction between the two countries in science and technology it is necessary to assess the existing conditions and their current scientific and technological potential. In this regard, the purpose for the study is to assess the scientific and technological potential and identify areas in its development in Russia and China. To achieve the goal it is necessary to address the following objectives: study the theoretical aspects of scientific and technological development of territories;

identify factors affecting scientific and technological development (STD); develop a methodology for comparative assessment of the scientific and technological potential of the territories of two (or more) countries, test it based on data from Russia and China; study the experience of the leading Russia's and China's subjects in the field of scientific and technological development; develop a list of tools and measures to activate it in the lagging territories of both countries.

The research novelty of the work is grounded in compelling comparative evaluation of scientific and technological potential of Russia's and China's territories based on the developed author's method, as well as in the development of science-based system of tools and measures for enhancing the processes of scientific and technological development of lagging areas in these countries.

Research relevance

Modern economic theories are divided into three groups: theories of exogenous and endogenous growth, a mixed approach.

Exogenous development of territories is carried out with strong external interference of public authorities including through state (federal) funding. This type of regional development is based on attracting capital (investment, subsidies, etc.), business from other regions and countries and on opening new businesses.

The endogenous approach to economic development of territories focused on research, formation and realization of regional strategic potential, to a greater extent corresponds to the conditions of new global risks and opportunities.

The mixed approach has features of both first and second theory. With this approach the state creates conditions for intensive development of leading territories, which ensures additional economic effect and provides the state with economic, scientific and technological resources, including for their re-distribution to their lagging territories. At the same time, based on main concepts of the endogenous theories of economic growth, federal and regional authorities and management create conditions for the development of territories using internal potential and growth reserves in order to equalize the level of socio-economic development, which remains a priority goal. As can be noted, this applies not only to the economic, but also to the scientific and technological potential (STP). From our point of view, such an approach is more acceptable since by maintaining the growth poles and the territories serving as the driving forces of economic growth, the state ensures the alignment of interregional imbalances due to internal potential of lagging territories.

Our research [4; 5] helps determine that in modern literature, the scientific and technological potential is considered from the standpoint of two approaches: resource-based and result-based. However, both options are secondary and clarifying in the context of studying the measurement of STP. Therefore it is preferable, in our opinion, to focus on a combined option which combines resource-based and result-based approaches, which makes it possible to reflect both the state of STP and the effectiveness of its implementation. Based on this, the scientific and technological potential should be understood as a set of resources and results of activities in the field of science and technology interconnected and interacting with each other and the external environment in certain organizational and managerial conditions to solve the problems of current and future development of the territory, increase its competitiveness and ensure sustainable economic development.

The development of scientific and technological potential is widely discussed at the highest state level. Thus, the Russian Federation has adopted and in implementing the "Strategy for scientific and technological development of the Russian Federation"; "Development of science and technology", "Economic development and innovation economy" programs were adopted in 2013. China approved "The national strategic plan for innovative development" in 2016, which defines the main objectives of development of science, technology and innovation in the medium and long term.

From the above, it can be concluded that the issues of development of scientific and technological potential, which is becoming a key component of the territories' reproductive potential, is recognized as a necessary prerequisite for intensive economic growth by both public authorities and the scientific community.

Based on the previously studied aspects of the scientific and technological potential of territories it is possible to conduct a detailed analysis of the state, level and efficiency of the scientific and technological potential of individual territories in comparison with others. As part of this, we assess the resources constituting the potential, the results of their application, as well as the structural relations between the components of potential as a whole [5].

At the same time, despite many conducted studies, methodological issues of evaluating STP and the elaboration of valid directions of its development remain an urgent scientific issue. This issue becomes particularly relevant in the context of the development of international relations between Russia and China. Both countries are in the process of developing a developed economy, possess significant potential for economic, scientific and technological growth, having similar trends in the socio-economic development. In addition, facts indicate that scientific and technical cooperation between Russia and China is being established [6] within the framework of cooperation of large integration associations (Shanghai Cooperation Organization (SCO), BRICS, etc.).

Thus, addressing measurement issues and searching for directions in the development of scientific and technological potential are important theoretical and practical research objectives.

Research methods

Our research [5; 7] has helped develop the methodical scheme for conducting comparative analysis of the level of scientific and technological potential of Russia and China. With this scheme regions can be ranked according to the level of STP based on an integrated index which gives a comprehensive assessment of the territories' potential. Conditionally calculations can be divided into the following main stages.

Stage 1. To build an integrated index of scientific and technological potential as a result of preliminary analysis we selected indicators (*Tab. 1*) conditionally divided into 3 vertical and 2 horizontal blocks (a posteriori set of particular criteria).

The "Research and development" block considers indicators of the extent of research and development and the results of development of new technological equipment in the region. The "Staff" block takes into account the features of the existing level of education for the implementation of scientific and technological activities, as well as attention paid to the development of educational activities in the region. The "Technology and innovation" block reflects, on the one hand, the availability

Table 1. Indicators of scientific and technological potential assessment*

Indicator	R&D	Staff	Technology and innovation
Resource-based	Share of domestic cost of R&D in GRP (%), Russia Share of domestic cost of R&D in GRP (%) – China	Cost of education (per 10.000 people, mln. rubles) in consolidated budgets of Russia's constituent entities – Russia Education costs (10,000yuan per 10,000 people) – China	Internal current research and development costs (per 10,000 people, thousand rubles) – Russia Domestic costs of research and development (10 thousand yuan per 10 thousand people) – China
Result-based	Patent applications and issues of patents in Russia (per 100,000 people, units) – Russia Number of patent applications (units/10,000 people) – China	Personnel engaged in R&D (per 10,000 people, people) – Russia Personnel engaged in R&D (people/ 10,000 people) – China	Volume of supplied innovative products (per 10,000 people, mln. rubles) – Russia The volume of shipped new products from industrial enterprises above the established amount (10,000 yuan /10,000 people) – China
* The indicators in monetary terms were converted into equivalent prices and currencies.			

of resources for the development of scientific and technological activities, on the other hand, the main indicators of effective development of methods, processes and tools used in production.

Moreover, these indicators within the framework of the described approach can be grouped by three aspects reflecting relatively separate areas of scientific and technological development and types of scientific, technological and innovation activities, such as:

1) resource-based – includes activities related to basic and applied research;

2) result-based – includes activities related to dissemination of innovation, including sale of high-tech products.

The presented set includes main indicators published annually by state statistics services of the Russian Federation and China in open sources, which increases the reliability of the calculation methods.

Such indicator:

– are characterized by a clear link with the overall level of scientific and technological potential of territories;

– help fully consider the resources and results of scientific, technological and innovation activities;

– are evenly distributed among blocks – components of scientific and technological potential which, according to theoretical provisions, includes educational, scientific, technical, and technological components.

Based on these arguments, such a set of indicators seems to be the most universal. Taking into account the considered interpretations of the scientific and technological potential, it is advisable to preserve the approach whose calculation framework lies in the identification of an integrated indicator of the scientific and technological potential of each region. This is the average value of indices reflecting the previously described individual components (blocks) of potential which, in turn, are the average values of indicators included in them.

Stage 2. The information obtained from official statistics databases should be standardized (reduce to a comparable form suitable for evaluation) according to the following rule:

1) The following formula is applied for the studied indicators which monotonically increase in relation to the resulting indicator, i.e. factor increase (x_j) entails the expansion of the phenomenon under consideration:

$$\widehat{x_{ij}} = \frac{x_{maxj} - x_{ij}}{x_{maxj} - x_{minj}} N, \quad (1)$$

where x_{ij} – the i-th value of the j-th factor,

x_{maxj} and x_{minj} – maximum and minimum j-th factor values,

N – scale factor;

2) The following formula is applied for indicators related to the result of uniform decreasing dependence:

$$\widehat{x_{ij}} = \frac{x_{maxj} - x_{ij}}{x_{maxj} - x_{minj}} N, \quad (2)$$

3) Rare in practice yet possible in theory is the situation where *xj* is linked to the analyzed integrated index of non-uniform dependence, i.e. between maximum and minimum values there is an optimal – $x_{opt j}$, which gives the best quality. In this case, the following formula is applied:

$$\widehat{x_{ij}} = \left(1 - \frac{|x_{ij} - x_{\text{опт}j}|}{max\begin{cases} x_{maxj} - x_{\text{опт}j}, \\ x_{\text{опт}j} - x_{minj} \end{cases}}\right) N, \quad (3)$$

Thus, unification according to the given rules will help proceed to the next stage of the method.

Stage 3. The implementation of the principal component method by values of particular criteria of a posteriori set of indicators. The application of this method is due to the identification of a hypothetical value (scientific and technological potential) corresponding to a much larger number of initial factors. The advantage of the method is that it does not require preliminary grouping of source data, which greatly simplifies the analysis.

Based on the calculated principal components it is possible to build a simpler informative system of scientific and technological potential, estimate the extent of causation between the factors, study the possible changes in the analyzed factors under the influence of the principal components.

The initial set of indicators was divided into 4 groups. Each of them includes indicators with highest absolute values, characterizing the share of the total spread in the category of scientific and technological potential in each separate line. The first group included indicators such as "Internal current research and development costs, thousand rubles/10 thousand people" (50.65%) and "Patent applications and issues of patents in Russia per 100,000 people, units" (49.35%). The second group – "Cost of education in consolidated budgets of Russia's constituent entities, mln. rubles/10,000 people" (42.22%) and "personnel engaged in R&D, people\10,000 people" (57.78%). The third and the fourth group include one indicator: "share of domestic cost of R&D, in % to GRP" and "volume of supplied innovative products, mln. rubles\10,000 people", respectively.

Stage 4. Determination of the weighing factors for criteria from a posteriori set. Weighing factors (w_j) are determined depending on the hyper-parameters selected in factor analysis (using the principal component method) and are calculated based on the covariance matrix of the a posteriori set of unified partial criteria by the formula:

$$w_{el} = \begin{cases} \frac{c_{el}}{\sum_{e=1}^{z} c_{el}}, & \text{if all } c_{el} \text{ are of the same sign,} \\ \frac{c_{el}^2}{\sum_{e=1}^{z} c_{el}^2} & \text{otherwise;} \end{cases} \quad (4)$$

where c_{el} – value of eigenvector of covariance matrix of e factor in l block;

z – number of criteria in l block.

Thus, the weighing factors of each indicator in the overall integrated assessment are as follows: "internal current research and development costs, thousand rubles per 10,000 people" –

11.2%; "cost of education in consolidated budgets of Russia's constituent entities, mln. rubles/10,000 people" – 4.26%; "share of domestic cost of R&D, in % to GRP" – 33.07%; "patent applications and issues of patents in Russia, per 100,000 people, units" – 10.09%; "personnel engaged in R&D, people per 10,000 people" – 5.83%; "volume of supplied innovative products, mln. rubles per 10,000 people" – 34.73%.

Stage 5. Definition of index values for the selected blocks. This procedure is carried out by summing the product of unified criteria included in the block, and their respective weighting factors:

$$y_{il} = \sum_{e=1}^{z} w_{ie(l)} \widehat{x_{ie(l)}} , \quad (5)$$

Stage 6. Construction of a multiplicative integrated indicator of scientific and technological potential of regions based on the assessment of the general variance (average squared deviation of actual values from their arithmetic mean), according to which the final indicator is discovered according to the following formulas:

$$I_i = N + \sum_{l=1}^{k} q_l (y_{il} - N) , \quad (6)$$

$$q_l = \frac{S_l^2}{\sum_{l=1}^{k} S_l^2} , \quad (7)$$

$$S_l^2 = \frac{1}{n} \sum_{i=1}^{n} (y_{il} - \bar{y}_l)^2 , \quad (8)$$

$$\bar{y}_l = \frac{1}{n} \sum_{i=1}^{n} y_{il} , \quad (9)$$

We note that a sufficient number of samples is required to satisfy the requirement of the "law of large numbers". The number of factor values must be greater than or equal to the number of factors multiplied by 10. With the selected a posteriori set, the number of factor observations must be equal to 60 (6 factors). An observation from the statistics point of view is a single perception of any object or phenomenon recorded by the observer. There are observations recorded by time (time series) and by a time interval (cross-sampling). There also are observations which take into account both these conditions (panel data).

We add that the set of indicators under study is calculated, i.e. they are taken as shares or relative values to a particular base. Such an approach helps compare the studied objects more accurately with each other. In addition, it should be noted that forecasting the missing observations must be based on a primary sample, rather than on calculation criteria. This procedure will help avoid unnecessary averaging of the estimates.

The following scale is proposed for the interpretation of the calculation of a multiplicative integrated index of scientific and technological potential (*Tab. 2*). The threshold values of the calculated index range between 0 and 1. Therefore, it is possible to distinguish five levels of scientific and technological potential development.

Research results

The method testing has helped rank Russian and Chinese regions according to their scientific and technological potential development. According to the ranking, in 2011 and 2014, in both countries there were no areas with a high level of STP development, in 3 entities, the level of STP development was above average (Beijing, Shanghai, Tianjin), in 4 entities – average (Jaan, Jiangsu, the Nizhny Novgorod Oblast, Guangdong). Saint Petersburg and Moscow ranked seventh and eighth, respectively. The top twenty included 13 Chinese provinces and 7 Russian regions (*Tab. 3*).

Table 2. Scale of regions' scientific and technological potential level

Index value	Level of STP development
(8; 10]	High
(6; 8]	Above average
(4; 6]	Average
(2; 4]	Below average
[0; 2]	Low

Table 3. Ranking of Russia's and China's territories in 2011, 2014 by level of STP development (top 20)

Territory	2011		2014		Change, 2014–2011	
	Index value	Rank	Index value	Rank	Deviation, %	Change in rank
Beijing	7.89	1	7.72	1	97.79	0
Shanghai	6.81	2	6.76	2	99.22	0
Tianjin	5.45	3	6.40	3	117.47	0
Zhejiang	4.43	5	5.57	4	125.72	1
Jiangsu	4.80	4	5.46	5	113.69	-1
Nizhny Novgorod Oblast	3.66	8	4.24	6	115.65	2
Guangdong	3.49	9	4.06	7	116.11	2
Saint Petersburg	3.69	7	3.60	8	97.81	-1
Moscow	3.89	6	3.28	9	84.38	-3
Shandong	2.92	12	3.24	10	110.97	2
Moscow Oblast.	3.22	10	3.11	11	96.76	-1
Chongqing	2.33	15	2.47	12	105.98	3
Anhui	1.97	21	2.44	13	124.38	8
Hubei	2.04	20	2.39	14	116.89	6
Ulyanovsk Oblast	2.94	11	2.38	15	80.90	-4
Fujian	2.17	18	2.31	16	106.68	2
Kaluga Oblast	2.92	13	2.29	17	78.63	-4
Tomsk Oblast	2.52	14	2.17	18	86.01	-4
Liaoning	2.30	16	2.15	19	93.31	-3
Jiangxi	1.63	26	2.13	20	130.89	6

Source: compiled by the authors using [8, 9, 10, 11, 12, 13, 14].

Thus, analysis of the results indicates that the level of STP development of the territories of China is on average higher than in Russia. At the same time, there are significant imbalances in the development of individual territories in both countries. In addition, the territories of China are characterized by a more active increase in indicator values compared to indicators of 2011.

Chinese provinces demonstrate a more uniform distribution by level of STP development than in Russia, yet more than half of the entities have a low level, in Russia – more than 90% (*Tab. 4*). In China, in 2011–2014, the number of regions with a low level of STP decreased by 10 percentage points, which, despite a slight decrease in the index values of the leading regions, indicates its overall increase. In Russia, however, there is an increase ,yet slight, in the number of regions with a low level of STP. In the context of sub-indices, the situation is similar. The majority of entities in Russia and China have low values in three blocks: "Research and development", "Staff", "Technology". However, in China, unlike Russia, there is a more uniform distribution of entities by block values.

Table 4. Distribution of Russian and Chinese entities by index of scientific and technological potential and its block values in 2011, 2014, %

Index	High		Above average		Average		Below average		Low	
	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014
Russia										
STP index	0	0	0	0	0	1.25	10	7.5	90	91.25
Distribution of entities by STP block										
R&D	0	0	1.25	1.25	1.25	1.25	6.25	5	91.25	92.5
Staff	0	0	1.25	0	2.5	1.25	7.5	12.5	88.75	86.25
Technology	0	0	0	0	1.25	1.25	6.25	5	92.5	93.75
China										
STP index	0	0	6.45	9.68	9.68	9.68	22.58	29.03	61.29	51.61
Distribution of entities by STP block										
R&D	3.23	3.23	9.68	3.23	3.23	12.90	22.58	16.13	61.29	64.52
Staff	0	0	3.23	3.23	6.45	3.23	32.26	16.13	58.06	77.42
Technology	0	0	9.68	12.90	6.45	6.45	25.81	25.81	51.61	54.84
Source: compiled by the authors.										

Table 5. Ranking of Russian and Chinese regions in 2011, 2014 by "Research and development" block (top 20)

Region	2011		2014		Change, 2014–2011	
	Index value	Rank	Index value	Rank	Rank	Index value
Beijing	8.62	1	8.63	1	100.13	0
Moscow	6.94	2	6.29	2	90.62	0
Zhejiang	6.04	5	6.18	3	102.34	2
Shanghai	6.41	4	5.16	4	80.51	0
Jiangsu	6.59	3	5.06	5	76.88	-2
Jiangxi	3.03	11	5.02	6	165.95	5
Saint Petersburg	4.91	6	4.83	7	98.26	-1
Tianjin	4.04	7	4.22	8	104.57	-1
Guangdong	3.87	8	3.77	9	97.50	-1
Nizhny Novgorod Oblast	3.03	12	3.74	10	123.66	2
Moscow Oblast	3.52	9	3.40	11	96.64	-2
Tomsk Oblast	3.06	10	2.59	12	84.80	-2
Shandong	2.59	13	2.33	13	89.83	0
Fujian	2.07	19	2.25	14	108.65	5
Anhui	2.10	17	2.21	15	105.44	2
Kaluga Oblast	2.49	14	2.06	16	82.61	-2
Shaanxi	2.11	16	2.06	17	97.25	-1
Chongqing	1.97	20	1.95	18	98.81	2
Novosibirsk Oblast	1.94	21	1.86	19	96.17	2
Ulyanovsk Oblast	2.37	15	1.81	20	76.59	-5
Source: compiled by the authors.						

According to the block "Research and development" a high level was observed only in Beijing (8.63 in 2014; 8.62 in 2011), the level of STP was "above average" in two entities (including Moscow), in five – "average", in nine – "below average" (*Tab. 5*). It should be noted that in this sub-index out of three the most uniform distribution of constituent entities in Russia and China was observed.

Regarding the sub-index "Staff" the situation is similar (*Tab. 6*). However, here the overall level of potential development is much

Table 6. Ranking of Russian and Chinese regions in 2011, 2014 by "Staff" block (top 20)

Region	2011		2014		Change, 2014–2011	
	Index value	Rank	Index value		Index value	Rank
Beijing	7.08	1	6.63	1	93.74	0
Moscow	6.36	2	6.00	2	94.33	0
Tibet	4.29	5	4.31	3	100.41	2
Saint Petersburg	4.01	6	4.00	4	99.70	2
Tianjin	3.97	7	3.64	5	91.73	2
Shanghai	4.53	3	3.58	6	78.91	-3
Tomsk Oblast	3.78	9	3.57	7	94.56	2
Republic of Tatarstan	2.27	19	3.01	8	132.59	11
Kamchatka Krai	1.59	43	2.89	9	181.58	34
Qinghai	3.82	8	2.59	10	67.95	-2
Moscow Oblast	2.11	21	2.42	11	114.46	10
Xinjiang	2.99	10	2.38	12	79.62	-2
Voronezh Oblast	2.42	15	2.37	13	98.09	2
Ivanovo Oblast	4.51	4	2.27	14	50.33	-10
Shaanxi	2.64	12	2.21	15	83.65	-3
Novosibirsk Oblast	1.74	32	2.15	16	123.69	16
Ulyanovsk Oblast	2.41	16	2.13	17	88.07	-1
Kursk Oblast	1.70	36	2.01	18	117.83	18
Jiangsu	2.32	18	1.93	19	83.40	-1
Samara Oblast	2.06	23	1.93	20	93.58	3
Source: compiled by the authors.						

Table 7. Ranking of Russian and Chinese regions in 2011, 2014 by "Technology and innovation" block (top 20)

Region	2011		2014		Change, 2014–2011	
	Index value	Rank	Index value	Rank	Rank	Index value
Shanghai	7.74	1	7.76	1	100.22	0
Beijing	7.54	2	7.58	2	100.54	0
Tianjin	6.58	3	7.52	3	114.31	0
Jiangsu	4.72	4	6.11	4	129.38	0
Zhejiang	4.39	5	5.93	5	135.18	0
Nizhny Novgorod Oblast	4.06	6	4.82	6	118.75	0
Guangdong	3.75	7	4.51	7	120.14	0
Shandong	3.35	8	3.80	8	113.63	0
Saint Petersburg	2.81	12	3.15	9	111.86	3
Moscow Oblast	3.05	10	3.12	10	102.49	0
Chongqing	2.66	13	2.78	11	104.51	2
Hubei	2.21	16	2.74	12	124.36	4
Anhui	1.98	20	2.71	13	136.36	7
Ulyanovsk Oblast	3.01	11	2.60	14	86.43	-3
Kaluga Oblast	3.17	9	2.57	15	81.10	-6
Liaoning	2.41	14	2.47	16	102.54	-2
Fujian	2.34	15	2.44	17	104.56	-2
Hunan	1.86	21	2.36	18	126.80	3
Shaanxi	2.06	18	2.07	19	100.58	-1
Sakhalin Oblast	0.09	102	1.98	20	2317.83	82
Source: compiled by the authors.						

lower than in the previous case: only one entity reached the "above average level of HR development – Beijing (6.63), its index decreased by 0.45 units compared to 2011. Two entities are characterized by an average level of potential development, 15 more entities demonstrate a "below average" level. In addition, in the majority of entities, a decrease in the sub-index values is also observed.

Judging by analysis of the final sub-index of "Technology and innovation", in 2011–2014 there was an increase in its values in most entities (*Tab. 7*). The "above average" level in 2014 was recorded in 4 entities (all provinces of China), the "average" level – in 3 entities. In 12 other entities the level of sub-index was "below average". It is interesting that the top twenty of entities in on the "Technology and innovation" block consists of about 50% of Chinese provinces (14 units). It can be concluded that the level of technological development and innovation activity in China is higher than in Russia.

Thus, analysis of the index values of scientific and technological potential and sub-indices revealed a very significant gap in the level of STP between Russian entities Russia, which continues to increase. In China, the situation is similar, but during 2011–2014 adjustment of imbalances took place, which suggests that the Chinese policy to support its lagging territories has a certain effect.

The calculation results, as well as our earlier studies on this issue [4, 5] suggest the following most important problems in Russia.

1. There is a spatial imbalance of scientific and technological development. Its HR potential due to its historical features is concentrated mainly in Moscow and Saint Petersburg (more than 70%). In the vast majority of regions, the share of personnel employed in R&D in the total employed population is critically small and cannot significantly influence the increase in innovation activity and the formation of appropriate competitive advantages of territories.

2 The gaps between science, business and education, the focus of support mainly on traditional production rather than on dissemination of innovation in all sectors of the economy cause the concentration of most innovation in a limited number of types of economic activity.

3. Despite proactive active policies in scientific and technological development, the issues of funding have not yet been practically addressed, support tools have not been determined, development goals and objectives have not been set specifically, and target indicators are not being achieved.

Although in China, an increase in main indicators of scientific and technological development was recorded, the country still has certain problems:

1. Lack of world-class human resources in S&T. One of the most important problems of China's scientific and technological potential is that, despite high concentration of staff there are very few talented researchers and world-class experts in S&T.

2. A small number of own breakthrough innovative products competitive at the international level. Experience shows that the development of new industries is based on productive forces established through breakthrough technology. Market competition is a competition of technology, patents, and standards. However, China still remains predominantly a "follower"-country in S&T development, which prevents it from proper development of productive forces. This limits both the development of new industries and the modernization of the industrial structure and the implementation of the national goal of expanding domestic demand.

Table 8. Systematization of experience of supporting the development of S&T potential of the territories of Russia and China

No.	Development area	Territories
1.	Stimulation of innovative activities of industrial enterprises, modernization of production companies, optimization of industrial structure	Moscow, Moscow Oblast, Ulyanovsk Oblast, Beijing, Jiangsu
2.	Large and increasing number of higher educational institutions	Moscow, Nizhny Novgorod Oblast, Beijing, Tianjin, Zhejiang, Jiangsu
3.	Development of the innovation infrastructure, creation of special industrial zones, establishment of institutions to support and assist innovative projects	Moscow, Nizhny Novgorod Oblast, Moscow Oblast, Ulyanovsk Oblast, Beijing, Shanghai
4.	Development of production logistics in the regions	Moscow Oblast, Ulyanovsk Oblast
5.	Legislative support in the field of regulation of the legal framework of S&T activities	Moscow, Nizhny Novgorod Oblast, Saint Petersburg, Moscow Oblast, Ulyanovsk Oblast, Beijing
6.	Legislative support in industrial development, defining industrial policy directions	Nizhny Novgorod Oblast, Ulyanovsk Oblast
7.	ICT funding	Moscow
8.	Establishing a favorable investment environment	Saint Petersburg, Jiangsu, Zhejiang
9.	A s system of technology transfer and transfer of research results to the real sector of the economy	Beijing, Shanghai
10.	Assistance in holding exhibitions and fairs	Saint Petersburg
11.	The system of preferential tax treatment for S&T entities	Moscow Oblast
12.	Development of cooperation between all participants of scientific and technological activity	Shanghai, Tianjin, Zhejiang, Beijing
Source: compiled by the authors using [5; 15;16; 17; 18; 19; 20; 21].		

3. Absence of a full-fledged market environment which would effectively support S&T development. Successful world experience indicates that the market serves as an effective mechanism for resource allocation and a "bridge" between S&T and economic activity. S&T development must be based on the improvement of modern services, especially in science and innovation. In this part, China has a large gap which is the main obstacle to the development of S&T potential and knowledge-based economy.

Despite the above-mentioned problems, both Russia and China have successful experience in developing S&T potential at the regional level. Analysis of experience of the leading entities of the two countries (according to the methodological tools developed by the authors) made it possible to identify similar trends and prospects (*Tab. 8*).

Systematization of experience in the development S&T potential in Russia and China helps make the following conclusions.

1. Priority in this area must be the development of HR potential of the economy. The experience of the leading regions clearly indicates the need to improve the system of education and training of R&D personnel. This will help increase the efficiency of university science.

2. Laws of S&T, innovation and industrial activity in the studies leading regions have been well elaborated, the priority areas of S&T potential are clearly stated in strategies, their financing is carried out both from the national and regional budgets, there is no formalism in their implementation. All this helps maintain S&T potential at a high level.

3. The most important aspect of the development of S&T potential is an obligatory presence of a developed diversified industrial complex as the main consumer of the developed technology, and trained personnel. Moreover, a competitive industrial complex can also provide additional funding for R&D, which will contribute to STP development.

4. The development of S&T potential is impossible without the development of logistics and innovation infrastructure, which ensures interaction of all S&T and at the same time the "flow" of knowledge, technology, and experience. In all studies regions, the authorities and management paid much attention to information and analytical support of the development of S&T potential.

Conclusions

The testing of the methodological scheme developed by the authors has helped identify the regions leading in S&T development in Russia and China and the generalized experience in successful implementation of its support measures gave an opportunity to identify its main aspects to be addressed in lagging regions. These are aspects such as:

1. Development of HR potential of the economy through target policy to train S&T personnel starting from primary school.

2. Development of strategic documents to ensure the development of S&T potential at the regional level.

3. Stimulating the growth of industrial production and diversification of high-tech products.

4. Development of the logistics and innovation infrastructure in lagging regions.

To sum up, it should be noted that the present study is of a complex nature. Its results make a contribution to the development of methodological aspects of assessment and comparison of S&T potential of Russia and in foreign countries. In addition, much has been done in the field of applied science: we analyzed the experience of systematic work of federal and regional authorities and management in Russia and China related to the development of S&T potential. We developed and presented a list of tools and measures to activate the processes of S&T development of lagging territories in these countries.

Further stages of the research will include the improvement of the mathematical framework for assessing S&T potential of territories, analysis of trends in the development of cooperation between Russia and China in S&T, as well as the expansion and specification of the developed system of measures to enhance the processes under consideration. The importance of the obtained results lies in the possibility of their application in the development of strategic documents of federal and regional importance, the definition of mechanisms and methods of state regulation of the development of S&T potential, as well as the possibility of using the methodological research aspects in the study of other countries.

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Economic Activity in Russian Regions*

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Abstract. The paper deals with the issues of concentration of economic activity in Russian regions influenced not only by factors of the "first nature" – presence of minerals, fertile land, favorable geographic position, but also by factors of the "second nature", in particular, the agglomeration effects and potential savings in the scale. Analysis of the geographic concentration and the region-specific focus reflects the general trend in the concentration of industrial production, investment and human resources, provides the necessary information framework for a harmonized economic policy. The purpose for the study is to theoretically justify and analyze economic activity concentration in terms of assessment of concentration and specialization of Russian regions over time. The paper reveals terminological aspects of concentration, agglomeration, specialization, agglomeration economics and urbanization. The applied methodological tools of assessment include the localization factor, Herfindahl-Hirschman and Krugman concentration and specialization indices, Gini index. The research novelty lies in the formation of the terminological framework of the location theory, namely the definition of agglomeration as a process of concentration of activities in a region supported by circular logic at several levels with a distinction between its two types – "economy of localization" and "economy of urbanization"; in the identification of the relative and absolute types of geographic concentration. Elements of the research novelty are contained in the methodological framework of the study – the system of traditional indicators for assessing the concentration and specialization of regional economy is supplemented by relevant Krugman indices similar in content to the Herfindahl-Hirschman indices, but reflecting the heterogeneity of development

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to a greater extent; the localization factor is used to identify potential economic clusters in the territory when making decisions in the process of regions' management. High concentration of investment and industrial production in Russian regions, consistent upward trend of the labor force is revealed. This situation leads to increased inter-regional inequality. The manufacturing industry has experienced a decline in employment. The tendency towards concentration is identified in the pulp and paper industry, publishing and printing, metallurgy, manufacturing of transport vehicles and equipment, and chemical production. The regions with a high level of specialization include Kamchatka Krai, Chukotka Autonomous Okrug, the Sakhalin, Magadan, Ivanovo and Lipetsk oblasts. The obtained results can be used in scientific research to analyze the concentration of economic activity, assess the development of agglomeration processes, or as recommendations for implementing the economic policy in the regions.

Key words: new economic geography, regional economy, theories of location, concentration of economic activity, Russian regions.

Introduction. The study of trends in regions' economic activity, the emerging and developing processes of concentration and agglomeration of economic activity, changes in regional profile helps implement target regional policy. It is important to understand what conditions should be created to attract new production; what the future population will be and what the reason for this change will be; whether provision of subsidies will have the proper effect; what transport links should be developed in the first place. To date, the theories of economic activity have proved to be untenable: the factors of the "first nature" have ceased to explain effective development of many types of economic activity and their concentration in separate regions. Based on the improvement of the existing scientific provisions in this area, ultramodern currents in science such as new economic geography, new and modern theories of international trade appear, prerequisites for their unification into a single doctrine are created. The theoretical foundations in the regions of world nations are constantly tested.

The issues of economic activity are currently relevant at the global level. Industrial production is concentrated in large cities, leading regions and some countries; half of world industry is localized on 1.5% of the territory. Cairo, which produces more than half of Egypt's GDP, occupies 0.5% of the country's territory. Three South-Central regions of Brazil, with the share of 15% of the country's area, produce more than half of its GDP. Three quarters of the world economy is located in the countries of North America, the EU, and Japan, with less than a billion people living there[1]. Moscow occupies 0.015% of the Russian territory; its share in the manufacturing industry comprises 14.5%[2].

The relevance of studying the concentration of economic activity is caused by a high inequality both among countries and at the intra-country regional level.

The issues of concentration, agglomeration and specialization were raised in the works of Russian researchers. We revealed specific features which do not significantly contradict the provisions of modern scientific doctrines:

[1] *World Development Report 2009. Reshaping economic geography*. Available at: https://openknowledge.worldbank.org/handle/10986/5991 (Accessed: 18.04.2017).

[2] As of 01.01.2016. Calculated by the author according to: Russian regions. *Main socio-economic indicators of cities. 2016: statistics book*. Rosstat. Moscow, 2016. 442 p., pp. 106-107; *Russian regions. Socio-economic indicators*. 2016: statistics book. Rosstat, Moscow, 2016. 1326 p., p. 18.

1) the level of spatial concentration in Russian regions increases at least in terms of indicators of GRP, employment and population (Kolomak, 2014);

2) the system of "core–periphery" relations is formed when resources tend to move to regions with higher production concentration, which significantly increases territorial differentiation (Rastvortseva, 2013);

3) the positive effects apply to all settlements included in the urban agglomeration with proper development of the transport infrastructure (Gonchar, 2010); economic growth tends to go beyond the region's borders and spread to the neighboring regions (for the whole territory of Russia) and then – only for the Western part of the country (Kolomak, 2010);

4) the agglomeration processes in the regions stimulate productivity growth, have a direct impact on the well-being of the population; the processes of economic activity concentration are accompanied by an inflow of labor resources and, subsequently, lower wages (Rastvortseva, 2013);

5) the socio-economic development is influenced by the location of the region relative to the national border: regions bordering the former Soviet republics in a better position, regions with maritime borders are less profitable (Rastvortseva, Usmanov, 2015);

6) the operation of enterprises amid agglomeration processes increases average revenues by 3.8% per year (Vorobyov et al., 2014); at this level, greater importance for efficiency belongs to internal returns on the scale rather than on external one (Gonchar, 2010).

The purpose for the research whose results form the basis of the article is to theoretically justify and analyze the economic activity in terms of assessing the concentration and specialization of Russian regions over time.

The scientific novelty of the research lies in the formation of the terminological framework of the theory of economic activity concentration, namely the definition of agglomeration as a process of concentration of activities in the region supported by circular logic at several levels with a distinction between its two types – "localization economics" and "urbanization economics" –, in the identification of relative and absolute types of geographical concentration. Elements of scientific novelty are contained in the research methodology: we propose to include in the system of traditional indicators for assessing the concentration and specialization of the regional economy the corresponding P. Krugman indices similar in the content to Herfindahl-Hirschman indices, but to a greater extent reflecting the development heterogeneity; the localization factor is recommended to be used for identifying the territory's potential economic amid decision-making in the process of regional management.

The article is constructed as follows. The first section presents the research terminology – the concepts of concentration, agglomeration and specialization are described. In view of the fact that in the Russian economic science, agglomerations can be considered in two ways, this category is considered in more detail in the second section of the article. The paper presents the research methodology (section 3) and the results of analyzing agglomeration processes in Russian regions (section 4). Conclusions are drawn in the final part.

1. Concentration, agglomeration, specialization: issues of terminology. Modern economic science considers the provisions of the concentration of economic activities in two main areas: from the perspective of the new economic geography (in the framework

of studying and explaining the concentration of economic activity in certain regions) and from the perspective of the new theory of trade (explanation of the position of border regions under specific trade conditions). Checking the adequacy of the theoretical provisions in the regional economies of world countries will provide new aspects in the development of this field of knowledge; will serve not only as a subject of additional research, but also as a framework for re-consideration and supplementation of theories of concentration of economic activity.

The concentration of economic activity in the region is characterized by the level of concentration, agglomeration and specialization. While the latter is unambiguously interpreted in relation to the region and assesses the extent to which economic activity dominates (or is evenly distributed), the differences between concentration and agglomeration in the literature are not so obvious. First of all, we review the term concentration.

Concentration is defined in relation to the type of economic activity, sector, sub-sector, industrial group, etc. and means the degree of concentration or sparseness of industrial production within a given territory. It is necessary to distinguish between absolute and relative concentration. The industrial sector is *absolutely concentrated* when several countries, regardless of their size, make up quite significant shares in the total volume of production (Midelfart-Knavik et al., 2000). The industrial sector is *relatively concentrated* when one type of activity is different from those that are, on average, most prevalent in industrial production in countries. The neoclassical theory usually deals with relative concentration, new economic geography – with absolute concentration, new trade theory provides for both kinds (Haaland et al., 1999).

We believe that concentration reflects the distribution of specific economic activities in the geographical space, while *agglomeration* indicates the feasibility of entirely different types of activity in a common area. For example, ferrous and non-ferrous metallurgy in the Sverdlovsk Oblast is concentration; the concentration of enterprises of different industries in the Belgorod Oblast is agglomeration. Both concentration and agglomeration can occur in the same region, but agglomeration is a more general process as it usually affects several sectoral breakdowns. We believe that it is appropriate to claim that "the agglomeration process is the concentration of economic activity in the region (city) over time", but one cannot say that concentration is necessarily an agglomeration process.

2. The concept of agglomeration and its types. In view of the fact that among economists and geographers, the term "agglomeration" is associated with urban agglomerations (a certain type of settlement system consisting of several cities), we suggest to consider this scientific category in detail. Agglomeration – the clustering of economic activity, created and sustained by some sort of circular logic – occurs at many levels, from the local shopping districts that serve surrounding residential areas within cities to specialized economic regions like Silicon Valley (or the City of London) that serve the world market as a whole (Fujita et al., 1999, p. 1).

The term "agglomeration" was first introduced by Alfred Weber in 1905 to refer to the emerging mutual attraction between enterprises located in the same area. Nowadays the economic literature clearly distinguishes between two types of agglomeration (depending on the emerging externalities) – the concentration in one place of enterprises of one type of activity and enterprises of different type of activity.

In the first case reference is commonly made to "localization economics" with endogenous effects from specialization (placement externalities) and occurring exogenous sources of additional benefits. Enterprises of the same type of activity, being located in one region, get the agglomeration effects from combined use of various objects – trade associations, educational institutions, etc. A. Marshall was the first to study this research area. He demonstrated that the interaction between enterprises in the same area lead to an increase in productivity of all production factors. Such agglomeration is estimated by concentration indicators.

In the second case, when enterprises of different types of economic activity prefer to be located in one geographical place, it is common to talk about urbanization economics. It is here that the term intersects with the "urban" agglomeration, which is more common in the Russian economic geography. The enterprises' benefits increase due to the concentration of economic activity and are linked to diversity. The key principle underlying the economic mechanism of agglomeration in the region is that three groups of factors are of great importance during production of a variety of consumer and intermediate goods: increasing returns at the level of an individual enterprise, transport costs and labor migration (and hence consumer migration). Enterprises receive agglomeration effects not only from a large number of suppliers and manufacturers, but also from using the advantages of banks, universities, developed labor market, etc.

There are three types of agglomeration effect (for companies). The first is the opportunity to share local facilities, services of suppliers of raw materials and intermediate goods, labor resources (Scotchmer, 2002; Puga, 2010). The second – ample supply from suppliers of intermediate goods helps producers reduce transaction costs (Rosenthal, Strange, 2001). The third – united labor resources can reduce the possible variety of shocks (Overman, Puga, 2009; Combes, Duranton, 2006; Rosenthal, Strange, 2004). Agglomeration processes in the region are characterized by economic relations between producers, which weaken as distances between them increase (Fujita, Ogawa, 1982).

3. Research methodology. To analyze the concentration of certain economic activities in the regions we can use the traditional localization indicator:

$$LQ = \frac{\frac{E_{ij}}{E_i}}{\frac{E_j}{E}} = \frac{\frac{E_{ij}}{E_j}}{\frac{E_i}{E}}, \qquad (1)$$

where LQ – localization factor;

E_{ij} – number of employees in sector j in i-th region;

I_E – total employment in i-th region;

E_j – number of employees in sector j;

E – total number of employees in the country;

j – economic sector;

i – region.

The localization factor indicates how many times the concentration of a particular economic activity exceeds the national average. That is, the localization factor characterizes the region relative to profile of industrial production. Calculations of the indicator can be made not only in terms of the number of employees in the economy, but also in terms of output and value of fixed assets.

This factor is useful and is widely used in the development and implementation of the regional economic policy. Previously in the work (Rastvortseva & Cherepovskaya, 2013)

we proposed and tested the method with the use of the localization factor, which helps identify the potential clusters in the area. For example, in the Belgorod Oblast, five economic clusters have been experimentally identified: agro-industrial, mining, metallurgy, machinery and equipment, and construction.

Another methodological tool for analyzing concentration of economic activity is *Herfindahl–Hirschman index (HHI)*. To calculate it we determine industrial output, investment in fixed capital, and the number of people employed in the economy as initial indicators for which the assessment is performed:

$$HHI = \sum_{i=1}^{n} x^2 \text{ HHI} = \sum_{i=1}^{n} x_i^2, \qquad (2)$$

where x_i – share of *i*-th region in the total population.

HHI can be used to estimate both geographical concentration (HHI_j^C), and regional specialization (HHI_i^S):

$$HHI_j^C = \sum_{i=1}^{n} \left(\frac{E_{ij}}{E_j} \right)^2, \qquad (3)$$

$$HHI_i^S = \sum_{j=1}^{m} \left(\frac{E_{ij}}{E_i} \right)^2, \qquad (4)$$

HHI is considered an *absolute measure of concentration or specialization*. The index increases as the degree of concentration or specialization increases, reaching its upper limit of 1 in the case where the *j*-th branch is concentrated in one region or *i*-th region specializes in only one branch. The main disadvantage of the index is the sensitivity of its lower limit to a number of observations: the lowest concentration level is $1/n$ (when all regions have equal shares in *j*-th industry), and the lowest specialization – $1/m$ (when all economic activities have equal shares in *i*-th area). This indicator has another important disadvantage as an absolute measure: large regions due to their high share have a significant impact on changes in concentration/specialization (the index shifts towards larger regions).

The degree of concentration of economic activity in the region is estimated by the *Gini index* (*G*)):

$$G = 1 - 2\sum_{i=1}^{k} dx_i dy_i^n + \sum_{i=1}^{k} dx_i dy_i , \qquad (5)$$

where dx_i – share of *i*-th group in the total population;

dy_i – share of *i*-th group in total indicator volume;

dy_i^n – accumulated share of the I-th group in the total volume of the trait.

The Gini index varies from 0 to 1.

Krugman Dissimilarity Index (KDI) is considered *a relative measure of concentration or specialization*. KDI estimates concentration by individual economic sectors (KDI_j^C) and specialization by region (KDI_j^S):

$$KDI_j^C = \sum_{i=1}^{n} \left| \frac{E_{ij}}{E_j} - \frac{E_i}{E} \right|, \qquad (6)$$

$$KDI_i^S = \sum_{j=1}^{m} \left| \frac{E_{ij}}{E_i} - \frac{E_j}{E} \right|. \qquad (7)$$

The relative index of Krugman specialization/concentration is used to compare one region/sector with the country's economy as a whole. The index value ranges from 0 (identical territorial/sectoral structures) to 2 (completely heterogeneous structures).

Concentration indices CR_0, CR_4, CR_5 indicate the share of employees in the industrial sector concentrated in three, four or five of largest regions by this indicator:

$$CR_{3j} = \sum_{i=1}^{3} \frac{E_{ij}}{E_j}, \quad (8)$$

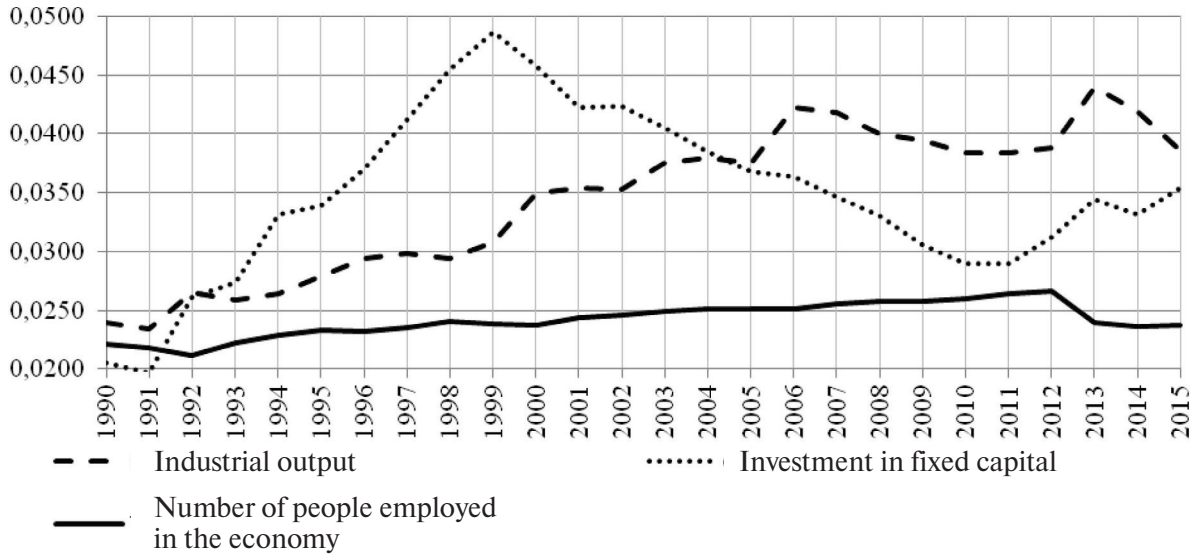
$$CR_{4j} = \sum_{i=1}^{4} \frac{E_{ij}}{E_j}, \quad (9)$$

$$CR_{5j} = \sum_{i=1}^{5} \frac{E_{ij}}{E_j}, \quad (10)$$

We conducted a research in 83 Russian regions (the Republic of Crimea and the city of Sevastopol were not included due to insufficient statistics). Data on the Arkhangelsk and Tyumen oblasts were taken separately excluding including autonomous districts. Autonomous districts were registered as separate constituent entities of the federation. The performance of geographical concentration in Russian regions by HHI and regional inequality by Gini index were determined for the period from 1990 to 2015. The study of geographical concentration of industrial production by type of activity according to HHI and KDI was conducted over the period from 2009 to 2015. Analysis of the specialization index is conducted for 2009-2015. Official data of the Federal State Statistics Service of Russia (www.gks.ru) were used as a source of information, this also included statistical digests "Russian regions. Socio-economic indicators" for 2002–2016 and the Unified Interdepartmental Information and Statistics System (EMISS) database.

The results of regions' agglomeration process analysis. The HHI performance was calculated by three indicators: industrial output, investment in fixed assets and number of people employed in the economy. The results for Russian regions in 1990–2015 are presented in *Figure 1*.

Figure 1. Performance of geographical concentration in Russian regions in 1990–2015, HHI



Source: calculated according to data from: the Unified Interdepartmental Information and Statistics System (EMISS). Available at: https://www.fedstat.ru

Figure 2. Performance of inequality of Russian regions in 1990–2015, Gini index

Source: calculated according to data from: the Unified Interdepartmental Information and Statistics System (EMISS). Available at: https://www.fedstat.ru

As can be seen in the figure, Russian regions have the highest concentration in terms of investment in fixed assets. Until 1999, the concentration index steadily increased to 0.0486, then until 2010 it had a downward trend to 0.029 and later it did not exceed the level of 0.0345 (2013).

The lowest concentration indicator, yet with a stable growing trend, occurs in terms of the number of people employed in the economy. We believe that due to the large country's territory, the Russian population is not characterized by high mobility. However, even low mobility leads to a gradual increase in the concentration of labor resources in certain regions, and hence to an increase in the socio-economic inequality. The exception is 2013, where HHI fell from 0.0266 to 0.0239 units.

Regions have a high degree of concentration in terms of industrial output. It is more responsive to the impacts of globalization factors: until 2006 its concentration degree in Russian regions had a stable upward trend, then it gradually decreased until 2010. HHI varies during the analyzed period (from the lowest value of 0.0234 in 1991 to the highest value of 0.0439 in 2013).

Let us consider the performance of the Gini index for the same indicators (*Fig. 2*).

The dynamics of inequality between Russian regions in terms of socio-economic indicators has a pattern similar to concentration. Gini index by number of people employed in the economy almost completely duplicates the trajectory of HHI performance, has a stable upward trend and is only inferior to the indicators of industrial output and investment. It may be noted that a slight decrease in the concentration of people employed in the economy in 2013 did not affect the positive trend in the growth of inequality between regions by indicator.

High concentration of investment in fixed assets in 1999 resulted in the maximum level of inter-regional disparities in 2000. The overall performance trajectory is similar, but the amplitude Gini index oscillation is somewhat less pronounced.

Similar conclusions can be drawn regarding the concentration and inequality of Russian regions in terms of industrial output. We can conclude that increased concentration leads to increased inter-regional inequality.

Let us consider the processes of concentration of economic activity in the industrial sector in detail. To do this we can assess the performance of the region's share in the number of people employed in the manufacturing industry. During the period from 2002 to 2014, the number totally reduced by 28.23%; the increase in the share took place in 38 regions of the country (of course, due to a decrease in other regions). The following regions are worth noting: the Moscow (its share increased by 1.37%), Novosibirsk oblasts (0.48%), Republic of Tatarstan (0.47%), the Belgorod (0.45%), Chelyabinsk (0.44%), Kaluga (0.42%), Kaliningrad (0.38%), Omsk (0.30%), Sverdlovsk (0.29%), Leningrad (0.28%), and Rostov oblasts (0.28%). In total, the share of the listed eleven regions in the total number of employees in the manufacturing industry increased by 5.16%, which definitely indicates the developing processes of industrial output concentration and, if the share of the region increases in several sectors of the economy – agglomeration.

The provisions of the economic theory indicate that the concentration of economic activity increases the overall resource use efficiency, provides additional benefits and generally has a positive impact on the economic development. But we must understand that increasing concentration leads to greater inter-regional inequality, first in economic and later in social indicators. Regions less attractive for workers, investment and other resources, for the development of industrial production (and hence auxiliary activities), become economic recipients. The resulting costs of maintaining such territories reduce the benefits derived from the concentration of economic activity in the leading regions. That is why we believe that, in general, high concentration of economic activity in certain regions cannot have a positive impact on the development of the national economy and the social sphere. Taking into account the vast Russian territory and interregional differentiation in social and economic indicators it is necessary to monitor the emergence and development of agglomeration processes which may strengthen the existing imbalances.

It is important to understand which types of economic activity have a specific focus on individual territories, and which – on the development prospects of any region. The trend to concentrate is explained by two factors: additional profit due to the effect of scale and proximity to resources (minerals, highly skilled labor resources, etc.). We consider these activities on the example of the manufacturing industry. To do this, we calculate the performance of the absolute (HHI, *Fig. 3*) and relative (KDI, *Fig. 4*) indicators of geographical concentration (by number of employees in the industrial production sectors).

HHI estimates the absolute concentration of certain types of manufacturing. Traditionally, there is a trend to focus on certain areas of enterprises engaged in pulp and paper, publishing and printing, metallurgy, production of vehicles and equipment, chemical production. Food industry, wood processing and wood products manufacture, production of non-metal mineral products are evenly

Figure 3. Dynamics of geographical concentration of industrial output by type of activity in Russian regions in 2009–2015, HHI

Source: calculated according to data from: the Unified Interdepartmental Information and Statistics System (EMISS). Available at: https://www.fedstat.ru

Figure 4. Dynamics of geographical concentration of industrial output by type of activity in Russian regions in 2009–2014, KDI

Source: calculated according to data from: the Unified Interdepartmental Information and Statistics System (EMISS). Available at: https://www.fedstat.ru

distributed among the country's regions. Similar conclusions can be drawn on the relative concentration index – KDI.

The geographical concentration of labor in *food production* is low: HHI – 0.023–0.026 units, KDI – 0.32–0.34 units. Note that in general, the number of employees in this sector is steadily decreasing in Russia. The recent decrease in concentration is explained by the weakening of the leading regions in 2009: Moscow (its share decreased from 7.46% in 2009 to 4.29% in 2015), the Krasnodar Oblast (from 6.15 to 5.72%), and Saint Petersburg (from 3.11 to 2.5%). It should be noted that the share in production in the Republic of Tatarstan, Altai Krai, and the Belgorod and Voronezh oblasts increased. The share of the Moscow Oblast did not change (average of 5.95%). The total number of people employed in food production in four regions (CR_4) amounted to nearly 14% in 2015, in three regions (CR_3) – almost 11%.

The absolute concentration in textiles and clothing manufacture is decreasing. HHI had its maximum value (0.037) in 2009, minimum (0.032) in 2012. KDI ranges within 0.49–0.52 and has a slight upward trend. It should be noted that 31.18% of people employed in textiles and clothing manufacturer are concentrated in five regions (CR_5). The sector's leaders are the Ivanovo (its share is slightly reducing) and Moscow (its share is increasing) oblasts. The share of the Rostov and Vladimir oblasts is increasing; the share of Moscow is decreasing.

The absolute concentration of leather, leather goods and footwear manufacture cannot be called high – 0.032–0.04, unlike KDI – 0.59–0.67. This is due to the fact that in 13 regions this economic sector is not represented at all and the share of other 40 regions does not exceed 1%. The sector's leaders in 2015 were Saint Petersburg (6.55%), Moscow (5.97%), the Tver (5.68%), Kirov (5.48%) and Moscow (5.34%) oblasts. Five regions account for about 29% of the total number of employees in the sector.

The highest degree of heterogeneity (at moderate concentration) in the industry occurs in wood processing and wood products manufacture (KDI– 0.74–0.79, HHI – 0.028–0.029). In recent years, five regions have accounted for about 25.4% of this economic sector. Regions with greater number of employees include the Kirov Oblast, Krasnoyarsk Krai, the Irkutsk, Vologda and Arkhangelsk oblasts.

Pulp and paper, printing and publishing demonstrate a downward trend in KDI: in 2009 it comprised 0.54 units, in 2015 – 0.47 units. The concentration is the highest: the average of 0.054 during the analyzed period. At the same time, more than a quarter of the employed are concentrated in Moscow, the Moscow Oblast and Saint Petersburg; five regions account for about 33%.

High concentration is observed in chemical production: KDI ranges from 0.54 to 0.61 units, HHI – 0.04–0.042. Five regions account for more than 36% of people employed in the industrial sector. The first place in the number of people employed in the chemical industry belongs to the Republic of Tatarstan (8.73%); in recent years, this share has been steadily increasing. A significant amount of activities is concentrated in Perm Krai, the Moscow Oblast, the Republic of Bashkortostan more than 7%, in the Samara and Moscow oblasts – 5.16 and 4.4% respectively.

Rubber and plastic products manufacture demonstrates a clear trend of industry dispersion. KDI decreases from 0.46 units in 2009 to 0.39 units in 2015; HHI – from 0.042 to 0.034 units. About 30% of people employed

in the sector work in five regions: the Moscow Oblast (about 10%), the Republic of Tatarstan (6.4% in 2015), Moscow (5.33%), the Nizhny Novgorod Oblast and in Saint Petersburg.

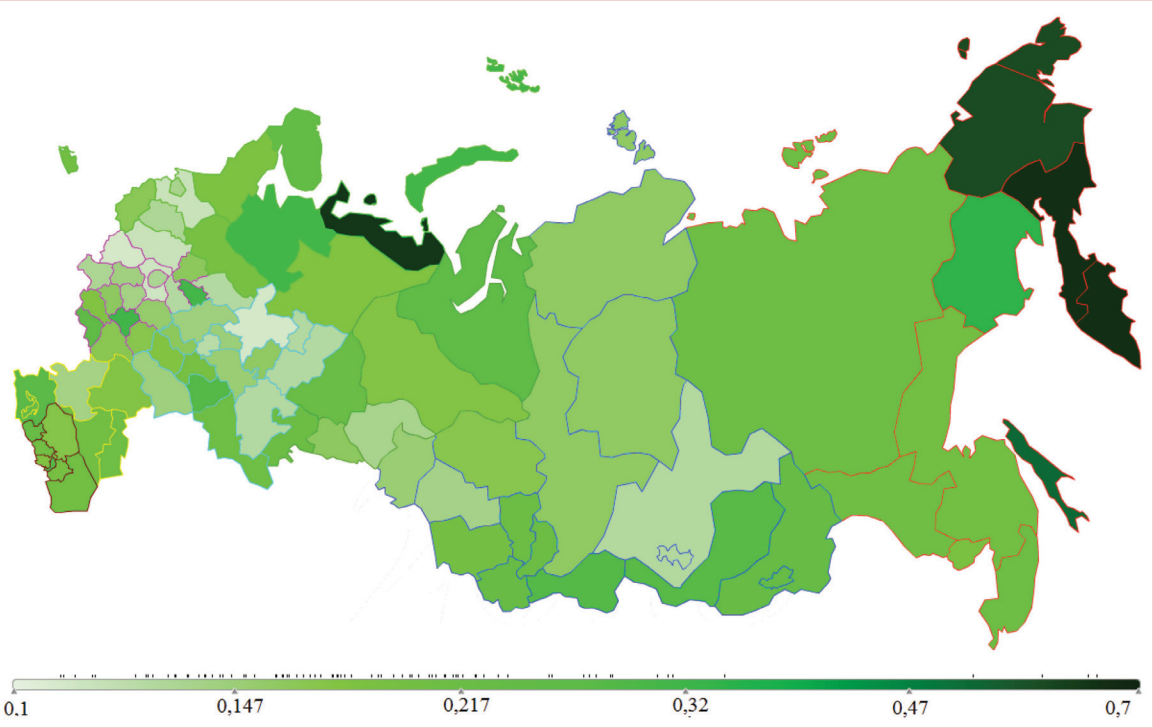
The lowest level of geographical concentration during the analyzed period is recorded in manufacture of other non-metal mineral products: KDI – 0.30–0.34 units, HHI – 0.26–0.29 unit. The share of five largest regions in terms of this indicator varies around 25%. These include the Moscow, Chelyabinsk, Sverdlovsk oblasts, Krasnodar Krai and the Republic of Bashkortostan.

In metallurgy, on the contrary, a high degree of concentration with its constant decline should be noted. More than 27% of employees work only in three regions of the country in this economic sector: the Sverdlovsk, Chelyabinsk and Moscow oblasts. More than 34% of all people employed in metallurgy account for five regions (including the Nizhny Novgorod and Kemerovo oblasts).

The low geographical concentration of electrical, electronic and optical equipment manufacture should be assessed positively. In 2015, five regions of the country amounted to 31% of the sector. These include Saint Petersburg (almost 9%), Moscow (about 8%), the Moscow (over 5%), Chelyabinsk (4.5%) and Sverdlovsk (4.15%) oblasts.

The total number of people employed in motor vehicles and equipment manufacture is decreasing. HHI is reduced from 0.044 to 0.038; KDI – from 0.56 to 0.54 units during

Figure 5. Mean value of the specialization HHI in the manufacturing sector by Russian regions in 2009–2014, index



Source: calculated according to data from: the Unified Interdepartmental Information and Statistics System (EMISS). Available at: https://www.fedstat.ru

the analyzed period. In recent years, the leading positions of the Republic of Tatarstan, the Nizhny Novgorod Oblast and Saint Petersburg have been strengthened. The share of the first five territories (with a declining contribution of the Samara Oblast and Moscow) in 2015 amounted to 32.85 %, while about 24% of the employed of this sector work in the Republic of Tatarstan and the Samara and Nizhny Novgorod oblasts.

The "other manufacturing branches" sector has an average degree of concentration with the gradually decreasing number of employees.

In general, the geographical concentration by number of employees in the manufacturing industry is declining (from average of 0.039 in 2009 to 0.034 in 2015), as well as the degree of heterogeneity (from 0.52 to 0.49 units). The combination of this trend with an increase in concentration in industrial output (see Figure 2) indicates the differences in the levels of performance: the number of employees in the leading regions decreases while production output maintains or increases.

We see that the Moscow Oblast, Moscow and Saint Petersburg, the Nizhny Novgorod Oblast, the Republic of Tatarstan, Krasnodar and Perm krais, and the Sverdlovsk Oblast account for a significant share of employees in many sectors of the manufacturing industry. This is not surprising as most of the economically active population works in these regions.

We analyze the performance of industrial production specialization in Russian regions in 2002–2014 by HHI. The results of the analysis are presented in *Figure 5*.

The average value of specialization index in industrial sectors by region is 0.203–0.208. The regions with the highest level of specialization include Kamchatka Krai, Chukotka Autonomous Okrug, the Sakhalin, Magadan, Ivanovo and Lipetsk oblasts. The low level of specialization is characteristic of the Kirov, Moscow, Tver, Leningrad, Smolensk oblasts, Moscow, republics of Chuvashia and Bashkortostan, the Kostroma and Irkutsk oblasts etc. It should be noted that the above mentioned regions of the Far East reach high index value due to a significant share of employees engaged in food production (DA), in the Ivanovo Oblast – in textiles and clothing manufacture (DB), in the Lipetsk Oblast – metallurgy and finished metal products manufacture (DJ). From 2002 to 2014, the number of regions with the level of specialization in the manufacturing industry above average included 28–32 territories; below average – 47–51.

For more in-depth study of regional specialization we previously analyzed (Rastvortseva et al., 2012) the correlation between of its level and indicators of socio-economic development: GRP per capita, labor productivity, average monthly nominal wages, unemployment level. Russian regions were divided into three groups – with a low level of specialization, mining regions with a high level of specialization, regions with a high level of specialization and a missing mining sector. It has been determined that narrow specialization in a certain sector of industry is only "affordable" to regions which ensure the development of their economy through mining. In other cases, deep specialization of the Russian regions is ineffective (Rastvortseva, Kuga, 2012).

Analysis of KDI indicates that, apart from the above mentioned regions, the Arkhangelsk oblast and Nenets Autonomous Okrug, Komi and Tuva republics, the Samara oblast, Republic of Karelia, some republics in the Caucasus, Altai Krai, the Jewish Autonomous Oblast, the Belgorod oblast are significantly different than the average national level.

Debate and conclusions. The development of the theory of economic activity concentration is now becoming particularly relevant. New factors have been identifies, which have a significant impact on the geographical concentration of economic activity and regional specialization: emergence of agglomeration effects from the location of production in one territory and increasing returns. The degree of dominance of any economic activity in the region is estimated by the indicators of specialization; the concentration or sparseness of a certain type of activity or resource is determined by concentration. The situation where concentration in the region is observed in several types of economic activity is called agglomeration.

To analyze the trends in concentration of economic activity in regions we use Herfindal–Hirschman and Krugman indicators of localization, concentration and specialization, Gini index, CR_3, CR_4, CR_5. In the course of the research we revealed high concentration of investments and industrial production in Russian regions, a stable upward trend in the number of labor resources. This situation leads to increased inter-regional inequality. In the manufacturing industry, a threefold reduction in the number of the employed in 2002–2014 took place. The trend to concentrate is indicated in pulp and paper, printing and publishing, metallurgy, motor vehicles and equipment manufacture. Regions with a high level of specialization include Kamchatka Krai, Chukotka Autonomous Okrug, the Sakhalin, Magadan, Ivanovo and Lipetsk oblasts.

The obtained results can be used in scientific research to analyze the concentration of economic activity, assess the development of agglomeration processes, and as recommendations for economic policy in the regions.

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Developing an Organizational and Economic Mechanism for Shaping and Regulating the Competitive Environment in the Regional Economy

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Abstract. The processes of economic development of countries, industries, and enterprises are necessarily accompanied by the competition between the subjects of economic activity. That is why it is important to create favorable conditions for them, to form a competitive environment that meets market principles of economic activity, taking into account minimum intervention of the government in the functioning of the market. Russia is inferior to many countries – even to the former Soviet republics – in terms of favorable business environment; it ranks 40th in the Doing Business rating. Since there is no system approach to the formation of a competitive market environment and state competition policy is carried out with the help of economic coordination of economic entities, it becomes relevant to determine the set of elements (subjects, objects, methods, tools, etc.) regulating this area, and to study the links between them. Based on this, the goal of the present study is to develop an organizational and economic mechanism to shape and regulate the competitive environment in the regional economy. To achieve the goal of the article, we considered foreign experience in the formation of the competitive environment in the economy. Using a comparative analysis, we found that Russia has management practices typical of foreign countries, with the exception of effective privatization of enterprises. We studied the initial conditions for the creation of a mechanism to shape and regulate the competitive environment at the regional level (on the example of the Vologda Oblast). Thus, one of them is the need to organize the space for development in the field of entrepreneurship and competition; it is noted in the Strategy for socio-economic development of the

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Oblast for the period up to 2030. With the use of the calculation and analytical method and the method of generalization, we performed a critical analysis of the paragraph of the Strategy relating to this area of regulation. As a result, with the help of the system approach and synthesis, we designed a conceptual scheme for the proposed organizational and economic mechanism and described the action of its elements. The paper can be useful both for the authorities involved in the regulation of market relations, in the implementation of the standard for development of competition in the subjects of the Russian Federation, in the development of appropriate road maps, and programs, and for the representatives of the business community and researchers working in this field of studies.

Key words: competitive environment, regional economy, development strategy, foreign experience, Vologda Oblast, organizational and economic mechanism.

Introduction

The development of capitalist economies is facilitated largely by the competitive environment in the markets of goods and services, which is formed by institutional conditions for coordination of activity of economic entities. And while in some countries the competitive environment was formed evolutionarily, in others it was promoted by creating favorable conditions for competitive behavior of economic entities, taking into account existing and emerging market structures. The latter may include countries of Eastern Europe and Russia. These countries shifted from the monopolized Soviet economy to the commodity markets with the beginning of perestroika. In this regard, Russia had to face many problems in the organization of a market economy based on the principles of competition.

These problems appeared against the backdrop of attempts undertaken by state authorities to bring market institutions into the administrative and command system and at the same time to promote democratization of social and political life in the country [1]. Since the competitive environment can operate under political systems that promote or at least do not impede the development of market relations, and since its formation in Russia is revolutionary, it is not surprising that today our country is inferior to many others in terms of favorable business climate and level of development of the competitive environment *(Tables 1 and 2)*.

At the same time, a significant increase in the indicator of the ease of doing business in Russia (see Tab. 1) allows us to say that the efforts of the authorities to regulate entre-

Table 1. Comparison of some countries by the ease of doing business in comparison with the "frontier"*, in points [2]

Country	2010	2011	2012	2013	2014	2015	2016	2017
New Zealand	88.84	89.08	89.09	89.45	89.32	86.70	86.96	87.01
Singapore	89.77	90.40	90.41	90.38	91.24	85.08	84.50	85.05
Norway	82.05	82.17	82.20	83.45	83.56	82.80	82.30	82.82
Germany	79.49	79.45	79.59	79.24	79.55	79.20	79.88	79.87
France	69.79	70.46	70.49	70.29	70.04	75.34	76.21	76.27
Slovenia	62.75	65.67	67.48	69.48	70.15	73.23	75.44	76.14
Russia**	**54.93**	**54.32**	**56.66**	**58.93**	**66.00**	**71.25**	**73.20**	**73.19**
Hungary	65.39	67.20	66.94	66.92	66.92	72.36	72.74	73.07
China	56.52	59.45	58.58	59.94	61.13	63.14	62.86	64.28

* The frontier, which is assigned the value of 100 points, is calculated by the World Bank Group on the basis of the best indicators of the ease of doing business for all countries and for all years since 2005.
** 47th place in the rating – 2017.

Table 2. Russia's positions in international rankings assessing the business climate and the level of development of the competitive environment

	International rating		
	IMD World Competitiveness Yearbook 2016	The Global Competitiveness Index 2016–2017	Index of Economic Freedom 2017
Position	44	45	114

Sources: Discover the World Competitiveness Ranking 2016 results: World Competitiveness Ranking. Available at: http://www.imd.org/globalassets/wcc/docs/scoreboard-2016.pdf; Country Rankings: 2017 Index of economic freedom. Available at: http://www.heritage.org/index/ranking; The Global Competitiveness Index 2016–2017 Rankings: The Global Competitiveness Report 2016–2017. Available at: http://www3.weforum.org/docs/GCR2016-2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf

preneurship were not wasted, and the further development of the competitive environment will contribute to the strengthening of market relations and economic growth. In this regard, it becomes relevant to search for ways to form and develop a competitive market environment.

It should be noted that the modern economy has no mechanism that would regulate the development of competitive environment with its constituent elements working smoothly. Instead there is a system of economic coordination in which the main element is global coordination when the partners adapt to management parameters [3]. At the same time, the governments of different countries take into account global coordination and carry out centralized economic coordination (macroeconomics) to achieve development goals. At the micro level (economic entities), decentralized economic coordination adapts to the supporting environment and market structures. As a result, there emerges a need to improve this environment and market structures primarily on the meso level (region), which can be implemented by creating an effective mechanism.

Thus, the goal of the present article is to develop an organizational and economic mechanism to shape and regulate competitive environment in the regional economy. In accordance with the goal, it is necessary to address the following tasks: to consider management practices to shape and develop competitive environment in foreign countries, to study the initial conditions for creating the mechanism at the regional level, to design a conceptual scheme of the mechanism and describe the behavior of its elements.

Research methodology

We use comparative analysis as the main method of studying the formation of a competitive environment in foreign countries; the method helps characterize their general and distinctive features. To carry out the analysis, we use the works of domestic and foreign scientists, such as K.S. Oreshko, A.A. Tararuev, H. Dumez, A. Jeunemaitr, W. Eucken, and others. We use generalization and analytical method when we study the conditions for establishing competitive environment on the regional level in Russia. Our knowledge base includes the normative-legal acts regulating competitive processes in the economy, and reports of the Agency for Monitoring and Sociological Research. We design a conceptual scheme for the mechanism for formation and regulation of competitive environment on the basis of the analysis with the help of a system approach and synthesis.

Foreign and Russian experience

To achieve the goal set out in our paper, let us analyze the experience of developed countries such as Germany, France, Slovenia and Norway. We have chosen Germany as one of the most economically developed countries, and France – because of the large-scale reform it has undertaken to liberalize the economic environment after nationalization.

Table 3. General features in the formation of competitive environment in the economy of foreign countries

Country	Prerequisites	Main features and formation tools
Germany	Transition from an administrative-command economic system to a market economy	Privatization of state-owned enterprises by private companies and foreign investors (individual settlement for each transaction) Establishment of entrepreneurship support system Grant and financial support for high-tech industries Advisory support for entrepreneurs Governmental investment support for enterprises in the form of direct participation Preferential lending to enterprises
France	Liberalization of the economy	Partial privatization of the property of nationalized companies (at a high cost, with the subsequent control of activities) Formation of institutions of financial (in relation to small and medium-sized businesses) and educational support for entrepreneurship Tight control over the prices of natural monopolies
Slovenia	Transition from a planned to a market model of development, restructuring the economy for integration into the EU	Privatization of enterprises (most of the property was sold to employees of the enterprises) Formation of institutional infrastructure for demonopolization of the economy and development of small and medium-sized businesses Providing business with tax benefits Liberalization of government-controlled prices
Norway	Structural reorganization of the economy, the desire of the business community to get a share in the public sector of the economy	Partial privatization of state property (preservation of state participation in strategically important sectors) Abolition of state monopoly on certain activities Implementation of the business support system (educational, technological, etc.) Reduction of administrative barriers for market entry
Source: our own compilation with the use of [4; 5; 6; 7; 8].		

As for Slovenia, it faced problems similar to Russian ones in the formation of new economic institutions. Norway is similar to Russia in terms of commodity oil and gas structure of the economy *(Tab 3)*.

Considering the policy of creating a competitive environment in Germany, we should note that it aimed to integrate the institutional economic practices of the reunified Federal Republic of Germany and the German Democratic Republic. First of all, it was necessary to make a shift in the GDR from the administrative and command economy to a market economy. As early as in postwar Germany, economist Walter Eucken spoke about the need for a competitive order based on constitutional and regulatory principles, meaning legally fixed norms and rules of management that change under the influence of the current monitoring of the results of implementation of the established goals [9]. Eucken highlighted two constitutive principles in Germany's transition from a command economy to a market economy: governmental policy should aim to dissolve or restrict economic power groups; political and economic activities of the state should focus on creating forms of economic environment, rather than regulating the economic process. Nevertheless, at that time, the economic reform on the basis of these principles could not be carried out due to the impossibility of implementing the first principle.

Immediately after the unification of Germany in 1990, its private companies and foreign investors started to privatize enterprises, like it was done in many countries of Central and Eastern Europe. However, unlike in many countries, each transaction in Germany was accompanied by a strict economic calculation and individual approach. In the process of creating institutions and tools of a market economy, a system of support for entrepreneurship was organized. For example, competitions for grants and financial assistance for high-tech industries were organized;

technology and information consulting was provided; investment support in the form of contribution to the equity capital was carried out; preferential interest-free loans were issued, etc. [5, p. 329].

In France in 1982, the nationalization of industrial, commercial and banking enterprises was carried out in order to make them the "engines" of economic development. But it produces the opposite effect: labor productivity declined, as well as profits of enterprises, etc. And in 1986, the privatization of the property of the previously nationalized companies was launched, as a result of which foreign investors received 20% of the capital, the personnel of enterprises got no more than 10%, and the rest of the capital went to French investors [7]. It is worth noting that the government was selling the property at higher prices compared to compensation payments under the nationalization. The economic policy focused on the development of a competitive environment in the private sector was expressed in the formation of institutions that provided financial and educational support to entrepreneurship. Financial support was provided to small and medium-sized enterprises, and the National Agency for Enterprise Creation provided information support and organized educational programs in management (mandatory for entrepreneurs) [8].

If we look at the experience of creating a competitive environment in the Slovenian economy, we should note that this problem was solved in two ways:

1) the government created conditions for the functioning of the market whose economic subjects carried out their activity freely;

2) thee institutional infrastructure was designed to match those conditions and facilitate economic demonopolization and the development of small and medium-sized businesses.

The development of the regulatory framework, including the Law on protection of competition (1993), initially aimed to create competitive conditions for national enterprises, and to organize and streamline competitive rules for the functioning of foreign companies. Business was supported mainly by providing it with tax benefits for three main types of taxes (income tax, value added tax, corporate profit tax) [6].

As well as Germany and France, Slovenia carried out the privatization of enterprises. In accordance with the law on transformation of enterprises' property, a combination of different methods of privatization was envisaged [6, pp. 231-232]. Most of the property of enterprises (40%) was sold at preferential prices in the form of shares to the employees of enterprises, as well as to other citizens on commercial terms; 20% was distributed with the help of free certificates to the employees of companies; 20% was transferred to special investment funds. We can say that the creation of a competitive environment in Slovenia was predetermined by the strategy for joining the common economic space of the European Union. This made it possible to form an institutional basis for a competitive environment in a relatively short period of time – from 1993 to 2004.

Having outlined the processes of formation and development of competitive environment in Germany, France and Slovenia, we should point out that, along with their national economic policy in the field of competition, in the European Union, of which they are part, there is the European Commissioner for Competition, who is responsible for competition in the EU. His/her area of responsibility includes:

– enforcement of competition rules for the effective functioning of the domestic market;

– compulsion to follow the rules of competition in mergers, acquisitions, and subsidies (in the field of transport and energy, too);

– development of market monitoring;

– promotion of compliance with competition law and international cooperation with competition authorities outside the EU [10, 11].

In comparison with the countries discussed above, the process of creating a competitive environment in Norway can be called unique. Its characteristic feature was the pronounced protectionist policy, manifested in a significant concentration of state-owned enterprises in strategically important economic sectors, in high rates of taxes and customs duties that imposed significant limitations on imports. For instance, the government of Norway often held at least one third of the equity stake that allowed it to control the activity of enterprises in such industries as infrastructure, power network, culture, mining, forestry and public health [4].

In the late 1970s, thanks to the business community lobbying its interests to participate in profitable state-owned companies, the conservative government began privatizing state property. Several relatively small state-owned enterprises and then some large metallurgical and transport concerns were transferred to private hands. At the same time, along with the privatization, a system of practices to develop a competitive environment was introduced, which included support for entrepreneurship, reduction of administrative barriers, adoption of laws on protection of competition, etc. One of the most common forms of business support in Norway is the training of future entrepreneurs, their retraining and advanced training, as well as providing technological support to research innovation centers and organizations, business incubators and technology parks [4].

Consequently, continuing to be a "monopolist" and "protectionist", the Norwegian state has opened a way for the development of private entrepreneurship and foreign investment within a certain framework, which allowed businesses to become an active participant in the market and influence the competition processes.

Thus, many of the management practices of foreign countries in the development of a competitive environment, with the exception of effective privatization of enterprises [12; 13, p. 9; 14; 15], are typical of the Russian economic policy and at the regional level, too.

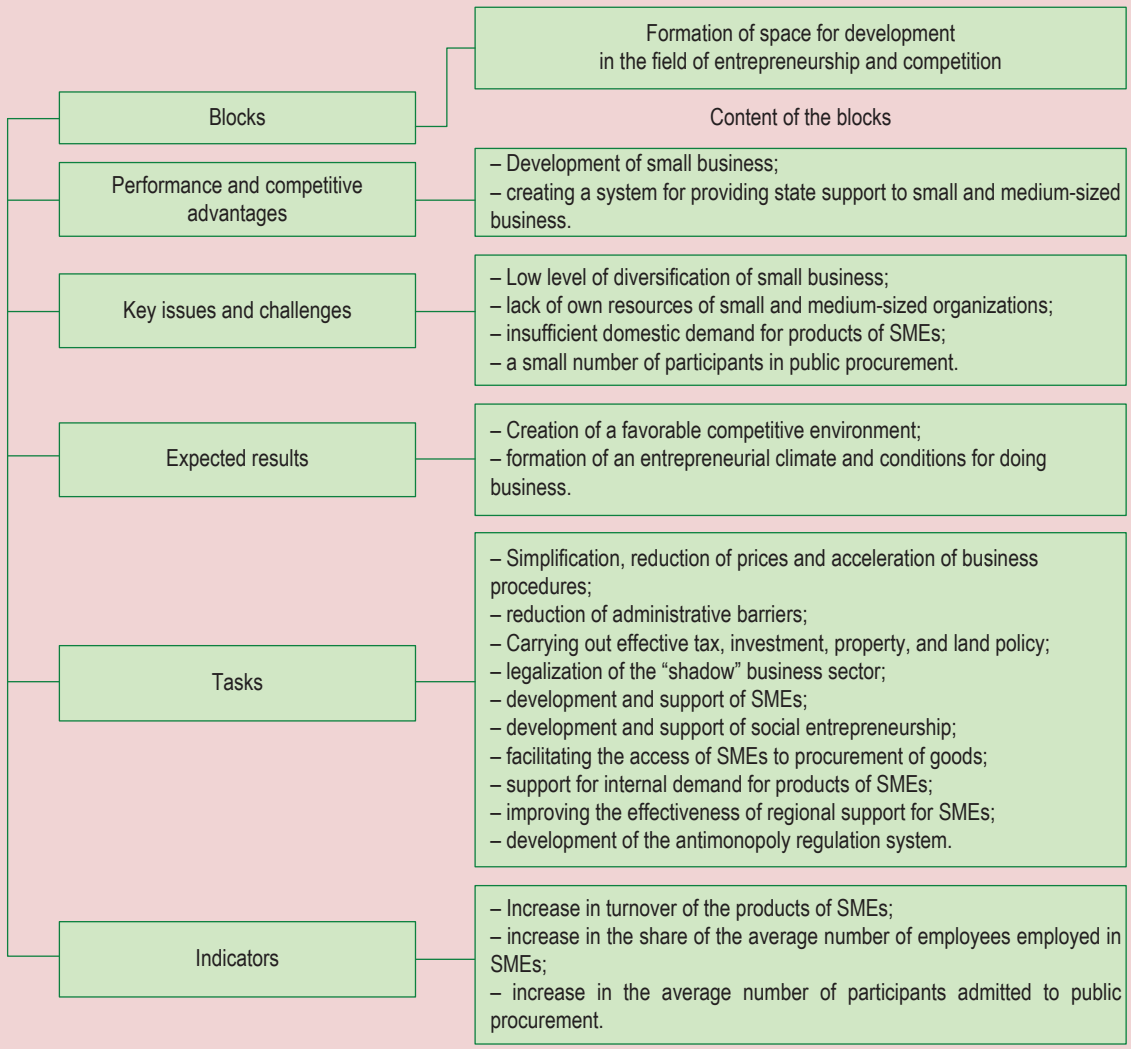
The policy promoting the development of competitive environment is also an element of regional economic policy. Therefore, it is necessary to study the initial conditions for creating a mechanism for regulating the development of competitive environment in the economy of a particular region. Let us take the Vologda Oblast as an example. According to the results of the rating of the degree of promotion of competition in 2015, the Oblast ranked 32nd among 85 regions and 3rd among the 11 regions that are part of the Northwestern Federal District.

The basic document[1] on socio-economic development of the region is Strategy 2030. Paragraph 5.6 of the Strategy pays attention to the implementation of such a priority as "the formation of space for development in the field of entrepreneurship and competition" *(Fig. 1)*. One of the factors in organizing such space is the creation of an effective competitive environment in the market. Therefore, the provisions set out in this paragraph affect this area of regulation.

Developers of the Strategy consider that the results of activities and competitive advantages are manifested in the successful development of small businesses in the region.

[1] About the Strategy for socio-economic development of the Vologda Oblast for the period till 2030: Resolution of the Government of the Vologda Oblast No. 920 dated October 17, 2016.

Figure 1. Aspects of the priority "the formation of space for development in the field of entrepreneurship and competition" in Strategy-2030



Thus, the number of small organizations has increased 2.2-fold since 2009. Another achievement is the creation of a comprehensive support infrastructure for small and medium-sized enterprises (SMEs). In general, the block under consideration focuses exclusively on this segment of business.

Note that the section does not provide information about the competitive advantages of the Oblast over other regions. As for the position of the Vologda Oblast in the ranking of competition development (in 2015 – 32nd place out of 82), it seems to be ambiguous. Hence consider it advisable to specify among the advantages the socio-economic processes in which entrepreneurial, organizational, and managerial skills to use available or potential opportunities (natural resources, labor, infrastructure, etc.) will be the most effective and affect (impact) the competitiveness of the region.

Among the key problems and challenges in the formation of the space are the low level of diversification of small businesses (about 50%

is occupied by trade and services, real estate transactions, and rent and provision of services), the insignificancy of its transition to the middle and large segment, and also financial and technological problems, small demand for SME products and a low level of competition in carrying out public procurement.

At the same time, the key problems, in our opinion, lie not in the indicated state of affairs in the organizations and the low level of competition, but in the prerequisites that create such a situation: significant administrative barriers; flaws in the legal framework, inadequate control of the activities of natural monopolies; insufficient solvent demand of people and enterprises; high percentage of commercial loans and the difficulty of obtaining them; insufficient protection of the rights of entrepreneurs and citizens.

The results of spatial development envisaged by the Strategy are associated with the creation of a favorable competitive environment, entrepreneurial climate and conditions for doing business that would prove appealing to current and new market participants by 2030. It is obvious that such results do not allow their achievement to be monitored due to the lack of their measurability. Therefore, it would be necessary to define specific indicators, mainly the relative ones, characterizing the achieved status. The fact that the Oblast is among the top 30 Russian regions in terms of the number of SMEs per thousand population is deliberately narrowing the scope of regulation and does not show the quality of the processes of spatial development. However, the fact that the Oblast is among the top ten Russian regions according to the index of competitive environment development is of great importance.

Regarding the tasks set by the authorities, it is worth noting that most of them are again associated with the development of small and medium-sized organizations and have a sectoral aspect. For example, these include expanding and ensuring the access of small and medium-sized businesses to the procurement of goods, works, services for state and municipal needs, companies with state participation and large organizations of the Oblast. Thus, analyzing the procurement placed for small businesses in the regions of the Northwestern Federal District, we can say this task was implemented most successfully in the Republic of Komi and in the Murmansk Oblast. It is confirmed by the increase in the share of small organizations in the total volume of procurement in these regions – by 11.5 and 10.1% for three years, respectively *(Tab. 4)*.

The key objectives, in our opinion, are as follows: reducing administrative barriers in the creation and execution of business, and reducing direct participation of state executive authorities and local self-government in the activities of economic entities. Thus, in 2016, almost 40% of small and medium-sized businesses believed that the existing administrative barriers are impossible to overcome or they can be overcome only with difficulty[2]. At the same time, the list of tasks should be expanded by adding the consumer, who is the object of influence of competitive environment, since the rivalry of enterprises ultimately goes precisely for consumers' demand and loyal attitude. In this case, the task can be formulated as "creating conditions for improving the quality of goods, works and services provided to the consumer". The urgency of the task is confirmed by the fact that in 2016, a significant number of residents of the Oblast – from 30 to 40% – were not satisfied

[2] The study of the Monitoring and Sociological Research Agency "Assessment of the state and development of the competitive environment in the markets of goods and services of the Vologda Oblast (small and medium-sized business)".

Table 4. Placement of procurement with regard to small businesses in the regions of the Northwestern Federal District according to Federal Law 44-FZ*

RF subject	Amount of procurement, mln rub.				Proportion in the total annual amount of procurement, %			
	2014	2015	2016	2016 to 2014, times	2014	2015	2016	2016 to 2014, +/-
Republic of Karelia	1 567	2 594	2 977	1.9	5.2	12.0	11.3	6.1
Republic of Komi	2 690	3 162	4 965	1.8	7.6	13.3	19.1	11.5
Arkhangelsk Oblast and Nenets Autonomous Okrug	3 978	4 808	5 478	1.4	7.1	11.5	9.9	2.8
Vologda Oblast	2 848	3 363	3 843	1.3	12.9	11.0	13.0	0.1
Kaliningrad Oblast	3 656	4 281	4 242	1.2	7.9	11.1	10.1	2.1
Leningrad Oblast	4 458	7 986	10 121	2.3	14.0	17.7	17.1	3.1
Murmansk Oblast	2 510	3 223	4 486	1.8	10.6	14.6	20.7	10.1
Novgorod Oblast	1 566	1 647	2 119	1.4	14.6	11.6	19.0	4.4
Pskov Oblast	1 687	2 193	3 158	1.9	10.3	13.6	13.7	3.4
Saint Petersburg	23 367	28 347	34 796	1.5	8.9	7.5	16.1	7.1
Total in NWFD	48 327	61 604	76 184	1.6	9.0	9.8	14.9	5.9

* Law "On the contract system in the procurement of goods, works and services for state and municipal needs No. 44-FZ dated April 5, 2013.
Sources: [16]; our own calculations.

with the quality of food, clothing, furniture, household appliances, medicines, gasoline and public transport, medical services, services of management companies and water quality[3].

An important point of the Strategy is the definition of the indicators that need to be increased by 2030. Except for one, all of them proceed from the success of doing business by SMEs. It is a 1.5-fold increase in product turnover in 2015–2030, the growth rate of the turnover of SME products in manufacturing, an increase in the share of products in the total volume of GRP from 13% in 2015 to 26% in 2030, an increase in the share of the average number of employees in the total employed population from 32.8 to 40% and more, respectively. The tasks of increasing the turnover of the products of SMEs in 1.5 times and doubling its share in GRP propose a reduction in the total GRP volume; this measure seems to be groundless.

It can be stated that all indicators are interconnected and, due to this fact, they limit the list of tasks for the development of competitive environment in the economy of the region. However, the tasks are extended by an indicator such as the increase in the average number of participants admitted to competitive procedures for determination of suppliers (contractors, performers), from 2.9 units in 2015 to 4 units in 2030. Of course, its achievement will be the evidence of effective regulation of competitive environment.

The list of the indicators, besides those mentioned above, should include "growth of people's satisfaction with the quality of products", "increase in the level of satisfaction of entrepreneurs with competitive conditions". Then the competitive environment could be assessed directly by the participants of market relations and would be more objective than the assessment by the subject of regulation.

Thus, the corresponding block in Strategy 2030, which is one of the legal forms of regulating the development of market competitive environment, competition and entrepre-

[3] The study of the Monitoring and Sociological Research Agency "Customer satisfaction with the quality of goods and services and price competition in the markets of the Vologda Oblast".

neurship, focuses mainly on the development of small and medium-sized businesses. At the same time, the main condition for the development of a competitive environment and intensification of competition and competitive relations should be the comprehensive approach, which includes simultaneous improvement of the organizational structure and external relationships, regulatory, technological, financial and investment foundations that contribute to the development of business of all forms and sizes. An effective competitive environment is based on a clear distinction between the powers of different levels of government and the spheres of activity of authorities at each level [17, p. 111].

Currently, the policy of development of competition and the competitive environment in the regions is carried out by territorial agencies of the Federal Antimonopoly Service, departments (ministries, committees, etc.) for economic development, non-governmental sectoral bodies (non-profit associations), the Business Rights Commissioner, etc. Regional authorities have also been taken steps for the implementation of the Standard for development of competition in constituent entities of Russia[4].

In accordance with governmental policy and the above-mentioned integrated approach, we associate the main directions of regional policy in the development of a competitive environment in the economy with the following:

1) ensuring the freedom of entrepreneurs, eliminating administrative and economic barriers;

2) improving economic conditions for ensuring economic efficiency of market subjects and improving the quality of the goods they make, works they execute, and services they render, as well as innovative production;

3) control over monopolistic activity, including the activity of natural monopolies, prevention and elimination of unfair competition.

Fruitful work in these areas, becoming system-wide in its nature, is possible with participation of all institutions regulating the competitive environment, their organization in a single mechanism and the establishment of appropriate resource support for their functions, and development of methods, tools and forms used in the regulatory process. Consequently, the development of organizational and economic mechanism to shape and regulate the competitive environment in the regional economy is becoming urgent.

Research results

The general scheme of the regulatory mechanism includes the following elements:

– subject – driving force that launches the mechanism;

– goals – programmable desired outcomes of the work of the mechanism;

– methods – tools, techniques, and technologies of the processes for achieving the goals;

– form – organizational and legal registration of methodological support;

– funds – a set of types and sources of resources used to achieve the goals;

– objects – economic entities, economic environment [18].

The interrelationship and action of elements in space and time constitute the essence of the mechanism under consideration. There exist different approaches to its interpretation. Let us consider two of them. For example, A.I. Tatarkin understands the mechanism of regional industrial policy as a system of legal, organizational and economic measures

[4] About the approval of the standard of development of competition in subjects of the Russian Federation: Resolution of the Government of the Russian Federation No. 1738-r of September 5, 2015.

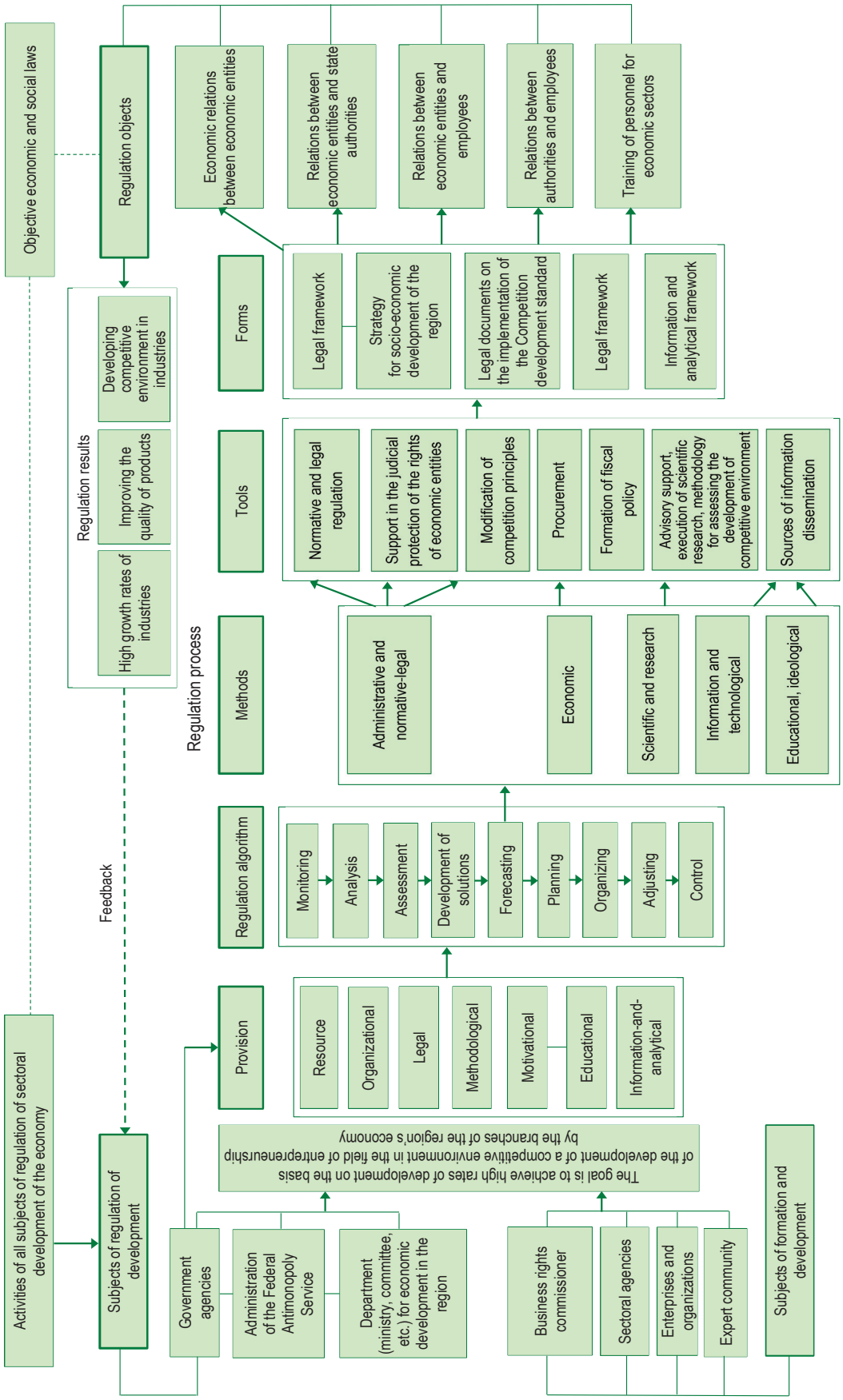


Figure 2. Conceptual scheme of an organizational and economic mechanism for designing and regulating a competitive environment in the regional economy

that promote the emergence of competitive production and the increase in its efficiency [19, p. 67]. According to V.G. Afanas'ev, control mechanisms are those practical measures, tools, levers, and incentives by which the management bodies affect the society, production and any system of social order with the aim of reaching their objectives [20, p. 234]. In general, when searching for a universal definition of the mechanism, most scientists distinguish several similar characteristics.

In this article we will adhere to the definition of organizational and economic mechanism as the relationship and interaction of the organizational structure of regulation and organization of decision-making processes with methods, techniques, tools in accordance with the rules of management, aimed at the most effective functioning and development of the market.

The purpose of the development of this mechanism lies in the successful development of the sectors of the regional economy based on improving the competitive environment in the sphere of entrepreneurial activities. Its construction is based on such principles as:

– minimal state interference in the regulation of market activity;

– freedom of economic activity, freedom of information;

– support for competition, protection of entrepreneurship and property rights.

One of the subjects of regulation in the regions is the Federal Antimonopoly Service *(Fig. 2)*. Its functions include monitoring the compliance with antimonopoly legislation, legislation in the sphere of activities of natural monopolies, advertising, and control in the sphere of procurement of goods, works, and services for ensuring federal needs. As we know, the fourth anti-monopoly package (amendments to Federal Law "On the protection of competition"[5]) was adopted by the Federal Antimonopoly Service for the purpose of developing preventive control measures. The legislation in the field of competition development should be adjusted in compliance with these regulations. It is due to the goals of creating a favorable competitive environment in the activities of economic entities, ensuring their equal access to goods (works, services) of natural monopolies, termination of anti-competitive interference of authorities in the functioning of markets, improving the efficiency of budget expenditures when placing state and municipal orders, ensuring effective control over foreign investment in economic companies of strategic importance.

Departments (ministries, committees, etc.) on economic development in the regions are another subject of regulation. For example, the functions of the Department of Economic Development of the Vologda Oblast are, inter alia, to develop and ensure the implementation of measures for the development of SMEs in the region, to regulate investment activities, create a favorable investment climate and conditions for development of innovation, regulate and develop trade activities, monitor the state and development of individual industries, implement measures for international and interregional cooperation, implement policy in the field of quality, and enhance the competitiveness of goods and services[6].

These subjects of regulation are government agencies.

An important subject of the formation and development of a competitive environment is the business rights commissioner. The scope of

[5] On the protection of competition: Federal Law No. 135-FZ dated July 26, 2006.

[6] About the approval of the Regulations on the Department of Economic Development of the Vologda Oblast: Resolution of the Government of the Vologda Oblast No. 1314 dated December 16, 2013.

his/her tasks includes support for the development of entrepreneurs and protection of their rights and interests.

As for non-governmental sectoral agencies that form and develop competitive environment, then in the Vologda Oblast, for example, they include the regional association of employers the Union of Industrialists and Entrepreneurs of the Vologda Oblast and its non-profit organizations – regional industry associations of employers: the Union of Timber Industrialists and Exporters of the Vologda Oblast, the Union of Enterprises and Entrepreneurs of the Consumer Market of the Vologda Oblast in the Field of Trade and Services, the Union of Builders and Designers of the Vologda Oblast, the Association of Peasant (Farmer) Enterprises and Agricultural Cooperatives, and the Vologda Oblast Federation of Trade Unions.

The main objective of the sectoral bodies is to create equal competitive conditions for all in the business environment, to develop coordinated professional requirements for improving the quality of work, to organize coordinated interaction with employees, to implement unified corporate protection of employees together with trade unions and other interested organizations. The common tasks for them are to integrate Russian business into the world economy, preserve traditional and search for new markets for Russian-made products, and create conditions for attracting foreign investments to the country [21].

The work of the Federation of Trade Unions consists in representation and protection of social, labor and civil rights, industrial, professional, economic and social interests of the labor collective and individual workers.

The enterprises themselves and the organizations which are carrying out fair and open competitive policy setting an example for other economic entities serve as the subjects of formation and development of competitive environment.

Expert support of the processes of formation and development of competitive environment can be provided to the subject primarily by the scientific community and experts in the relevant field. Involving them in the regulation of these processes will allow them to perform the tasks of developing a competitive environment at a high professional level and with greater efficiency.

The objects of regulation are various aspects of relations between economic entities, public authorities, and employees in the course of economic activity, as well as educational training of personnel for economic sectors.

These relations are regulated with the help of material, financial, and labor resources that the subjects of regulation possess. These processes are also promoted by *legal* support that includes advisory services on legal issues in the field of competition and development of competitive relations, and the regulatory framework in this sphere. *Information and analytical* support consists in the use of such sources as statistics, research findings, reports of enterprises, the Internet and the media that bring the processed information to the participants of regulated relations.

Organizational support consists in consolidating the resources required for the implementation of the tasks aimed to develop a competitive environment, in providing the performers with functions and powers to execute the works in accordance with a specified algorithm (see Fig. 2) and to interact with other subjects. At the same time, making an algorithm of the works involves the development of *methodological* support in the form of a set of tools, which is a companion document in the implementation of regulatory functions. The rise in labor remuneration plays the main

role in *motivational* support of increasing the functionality of the subjects of regulation. This also includes *educational* support in the form of trainings and courses that contribute to the improvement of qualification and acquisition of new knowledge and skills.

The mechanism with the help of which the subjects regulate the relations presented in the scheme is implemented with the use of various methods and tools. Thus, *administrative* and *regulatory legal* methods are those that consolidate the effect of the conditions and drivers of the market environment and the specifics of competitive relations of participants of economic activity, as well as those that help ensure the observance of related rights at the legal and subordinate levels. The tools of the method are normative legal regulation of economic activity, support in judicial protection of the rights of economic entities in various instances, modification of the principles of competition (formalization of effective rules operating in economic relations by establishing feedback from the participants of the regulated entities to the subjects).

The most effective methods for regulating the development of a competitive market environment are economic ones, that is, those that influence the entrepreneurial activity of market agents and the amount of their work [22]. Here we can select such tools as the implementation of public procurement in accordance with Federal Law 44-FZ of April 5, 2013, participation in the formation of optimal tax rates and benefits, changes in the terms of payment of tax liabilities and subsidies to enterprises.

These methods are necessary to be supplemented by the *research method*, which consists in the scientific substantiation of regulatory processes and improving their quality. Scientific support of the decisions made by the subjects may include up to 5–6 steps of the control algorithm (monitoring of the current condition – analysis – assessment – decision development – forecasting – planning), before organizing the work to develop a competitive environment. At the same time, one of the stages of the algorithm – evaluation of the competitive environment in the economy – requires that a set of methodological assessment tools be designed and implemented. Prior to the entry into force of regulatory legal acts, it is obligatory that scientific organizations and specialists assess their regulatory impact on market participants.

Information-and-technology, ideological and educational methods of regulation cover a large amount of information and analytical data related to the economic activity of economic entities, its legal protection and opportunities transmitted through information sources (Internet, various types of telecommunications, newspapers, specialists). Educational and ideological methods also include information that brings new knowledge to the rules of competition and promotes the development of healthy competition between market agents.

Competitive environment is regulated with the help of various means: legal registration, to which we refer regional strategies for socio-economic development, and legal documentation for the introduction of the Standard for development of competition in the subjects of the Russian Federation; organizational registration (a set of forms for organizing the support of participants in economic activities and promoting competition between them); information and analytical registration, expressed in the placement of data in certain sources by various means.

Implications and conclusion

In conclusion, we note that the process of regulation carried out through the organizational and economic mechanism of formation

and regulation of the competitive environment in the economy of the region takes place under the influence of external environmental factors, which include:

– global and domestic market demand for and supply of products, labor and resources;

– trends in global and national economies;

– the nature of international political and economic relations, etc.

In this regard, the mechanism is functioning alongside continuous consideration of the factors and appropriate adjustment of its elements.

Thus, the organizational and economic mechanism to form and regulate the competitive environment in the regional economy is represented by a set of interrelated methods, tools and forms implemented according to a given algorithm by governmental and non-governmental entities (subjects) in order to ensure effective functioning of the market, regulate various aspects of economic relations of economic entities, public authorities, and employees, as well as educational training of personnel for economic sectors.

As a result of this regulation, a competitive environment in the sectors of the regional economy should be developed, the quality of their products ensured, and growth rates increased.

At the same time, the proposed mechanism meets the features that we identified in the previous study [23, p. 95]; and they should be taken into account in the formation of the mechanism. These features are as follows: the need to ensure the availability and completeness of information for economic agents (the formation of a quality and comprehensive information environment); creation of conditions for free access to information sources; perception of evolving, objectively existing principles and rules of competition in the economy by the mechanism, their formalization; guarantee of protection of private interests on an institutional basis; provision of a preliminary analysis of the use of regulatory tools in terms of their potential impact on the development of the competitive environment of the regional economy; monitoring the level of development of the competitive environment in the sectors of regional economy, etc.

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MODELING AND FORECAST OF SOCIO-ECONOMIC PROCESSES

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Computer Analysis of Qualitative Features in the Formation of the Socio-Ideological Structure of Society*

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Abstract. The goal of the present paper is to develop a special methodology for analyzing and forecasting mass social interactions; the methodology can be used in various studies of how social positions and opinions of the population are formed. The paper proposes a technique of mathematical modeling of mass social interactions in the context of a comprehensive interplay of social contacts, under the impact of information channels and the external environment. The model is based on substantial ideas about cause-effect relationships between the size of social groups and their changes as a result of mutual transitions, the ideas about how the views of other participants and various media influence socio-psychological attitudes, and about possible external impact on the effectiveness of propaganda. In contrast to commonly used differential equations focusing on the analysis of the stationary state, we propose to analyze the group size dynamics with the use of simple modifications of Markov chains when participants do not move from one group to another uniformly, but are distributed through several time periods, and the probabilities

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of such a transition depend on the current state. For this purpose, computer programs that express the iterative procedures of Markov chains with additional intermediate states are used. An important feature that distinguishes our approach from other models consists in the reliance on a sociological theory that requires social behavior be considered as dependent on variables such as socio-psychological attitudes of members of social groups. Our work also takes into account the factors that determine the attitudes, namely social contacts between people and information channels of different types available to the participants. With the help of simulation calculations, we show how this attitude may affect the inter-group transitions in the formation of a socio-ideological structure of society. In general, these models are a kind of situational stand where we can study the features of formation of the ideological structure of society. If statistical or expert data are available, then the model we have developed can be used to analyze regional socio-political issues.

Key words: attitude, ideological structure of society, social groups, social contacts, the media, dynamics, probability of inter-group transitions.

1. The importance of information in shaping human behavior

The enormous complexity of the modern world, information flows that cover all its parts, computers and electronic equipment that have become necessary management tools – all this led to the emergence of concepts such as "digital economy", "electronic government", etc. The need for effective managerial decision-making on all socio-economic issues allows us to speak about "digital sociology" in a broad sense.

Information generated in a society becomes to a certain extent a demiurge of this society because it increasingly affects people's opinions about the reality around them and forms the preferences of social groups. Regular attacks of the U.S. media on their President, debates in social networks and about social networks, endless controversial speeches and comments of various politicians and experts, demonstrations convened through the Internet, and clashes at rallies – all this turns society in a boiling sea of living people and information flows.

In this regard, the researchers who study socio-economic and political reality face a task to understand the attitudes and causal relationships in the interaction of information and social groups [1, p. 207-214].

The influence of the media, the Internet, etc. on public opinion and on socio-political behavior is considered in many works, both in Russia and abroad. Numerous works by Western and Russian authors mainly focused on simulating the spread of rumors as infection [2, p. 50-54; 3, p. 457-470; 4; 5], analyze the impact of advertising on consumer behavior, emergence of gregarious behavior in people, lust for power [6; 7, p. 58-64], formation of protest groups and preparation of revolutions [8, p. 440-460; 9, p. 76-188; 10, p. 384-434]. Several works [11; 12] contain harsh criticism of the mass media that engage in brainwashing people under the guise of disseminating democracy; the works [13;14] address general problems of modern civilization in this aspect. A large group of Russian researchers from the Institute of Applied Mathematics under the Russian Academy of Sciences and the Department of Sociology at Lomonosov Moscow State University is working on the models of rumor spreading and has developed a mathematical model in the form of differential equations for describing information warfare in society [15; 16, p. 65-74; 17, p. 29]. In recent years, researchers at the Central Economics and Mathematics Institute of RAS analyzed models of ideological confrontation in society

and conducted statistical studies of the drivers of protest movement in Russia [18, p. 45-66].

In October 2016, Lomonosov Moscow State University hosted the all-Russian research-to-practice conference "Situation centers 2016"; its participants discussed the issues of creating a system of distributed situation centers in Russia operating under unified regulations. Some research findings of scientists from RAS and the Higher School were also presented at the conference. Eminent scholars and practitioners point out that such centers established in different regions of the country should be able to analyze the socio-economic and socio-political situation and provide the governing bodies of different levels with science-based solutions. Of course, elaborating such solutions should be based on the processing of large amounts of diverse information that reflects the situation; this involves arranging it in the form of some mathematical model allowing for its computer processing.

2. The goal of the study

The goal of this article is to develop a special methodology for analyzing and forecasting *mass* social interactions, a methodology that can be useful for the functioning of situation centers. It is dedicated to computer simulation of the correlations that naturally emerge in the processes of interaction at the "political and ideological field" between social groups, the media, and the external environment. The work involves the possibility of using special statistical information, but when we carried out computational experiments and analyzed their results, we used conditional data. At a purely speculative, qualitative level, it is impossible to trace the consequences of actions of all the participants of social interaction and detect how their multiple characteristics and properties will change. Therefore, the use of computers, even when dealing with conditional data, allows us to identify the role of correlations between such parameters as the availability of information channels, strength of their impact, people's inclination to imitate, random factor, etc.

As for the nature of its mathematical tools and modeling technique, the present work has some common aspects with the approaches described in [16, p. 65-74; 17, p. 29], etc., because these works, like ours, analyze the properties of models of virtual reality.

Mathematically elegant models in the form of differential equations designed by the authors mentioned above are useful, because they help obtain an explicit expression of the steady-state condition and analyze its dependence on the model parameters. However, for practical calculations, for example, forecast calculations, we consider it more convenient to use difference equations that are inherently close to the cause and Markovian dependencies. Especially for practical use of the model, it is necessary to conduct statistical estimation of parameters not only for the ultimate limit states but also at other time intervals. For this reason, we introduce difference ratios from the very beginning, and indicate the possibilities of their reflecting individual differences of the participants by introducing intermediate states. After that, computational experiments with virtual reality are conducted that help consider the properties of the society and provide an opportunity to see various scenarios of social change as a result of complex interactions between social groups, the mass media and the external environment.

It is necessary to mention that *qualitative conclusions* can be made already at the early stages of the process on the basis of quantitative calculations with the use of computer technology. In the presence of quantitative estimates of model parameters, it becomes possible to analyze real socio-political situations and to solve specific problems of forecast and management.

Let us point out two more features of our approach compared to the above-mentioned mathematical approach to the overall description of the processes of information dissemination. First, we follow the substantive sociological ideas about the dependence of behavior upon an individual's *attitude* that can be measured quantitatively and is affected both by direct social contacts and the media. Second, we examine the *polarity of interests* of major population groups.

3. Socio-ethical attitudes of social groups

We consider the following assumptions about the properties of reality, which are then expressed in mathematical language:

The community under consideration (this community may include young people, population of the region, the electorate on the eve of an election, etc.) consists of several social groups, and each of them has its own type of attitude toward reality and toward possible behavior.

People's attitude toward reality, their subjective assessments (usually positive or negative) and inclination toward something are latent characteristics manifested in certain statements or behavior. We call it an attitude characterizing the readiness for a certain behavior, and this attitude can be measured by certain scales [19]. Examples of attitudes include assessments of programs and slogans of political parties, opinions concerning free sex and moral rigor, tolerance, religious faith and atheism, etc.

Sociologists have found that the attitudes of group members can change either as a result of social contacts (the effect of imitation) or under the influence of information received via media channels, advertising, etc. In turn, the attitudes of group members influence the behavior, in particular, the probability of making certain decisions. As a result of the behavior that people implement, there emerge different groups of conventionally the same type; this defines the social structure of society in the context of appropriate attitudes and behavior.

4. Key variables and parameters of the model

The model considers three major groups (two active and one neutral) and a few "intermediate" groups, whose members quit the major groups and do not participate in social contacts for some time.

In model calculations the fixed parameters and variables for the moment of time t are designated as follows:

x_t – the number of participants of the first active group;

z_t – the number of participants of the second active group;

y_t – the number of participants of the neutral ("passive") group;

$e1_t$, $e2_t$ – quantitative expression of the attitudes to support the goals of the first active and second active groups, expressed on a certain numerical scale;

$E1$, $E2$ – quantitative expression of the values of attitudes "imposed" by the media (typically, the amount of negative and positive information toward the behavior and goals of active groups), measured on the same scale as $e1$, $e2$;

ρ, π – probabilities of autonomous reduction in the size of the first and second active groups at the moment of time t,

$p \cdot \Phi(e)$, $r \cdot \Phi(e)$ – the product of parameters p, r and the monotone function of a participant's attitude (in our case, the so-called error function integral), denoting the probability of transition from the "passive" group to the first or second active groups under the influence of acquired attitude e,

$A1$, $A2$ – parameters indicating the strength of influence of deviation from the imposed standard on the alteration of the current value of the attitude,

B1, B2 – parameters indicating the strength of influence of ideas of a participant concerning the numerical ratio between active groups on the alteration of the current value of the attitude.

5. Socio-ethical structure of society and the change of this structure

The socio-ethical structure of society is determined by the ratio of group sizes: *x, y, z,* when the participants of the first (*x*) and second (*z*) active groups identify themselves as such, but the participants of the passive group (*y*) do not identify themselves as being part of any of the active groups. Examples of socio-political attitude can be found in the intention to vote for a particular party, the degree of confidence in an electoral candidate or public figure, the assessment of their certain qualities, etc.; all these aspects are measured by sociologists.

The value of the attitude is changed under the influence of two processes of communication: under the influence of possible contacts with representatives of the active groups, and under the influence of information received via the corresponding channel. According to the assumption of the models, the information of the channel "recommends" each recipient a specific value of "standard" attitude (*E1* or *E2*), this value expresses a negative or positive tone toward the subject of agitation, which can be measured on a numerical scale.

The difference between the imposed standard and the current value of the attitude *E-e* creates a psychological discomfort which under the additional influence of social contacts with other participants may change in either direction. According to the simplest testable hypothesis [20, p. 110-134], a possible change in attitude caused by direct influence of the imposed standard is in proportion to the magnitude of this difference:

$$\Delta = A \cdot (E - e).$$

We can also assume that the change is nonlinear, it decreases as it gets closer to the standard:

$$\Delta = A \cdot (cnorm(E - e) - 0.5).$$

The function *cnorm(·)* represents the so-called error function integral, it increases monotonically from 0 to 1 (here we follow the approach of a renowned scientist [15]).

Figure 1 shows that if the value of the attitude $u < E1=5$, then the magnitude of its change is positive, when $u > E1$, then the magnitude is negative. It is usually considered that the influence on the change in the attitude caused by possible social contacts depends on the frequency of meetings with supporters of both positions. The probability of such contacts can be simulated considering it proportionate either to the predominance of the share of one or another position among the activists, or to this share in relation to the size of the entire neutral group. It is obvious that the type of statistical relationship should be identified by the data of objective observation. Then the magnitude of change can be represented, for example, as follows:

$$A \cdot (E - e) + B \cdot \frac{x - z}{x + z} \cdot y \ ,$$

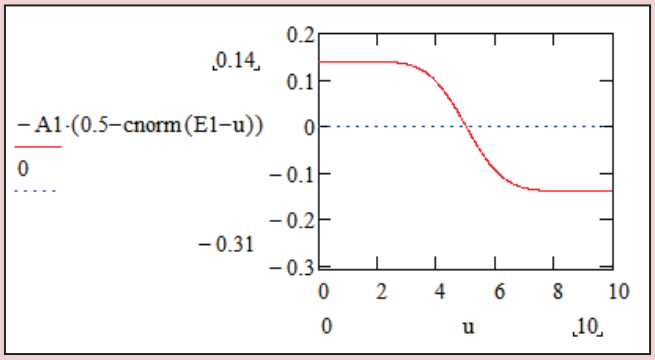
or like this:

$$A \cdot (cnorm(E - e) - 0.5) + B \cdot \frac{x - z}{x + z} \cdot y \ , \quad (1)$$

where the coefficients *A* and *B* compare the effect on the current attitude of the difference from the standard *E* and the numerical superiority *(x-z)* of a particular group. If the sum is positive, then the value of the attitude will increase; if the sum is negative, the value will decrease.

Let us now express the meaning of the basic model with the help of the formulas for a simple equilibrium macro model, when the

Figure 1. Nonlinear dependence of change in the attitude



Compiled with the use of our own calculations.

requirements of equality to zero in the change in the size of the groups *x, y, z*, and changes in the attitudes *E1* and *E2* are fulfilled.

Equilibrium equation (*Ia model*):

$$1.\ -x\cdot\rho + r\cdot cnorm(e1)\cdot y = 0$$
$$2.\ -r\cdot cnorm(e1)\cdot y - p\cdot cnorm(e2)\cdot y + \rho\cdot x + \pi\cdot z = 0$$
$$3.\ -\pi\cdot z + p\cdot cnorm(e2)\cdot y = 0$$
$$4.\ A1\cdot(E1 - e1) + B1\cdot\frac{x - z}{x + z}\cdot y = 0$$
$$5.\ A2\cdot(E2 - e2) + B2\cdot\frac{z - x}{x + z}\cdot y = 0$$
$$6.\ x + y + z = N,\ \text{где } N - \text{общее число участников.}$$

The first equation shows that in the equilibrium the number of those who left (ρ – the share of those who left the group) the first active group is fully compensated by the share of those participants of the neutral group who received the information from the sources of the first type and received the attitude *e1* under the influence of which they left the neutral group with the probability $r\cdot cnorm(e1)$. The third equation is similar to the first one and describes the situation with the equilibrium of *z*-members. The second equation indicates the equality between the number of those who came from the active groups and the number of those who left to join the active groups.

Thus, participants from the active groups move autonomously to the neutral group with the known probabilities (ρ, π). Participants move to the active groups from the neutral group with the probabilities $r\cdot cnorm(e1)$ and $p\cdot cnorm(e2)$. The fourth and fifth equations show how the influence of information *E1, E2* from the mass media on the current attitude *e1, e2* (influence coefficients *A1, A2*) correlates with the information obtained through intergroup contacts (influence coefficients *B1, B2*). The values of parameters at which the equilibrium of this model were calculated are as follows:

$A1$=0.28, $A2$=0.28, $B1$=0.05,
$B2$=0.045, $E1$=6,
$E2$=6, r=0.01, p=0.015,
ρ=0.015, π=0.015, N=1000.

The solution of these equilibrium equations is represented by the following values of the variables:

x=181.531, y=106.762, z=711.717,
$e1$=0, $e2$=6.

Due to the differences in the parameters B2>*B1* and p>*r*, indicating a greater inclination

toward imitation and a greater impact of the attitude to transition, the *z*-group receives a distinct advantage: $z>x$.

6. Models of the dynamics of the structure of society

The dynamics of the sizes for this simplest case can be represented by a system of difference equations in which we add logical conditions that specify the interval for the values of the attitudes. Time in the models is discrete and runs through the values from $t_0=0$ to the required number of iterations. At all the calculations conducted, the original data (parameters) were set artificially and expertly, taking into consideration previous studies [20, p. 110-134; 21, pp. 107-118]. Additionally, several thousand alternative calculations were conducted to check structural stability of the models.

Speaking about the specified parameters of the model, it is necessary to emphasize one fact that is not always given sufficient attention when simulating socio-economic processes. We are talking about the seemingly auxiliary parameters with the help of which we move from differential equations to difference equations: about the parameters h_k that specify the step size or the rate of change of the indicators of an iterative process.

No doubt, differential equations provide (due to their smallness) the closeness of solutions of difference equations and differential equations. But their quantitative relationship to each other determines the stability of the stationary state. And in the case of the models of "Markovian" nature, they determine the rate at which the simulated parameters actually change. In fact, they are equal parameters of the model and, just as others, should be evaluated statistically according to observations, as we did in other works. With respect to the models under consideration, we note that the values of the *h*-coefficients for the variables *x, y, z* can be considered identical due to the homogeneity of the indicators of size. The same is to some extent true for the *h*-coefficients of the variables *e1* and *e2*. As for their numerical values, it depends on the general assumptions of the model. In a particular simulation, we can specify which propaganda has the influence that is adopted faster, and which – slower.

The simplest dynamic *model 1b* has the same parameters and initial values of the variables: $x_0=50$, $y_0=900$, $z_0=50$; the rate of change $h_0=0.1$, $h_1=0.1$, $h_2=0.1$, $h_3=0.015$, $h_4=0.015$:

$$x_{t+1} = x_t + h_0 \cdot [-x_t \cdot \rho + r \cdot cnorm(e1_t) \cdot y_t]$$

$$y_{t+1} = y_t + h_1 \cdot [-r \cdot cnorm(e1_t) \cdot y_t - p \cdot cnorm(e2_t) \cdot y_t + \rho \cdot x_t + \pi \cdot z_t]$$

$$z_{t+1} = z_t + h_2 \cdot [-\pi \cdot z_t + p \cdot cnorm(e2_t) \cdot y_t]$$

$$e1_{t+1} = if\left[e1_t \le 0{,}0, 0, if\left[e1_t \ge E1, E1, e1_t + h_3\left[A1 \cdot (E1 - e1_t) + B1 \cdot y_t \cdot \frac{x_t - z_t}{x_t + z_t} \right] \right] \right]$$

$$e2_{t+1} = if\left[e2_t \le 0{,}0, 0, if\left[e2_t \ge E2, E2, e2_t + h_4\left[A2 \cdot (E2 - e2_t) + B2 \cdot y_t \cdot \frac{z_t - x_t}{x_t + z_t} \right] \right] \right]$$

When simulating the changes in attitudes, without losing generality, it is assumed that scale values are in the range from 0 to 6, and that it is possible to choose the scales with other ranges depending on specific cases. In order to avoid obtaining the values of attitudes beyond zero and *E1, E2* in the calculations, we introduce special logical conditions that provide the necessary restrictions in the last two equations of the system.

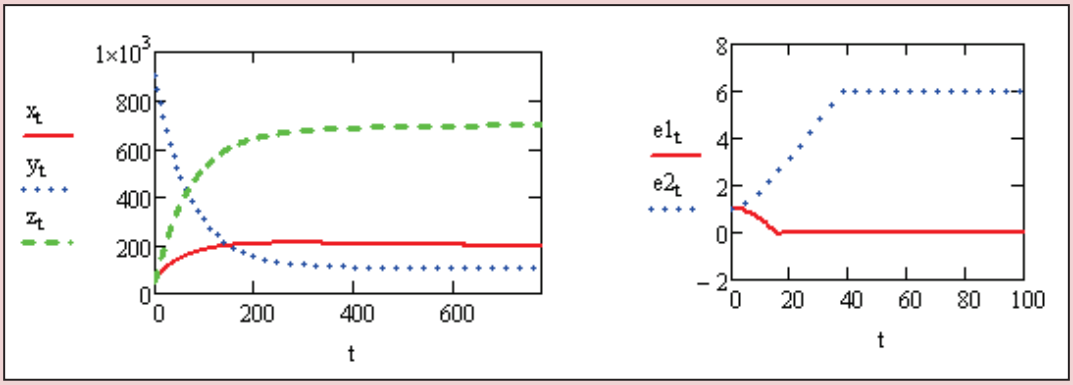
As a result of the calculations, the stationary solution of this system (the state at $t = 500$) coincides with the current balance. We note that the total change in all the sizes is N, which means the total size of all the groups remains unchanged with the passage of time. The trajectories of behavior starting from the initial state depend on the values of the model parameters.

The graph in *Figure 2* shows that already at the 400-th iteration the process stabilizes and coincides with the equilibrium.

Now it is necessary to point out that simulating the dynamics of the attitudes with the use of successive iterations according to the type of standard Markov chains, like in *Model 1b*, (as well as with a standard solution of differential equations using difference schemes) has a significant drawback. Since the probability of transition of an individual member of the group (group's share) depends only on the group itself, it will be the same for all its members regardless of when and how the member got into this group, i.e. all group members are similar and they make transitions simultaneously.

Admittedly, we do not consider the transitions of Markov chains, but rather those of "Markov-type" chains (introducing the rate of change expressed by the h-coefficients), because only a small part of the group change their state in one phase. Still, the lack of general "Markov behavior" weakens the model; and to reduce this defect we introduce some number of "intermediate" groups – for the moments of transitions – whose members have become different. As a result, in order to become an "equal" member of a particular group, the member that moves from one group to another must pass through several stages. This technique, of course, increases the number of variables and the dimensionality of the system, but at the same time brings the model closer to reality.

Figure 2. Trajectories of the dynamics of the model variables



Compiled with the use of our own calculations.

Next, we design and examine this more plausible model, which is like a "small" version of the so-called "agent-based" models [22], in which the participants are represented by individuals.

Additionally, we introduce a more specific assumption about the dependence of the number of those who move from one group to another on the prevalence and accessibility of information channels. This fact is reflected in the model by the probability of connecting to the channels (*q1* and *q2*). In addition to the previous model (except for the introduction of these probabilities) we will reflect the influence of the frequency of social contacts on the transition.

A neutral participant, depending on the prevalence of the media of the first or second channel with the probability *q1* or *q2* joins a subgroup of the carriers of the respective attitude (*e1* or *e2*) who assimilate the information of the orientation *E1* or *E2*. Modification of the current attitude is described by the above formula (1). After that, as a result of communication with active members and under the influence of the adopted attitude (*e1* or *e2*) the transition itself happens with a probability that depends on both results of communication. Those who came under the influence of the *x*-ideology make up $q1 \cdot y$ participants. The probability of "going further" depends on the number of its supporters and on the information-psychological pressure on the part of the media, which leads to an increase in the number of supporters of the *x*-ideology by the value $q1 \cdot \left(r \cdot \frac{x}{x+z} + G1 \cdot cnorm(e1) \right) \cdot y$. Those who came under the influence of the *z*-ideology form $q2 \cdot y$ participants. This leads to an increase in the number of supporters of the *z*-ideology by the value $q1 \cdot \left(r \cdot \frac{x}{x+z} + G1 \cdot cnorm(e1) \right) \cdot y$. Naturally, both fractions in these formulas denoting the ratio between the sizes of the groups in reality cannot be known to a particular participant. However, if they reflect the actual and changing proportion between the *types* of people in a society [23; 24], then, according to the principles of social psychology [25] in modern information society, the influence of this fact on the behavior should not be questioned, and modern statistical procedures are able to estimate the necessary values of parameters.

If we do not assume that all the members of one group are similar, we believe that, having left one group, the participant is in an intermediate state for several time steps; and now the participants differ according to this state. Since we are interested in methodological aspects in this regard, we shall consider only two intermediate transitions, although their number can be increased. In our case, dynamic equations will reflect two additional moments of time and the corresponding intermediate groups *Δx, Δy, xx, yy*. In the calculation formulas of the model these variables are recorded with the same index of the moment of time *t*, although by their content they belong to the previous ones: *xx, yy* are one step behind, and *Δx, Δy* are two steps behind.

Those who have fallen (with the probabilities *q1, q2*) under the influence of information channels form the first "intermediate group" (*Δx* and *Δz*); then, having passed through another stage, they get into the next intermediate group (*xx* and *zz*). And only at the next stage they become equal members of an active group. Those who leave the passive groups (*Δy* and *yy*) go through the same procedure. The equations to change the attitude contain logical conditions providing the values of the attitude between zero and *E1* or *E2*.

Then the dynamic equations are as follows:
Model II (basic)

1. $x_{t+1} = x_t + h_0 \cdot (-x_t \cdot \rho + xx_t)$
2. $xx_{t+1} = \Delta x_t$
3. $\Delta x_{t+1} = q1 \cdot \left(r \cdot \frac{x_t}{x_t + z_t} + G1 \cdot cnorm(e1_t) \right) \cdot y_t$
4. $y_{t+1} = h_1 \cdot \left[-q1 \cdot \left(r \cdot \frac{x_t}{x_t + z_t} + G1 \cdot cnorm(e1_t) \right) \cdot y_t - q2 \cdot \left(p \cdot \frac{z_t}{x_t + z_t} + G2 \cdot cnorm(e2_t) \right) \cdot y_t \right] + yy_t$
5. $yy_{t+1} = \Delta y_t$
6. $\Delta y_{t+1} = x_t \cdot \rho + \pi \cdot z_t)$
7. $z_{t+1} = z_t + h_2 \cdot (-\pi \cdot z_t + zz_t)$
8. $zz_{t+1} = \Delta z_t$
9. $\Delta z_{t+1} = q2 \cdot \left(p \cdot \frac{z_t}{x_t + z_t} + G2 \cdot cnorm(e2_t) \right) \cdot y_t$
10. $e1_{t+1} = if\left[e1_t \le 0{,}0, 0{,}if\left[e1_t \ge E1, E1, e1_t + h_3 \left[A1 \cdot (E1 - e1_t) + B1 \cdot y_t \cdot \frac{x_t - z_t}{x_t + z_t} \right] \right] \right]$
11. $e2_{t+1} = if\left[e2_t \le 0{,}0, 0{,}if\left[e2_t \ge E2, E2, e2_t + h_4 \left[A2 \cdot (E2 - e2_t) + B2 \cdot y_t \cdot \frac{z_t - x_t}{x_t + z_t} \right] \right] \right]$

We implemented and calculated the model in the MATHCAD package with the use of conditional data.

Let us consider the dynamics of trajectories with initial conditions $x_0 = z_0 = 100$, $y_0 = 800$, $e1_0 = 1$, $e2_0 = 3$ and at the following values of parameters:

A1=0.28, *A2*=0.28, *B1*=0.05, *B2*=0.05, *E1*=6, *E2*=6, *G1*=0.43, *G2*=0.43, *r*=0.01, p=0.031, *q1*=0.32, *q2*=0.20, *ρ=0.015, π=0.015.*

The results of the calculations are presented in *Table 1* and in *Figure 3*.

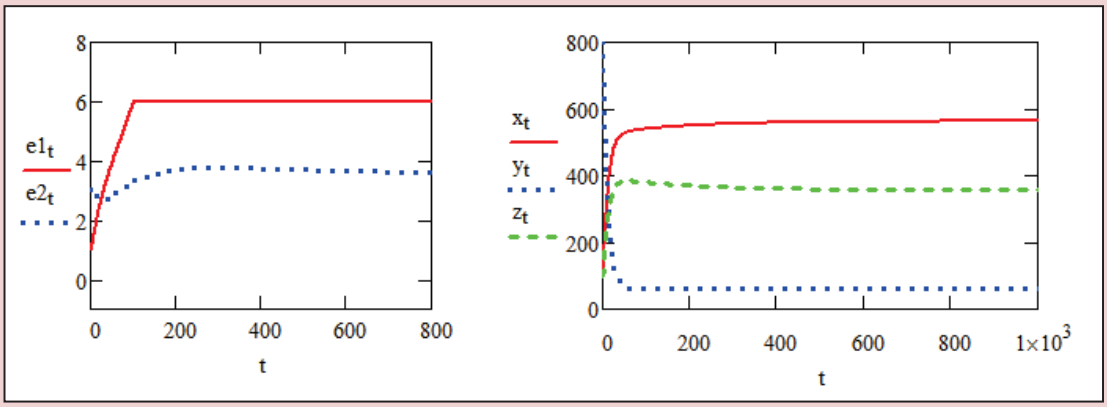
The initial quantities of active groups are similar. The initial attitude ($e2_0$=3) in those who contact with the *z*-media is greater than in those who contact with the *x*-media ($e1_0$=1); the importance of social contacts for transitions of the *z*-group is also greater than that of the *x*-group (*p>r*). However, due to the greater prevalence of the *x*-media (*q1>q2*) the limit attitude and size of the *x*-group exceed the values of their "competitors".

We also see that the number of those who move from one group to another in one time step of the iteration ("intermediate groups") is much less than the number of basic ones, which is natural, since the groups transform

Table 1. Stationary values of the variables

X	*xx*	*Δx*	*y*	*yy*	*Δy*	*z*	*zz*	*Δz*	*e1*	*e2*
563.03	8.445	8.445	60.515	13.794	13.794	356.592	5.35	5.35	6	3.6
Compiled on the basis of our own calculations.										

Figure 3. Trajectories of the model variables



Compiled on the basis of our own calculations.

gradually. And the shares of those who move to the active groups are defined by the prevalence of propaganda (*q1, q2*), the probability of contacts (*p ,r*) and the force of impact of the attitude (*G1, G2*). In this virtual world the *x* ideology defeats the alternative ideology pretty quickly.

7. The model with the constant percentage of "unyielding" participants (*Model III*)

To emphasize a certain versatility of our approach, we calculated the trajectories of the basic model under a *nonlinear law of influencing the attitude* on the part of the media according to (1). In addition, we introduced a new parameter δ that denotes the constant share of those members of the active first group ("unyielding") that do not leave it under any value of *t*. Now equations 1 and 6 in *Model II* are replaced by the following ones:

$$x_{t+1} = x_t + h_0 \cdot [(-(1-\delta)x_t \cdot \rho + xx_t)]$$
$$\Delta y_{t+1} = (1-\delta)x_t \cdot \rho + \pi \cdot z_t$$

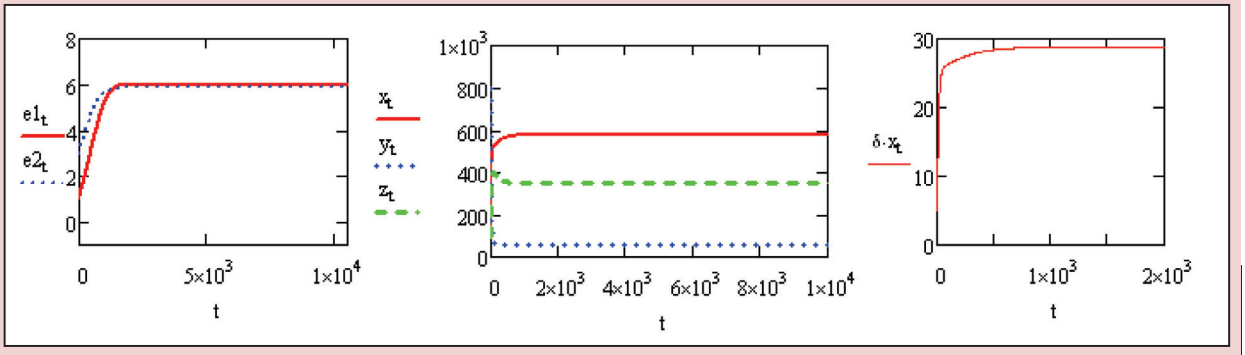
The graphs in *Figure 4* show that the nature of the trajectories of quantities remains virtually unchanged, but both attitudes tend to their limit. The third graph shows that the number of the most "unyielding" (or "conservative") participants quickly stabilizes and does not change.

Let us consider another simulation of a real process at different variants of the values of individual parameters. First, let us assume that the parameters for all groups are the same (*G1=G2, p=r, q1=q2,* $\rho = \pi$), and the initial values of the variables are presented in Column 1 of *Table 2*.

The behavior of the variables *x* and *z* at $t > 0$ does not vary when reaching its final state (see the first line of Table 2) and the neutral group also goes into its stationary state. However, even a slight predominance of one of the initial quantities of the active groups x=80, z=20 saves the predominance for the whole period (second line), as in the previous case. Significantly, due to the imitation effect, the numerical superiority of the second group exceeded even the initial level of the attitude of the *z*-group ($e1_0$=$e2_0$=2). This fact shows the role of social contacts when the sizes of groups differ.

Computer-assisted calculations show how we can compensate for the small initial size of one of the groups to ensure its further predominance. First, we can reduce the gap,

Figure 4. Trajectories of variables of Model III



Compiled on the basis of our own calculations.

Table 2. Dependence of stationary values on initial values

Initial	***Solution***				
$x_0; y_0; z_0$	*x*	*y*	*z*	*e1*	*e2*
50; 900; 50	457.789	78.93	457.789	6	6
80; 900; 20	594.97	102.19	297.485	6	0
Compiled on the basis of our own calculations.					

to level the sizes or even increase the size by increasing the prevalence of the mass media (coefficients *q2*); and second, we can increase the impact of the attitude toward the transition from the neutral group to the active group (*p, G2*). When the prevalence of the media of the second group (*q2*) decreases, then the size of the *x*-group increases at the expense of other groups. When the parameters *p* and *G2* increase, the sizes of the neutral group *y* and the group *z* reduce, while the size of the *x*-group increases. At the simultaneous reduction in the prevalence of the media channels *q1, q2* the sizes of the active groups (*z, x*) reduce, and the size of the neutral group (*y*) increases. Our calculations have confirmed these possibilities.

8. A model with external effects *(Model IV)*

Model III describes the interaction of social groups with information channels, when nothing except these factors influences the opinions and behavior of the group. And under certain parameter values the model is a method of forecasting the observed processes. People's behavior is always influenced by the context they live in: the standard of living, rise in prices, political events in society, etc. These conditions define the fixed values of the model parameters. This may be reflected in a *dependence* of parameters determining probability of behavior on the external environment; such parameters are as follows: to leave the group of activists (ρ, π), to move from the neutral group to an active group (*r, G*), to perceive information with more or less trust (*A, B*). We can also reflect the increase or decrease in the effectiveness of information influence at the expense of additional funds on advertising, propaganda and agitation. Thus, the model becomes a model of control, because knowing how to adjust, for example, the parameters *q* or *G*, we increase the size of the group.

Specifically, in a certain variant calculations under *Model IV* we assume that over time the transitions from the neutral group to the group

of *z*-activists experience external influence, which is manifested in the fact that the coefficient *G2* (the effect of the attitude on transitions) periodically increases by some value. As a result, there is a natural increase in the size of the *z*-group. If the change is manifested regularly in the form of a recurring "add-on" Ψ, then there is no certain stationary state, and there will be a certain attractor that sets a multitude of possible states. This leads to the oscillatory intensification of the *z*-propaganda and – ceteris paribus – to the predominance of the size of the *z*-group *(Tab. 3, Fig. 5 and Fig. 6)*.

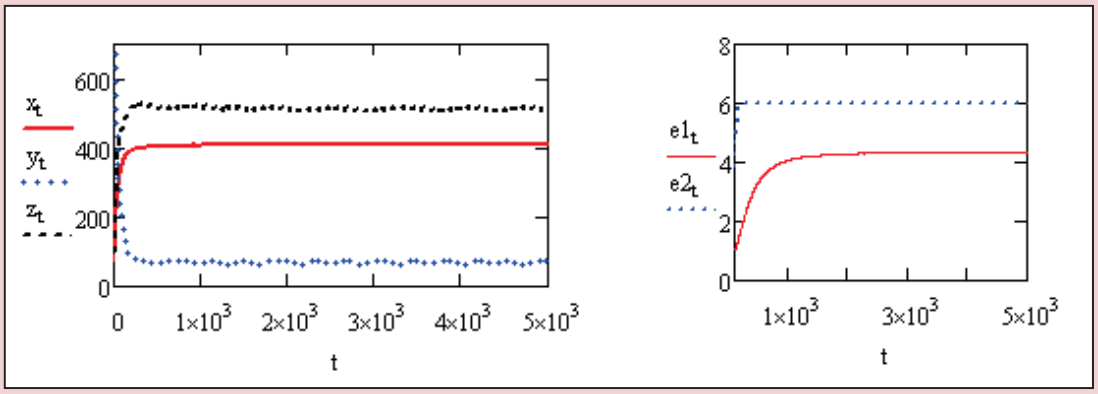
In *Model IV* the value Ψ represents an increase in the previous value of the parameter *G;* the change is simulated by a sinusoid in time:

$$\Psi = G2+d\cdot\Phi(2\cdot sin(k\cdot t)-1)\cdot 2\cdot sin(k\cdot t)-1.$$

Table 3. Quasi-stationary values of the variables for *t*=1000

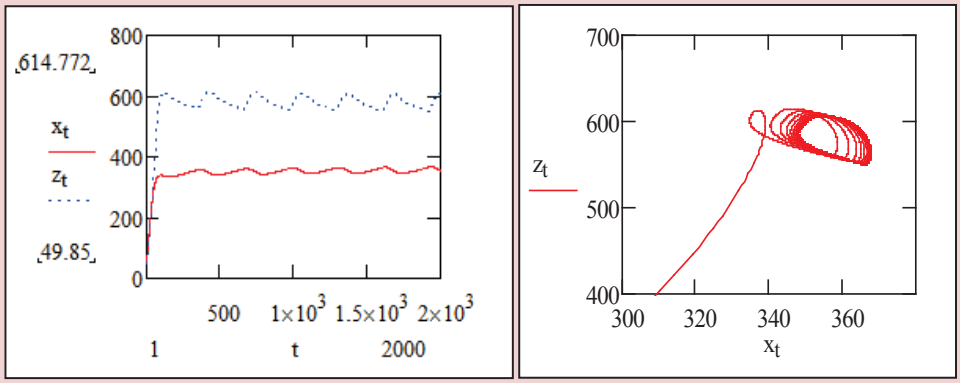
Ψ	*x*	*xx*	Δx	*y*	*yy*	Δy	*z*	*zz*	Δz	*e1*	*e2*
0.757	411.94	6.53	6.50	74.47	13.78	13.78	507.37	10.5	10.98	4.33	6
Compiled on the basis of our own calculations.											

Figure 5. Trajectories of the variables of Model IV



Compiled on the basis of our own calculations.

Figure 6. Dependence of trajectories from periodic external influences



Compiled on the basis of our own calculations.

The coefficient *d* is a multiplier that specifies the value of an additional summand. The function $\Phi(\cdot)$ retains only positive values of the argument. Every $x = \frac{2 \cdot \pi}{k}$ time steps, the value of "infusion" is repeated and the coefficient *k* characterizes this frequency. Naturally, the new values differ from those obtained previously without the external influence.

This model is obtained from *Model II* by adding the initial line to determine Ψ, and by altering lines 5 and 10:

$$y_{t+1} = h_1 \cdot \left[- q2 \cdot \left(p \cdot \frac{z_t}{x_t + z_t} + \Psi_t \cdot cnorm(e2_t) \right) \cdot y_t - \ldots \right] + y_t$$

$$\Delta z_{t+1} = q2 \cdot \left(p \cdot \frac{z_t}{x_t + z_t} + \Psi_t \cdot cnorm(e2_t) \right) \cdot y_t$$

The parameters of the model are the same for both active groups with the exception of the introduced Ψ.

h_0=0.1, h_1=0.1, h_2=0.1, h_3=0.015, h_4=0.015,

A1=0.28, *A2*=0.28, *B1*=0.06, *B2*=0.06, *E1*=6, *E2*=6, *G1*=0.43, *G2*=0.43, *r*=0.01, *p*=0.01, *q1*=0.2,

q2=0.2, *d*=0.5, ρ=0.015, π=0.015.

Initial values of the variables: *x*=*z*=50, *y*=900.

Due to external influence, the size of the *z*-group increases unevenly, leading to oscillatory changes in the sizes of other groups. At the same time, the limit values of attitudes remain unchanged, but different in magnitude.

Technically, the same method can be used to consider the impact of uncertainty in the assessment of each parameter. Setting such a parameter as a random variable with known characteristics, we can obtain the set of possible implementations of trajectories and explore the structural stability of the model, as described in our work [2, p. 107-118].

9. Conclusion

The main goal that we tries to achieve in the course of our research was to develop a computer-assisted approach based on a simple mathematical model, the approach that could reflect complex interaction of social groups between themselves and the media shaping an ideological understanding of the world. The urgency of this problem is particularly noticeable when it is clear that social conflict is always preceded by ideological split.

The article proposes an original formalization of the dynamics of the ideological structure of society, when:

1) changing the sizes of the groups is influenced by social attitudes, and the attitudes change depending on the sizes of the groups and the influence of the media.

2) in order to bring Markov-type models closer to reality we introduce "intermediate variables" related to several previous moments of time. This allows us to take into account time-related differences between members of similar groups.

3) forecast and management abilities of the models are increased with the help of external influence factors that we have considered and due to the possibility of adding random perturbations to the model parameters.

It is important to note that the article considers mass processes, which can be described by statistical indicators. Analyzing the forms of organization of group members, which often proves decisive is beyond the scope of our present work. The program we developed allows us, using conditional data about the virtual world, to consider various ways of forming social positions of population, and if real data are available – to design different scenarios of forecast calculations and control actions. In particular, at the model level it is possible to identify the roles and facilitators

of the prevalence and availability of media channels and their effectiveness, and social contacts, which in combination leads to various effects. Our experimental calculations demonstrate how the media and prepared social contacts can be used to influence the size of social groups of a particular political orientation. Finally, the proposed procedures can become an underpinning for an "agent-based" model that would simulate ideological confrontation in society and in which the logic of reflection of reality is actually consistent with the logic of our models.

Naturally, the completeness and adequacy of available information is an "Archimedean point" in finding a solution to forecasting and controlling the flows of public consciousness. In turn, this can be implemented only with the help of an active sociological monitoring, rather than separate statistical samples; the monitoring should be followed by competent econometric evaluation of the model parameters. In our opinion, the main part of mathematical correlations in the models we propose, in the presence of the realized (and observed) data, can serve as the basis for econometric equations, which can be used to obtain estimates of the model parameters. And the most difficult thing in this case is that we need to have the data for several subsequent points in time. It is within the scope of the monitoring service.

In conclusion, we would like to note that although our approach focuses on describing the political and ideological confrontation in society, it is applicable to the simulation of situations in different spheres of life, for example, when studying people's attitudes toward the authorities, ideologies of state-minded persons and liberals, strict moralists and advocates of free love, believers and atheists. We plan to extend our approach to the cases with more than two competing groups, consider the social characteristics of groups [24], and the influence of several external factors, and to carry out calculations on the basis of real statistical data. We also plan to develop econometric approaches to assessing the parameters of computer models.

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Current Issues in the Development of Municipal Entities and in Reforming the Institution of Local Self-Government

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Abstract. The goal of the present article is to evaluate the trends and identify key problems in the socio-economic development of municipal entities and in the development of local self-government, and to identify ways to solve the most acute of them. We consider trends in the development of municipal entities in their relation with the processes of reforming local self-government; the analysis uses not only statistics, but also the results of a local self-government monitoring held in the Vologda Oblast since 2007 in the form of a questionnaire survey of heads of municipalities. This distinguishes our present work from similar works of other scholars and forms its scientific novelty. To achieve our goal we used such scientific methods as economic, statistical and comparative analysis, generalization, expert survey, and a monographic method. We have found out that the main problems that impede efficient management of development of municipal

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entities are as follows: flaws in the legislation regulating the development of local self-government; lack of own revenue sources and insufficient financial support from the state; low efficiency of interaction with public authorities; lack of complete and reliable information on the socio-economic development of the municipality; non-involvement of the local population; limited powers of local self-government bodies in the sphere of economic development of the territory. We prove that local self-government institution in Russia is being continuously reformed, and the reforms do not address a key problem of municipalities – their low economic and financial independence. Thus, in 2014–2017, appropriate decisions were made at the federal level, according to which the number of issues of local importance of rural settlements were significantly reduced; the issues concerning the choice of the procedure of forming local self-government bodies are now handled at the regional level; now there exists the possibility of actually converting municipal districts to urban districts. We prove that all this only undermines the role of local self-government institution. We propose recommendations to eliminate possible negative effects of this reform. The results of our study can be used in the work of relevant federal and regional authorities, and serve as a basis for further research on this topic in the area of designing organizational and financial-economic foundations for the functioning of local self-government institution.

Key words: municipal entities, local self-government, socio-economic development, differentiation, region, Vologda Oblast.

Introduction. Modern socio-economic development issues of the country, its regions and municipal entities are largely associated with the consequences of the radical transition to a market economy and the overall economic recession of the 1990s; the issues emerge also due to the growing centralization of budgetary resources and, consequently, limited possibilities for sub-federal level authorities in making independent decisions on the socio-economic development of territories.

Currently, managing the development of territories in Russia is not comprehensive, it often ignores the specifics of individual territories and, as a result, the relevant policy is not effective enough. Such ineffective management of development is due to increased bureaucratization in the relations between levels of government, and also due to excessive control over municipal entities. This situation results from the perception of the municipal level mainly as the lowest level of power and management rather than an independent and equal partner in addressing socio-economic development issues of territories. A special nature of local self-government that combines the principles of public authorities and civil society is not implemented to the fullest extent. In addition, an ill-conceived policy of "optimization" of social institutions (and in most cases, their virtual elimination, especially in rural areas) carried out in recent years aggravates the negative effects of those solutions; i.e. the prospects of development of municipalities become limited, the migration outflow of population to the cities increases, the entire settlements deteriorate and become depopulated. We cannot but mention the current model of economic relations in Russia, under which in most cases the interests of the owners of large corporations outweigh the interests of the country and its territories. In this regard, it becomes especially important to assess trends and identify key issues of socio-economic development of municipalities and to identify ways of addressing the most acute of them; this is the goal of the present article.

Description of our research methodology and substantiation of its choice.

To achieve the goal, we used economic, statistical and comparative analysis, synthesis, expert survey, and the monographic method. Methodological basis of our study includes the works of Russian and foreign economists in the field of regional economics, state and municipal management.

It should be noted that the research on the issues of local self-government in Russia and evaluation of its reforming are presented in the works of R.V. Babun, E.M. Bukhval'd [1; 2], V.I. Vasilev, O.B. Glezer, V.G. Ignatov, V.I. Klistorin [3], V.N. Leksin [4], E. Markvart [5], A.S. Marshallova, A.S. Novoselov, A.V. Odintsova [6], R.V. Petukhov, T.V. Sumskaya, T.V. Uskova [1; 7], V.E. Chirkin, A.N. Shvetsov [8], E.S. Shomina, E.S. Shugrina [9], and others. Currently, the development of municipal entities is mainly considered in the context of creating a unified system of strategic planning in the country, development institutions at the local level, defining the role of municipalities and local self-government institution in spatial development of the country, development of "zonal" tools to stimulate economic dynamics of territories [10] (special economic zones, priority development areas, zones of territorial development, clusters, etc.) and agglomerations [11], ensuring self-development of local territories. These trends are largely typical of global science where considerable attention is paid to the issues of administration reform at the local level [12; 13; 14] and to the need for ensuring global competitiveness of regions based on strong local economies (this is a priority of the territorial agenda of the EU until 2020 [15; 16]).

Research into the trends and features of development of local self-government institution in Russia's regions is also carried out by the All-Russian Congress of Municipal Entities, the All-Russian Council of Local Self-Government, associations (councils) of municipal entities of Federation subjects, inter-regional associations of municipal entities (for example, the Association of Siberian and Far Eastern Cities [17]). However, in most cases, these studies are sporadic, and they focus on individual and very narrow issues. In this regard, our present paper considers current problems of development of municipal entities in relation with the trends of reforming local self-government institutions. Conclusions and proposals are substantiated not only by analyzing statistical data, but also with the help of the results of a long-term monitoring of the functioning of local self-government institution; the monitoring is carried out in the Vologda Oblast in the form of an annual questionnaire survey of heads of municipal entities, this aspect is certainly an element of scientific novelty of the article.

Research results. Using the example of the Vologda Oblast, we shall consider in more detail the situation concerning the socio-economic development of municipalities, the severity and diversity of problems, which is significantly higher than it is typical of the differences between Russia's constituent entities in the federal socio-economic space. Thus, major problems in the socio-economic development of municipal entities of the Vologda Oblast at the present stage are as follows.

The first problem is a great disparity in the development of municipal districts caused by significant differences in the means, resources, sources, drivers and conditions of development. In Russia, as a result of a significant decline of the role of the state in regulating spatial development in the 1990s, and also due to the competition of municipalities for population, investments, and federal support the problems

Table 1. Ratio of the maximum to the minimum values of indicators of municipal districts of the Vologda Oblast, times

Indicator	Years								
	1991	1996	2001	2006	2011	2012	2013	2014	2015
Volume of industrial production per inhabitant	29.9	40.6	78.8	47.7	537.3[1]	366.2[1]	733.5[1]	23.0[1,2]	29.3[1,2]
Volume of agricultural production per inhabitant	10.1	10.1	9.7	20.1	19.6	19.6	19.1	18.9	18.1
Volume of investments in fixed capital per inhabitant	2.5	14.7	26.8	35.3	22.2[1]	83.8[1]	160.4[1]	72.0[1]	52.1[1]
Average monthly nominal accrued wage	1.3	2.2	2.0	1.5	2.1	2.9	1.9	1.8	1.8
Retail trade turnover per inhabitant	1.3	3.0	2.8	2.5	1.7	1.8	1.9	2.0	2.1
Number of doctors per 10,000 population	2.8	2.8	3.6	3.5	3.4	3.4	3.0	3.4	2.5
Provision of inhabitants with housing	1.5	1.5	1.4	1.8	1.6	1.6	1.6	1.8	1.8

1. Excluding small businesses.
2. Differences between districts by volume of shipped products.
Calculation sources: *Raiony Vologodskoi oblasti v 1990 – 1999 godakh: stat. sbornik* [Districs of the Vologda Oblast in 1990–1999: statistics collection]. Vologda, 2001. 384 p.; *Munitsipal'nye raiony i gorodskie okruga Vologodskoi oblasti. Sotsial'no-ekonomicheskie pokazateli. 2000-2015. Stat. sbornik* [Municipal districts and urban districts of the Vologda Oblast. Socio-economic indicators. 2000–2015. Statistics collection]. Vologda, 2016. 308 p.

of development of municipalities aggravated; primarily, territorial differentiation increased dramatically[1].

First of all, a significant increase in intra-regional differentiation of territories is observed in the economic sphere *(Tab. 1)*.

The gap between municipal districts of the Vologda Oblast in terms of per capita volume of industrial production increased from 30 times in 1991 to 733 times in 2013, agricultural production – from 10 to 19 times, investment – from 2.5 to 160 times. In the social sphere, differences by several parameters (in particular, the number of doctors, availability of housing and retail trade turnover) have decreased by 2015.

A more detailed assessment of the differentiation and its long-term trends is essential for the regulation of the spatial structure of the regional economy, including targeted measures aimed to support and "pull out" the depressive and underdeveloped municipalities; such an assessment is also essential for substantiating the flexible approaches in the system of intergovernmental fiscal relations at the sub-regional level, as well as economically sound approaches to institutional changes in the system of local self-government.

The second problem is the increasing concentration of economic activity in urban districts and their surrounding areas. In the Vologda Oblast, 86% of the volume of industrial production shipments (in value terms) and 79% of the investment of the Oblast are produced by two urban districts (cities of Vologda and Cherepovets), and almost 2/3 (61%) of agricultural production is produced by four districts surrounding them (Vologodsky, Gryazovetsky, Cherepovetsky and Sheksninsky districts). As a consequence, the possibilities and prospects of development for the majority of peripheral areas are decreasing; the standard of living of their residents is declining, and there is a significant migration outflow from them.

[1] We understand territorial differentiation as an objective phenomenon caused by a set of natural-geographical, economic, and political factors and expressed in considerable differences in the basic parameters of socio-economic development between countries, regions and municipal entities.

The third problem consists in a significant gap in the standard of living and quality of life in Vologda Oblast districts. In 1991–2011 and in 2013–2015, the largest wages were in Cherepovets (it is an industrial center of the Oblast); in 1991, remuneration in Cherepovets was 1.7 times greater that that in the district with the lowest value of this indicator (Chagodoshchensky District), in 2015 – 2.1 times greater (Kichmengsko-Gorodetsky District). In 2012, Nyuksensky District had the highest average monthly wages – 34,199 rubles, which is 2.9 times higher than in Kichmengsko-Gorodetsky District (11,791 rubles). In 25 districts of the Vologda Oblast in 2001–2015, the level of remuneration was below the average indicator for the Oblast; and in 11–15 regions, it was below average values for the districts. By the end of 2015, wages in fifteen districts of the Oblast did not exceed two subsistence minimums for the Oblast.

The fourth problem is a low economic and financial independence of the majority of municipal entities. The capabilities of local self-governments to address issues and problems of local importance, satisfy basic needs of the residents and provide them with decent living conditions are directly determined by the amount of financial resources accumulated in the local budget. Own sources that form local budgets in Russia (land tax and individual property tax), as well as contributions from a number of taxes, are insufficient for the formation of a revenue base of the budget and do not help solve local issues efficiently. Most (more than half) of the revenues of local budgets in Russia are still formed by gratuitous receipts from higher budgets (grants, subsidies and subventions).

By the end of 2016, 47.8% of the total revenues of all local budgets of Russia is accumulated in urban districts, 40.2% – in municipal districts. Rural settlements account for 5.3% of the revenues, although the number of rural settlements is the greatest (about 18 thousand units).

For 2006–2016, the greatest dynamics were observed in the revenues of local budgets of settlements (the growth was 3.9 times), for 2009–2016 – in the revenues of budgets of rural districts and urban districts (1.5 times). However, in comparable prices (adjusted to the consumer price index), compared with 2009 there is a decrease in the revenues of all the local budgets (with the exception of intracity territories of cities of federal significance): on average for Russia – by 12%, for Vologda Oblast – by 25%. It should be noted that the number of issues of local importance of municipal entities (excluding settlements) increased 1.5-fold in 10 years; and the amount of state powers transferred to the local level also increased. These facts show that local governments have fewer opportunities and financial resources for a complete and quality resolution of all issues and problems of local importance.

The share of own (tax and non-tax) revenues of local budgets (excluding intracity territories) for the whole period under consideration did not exceed 60% of the total amount of revenues *(Tab. 2)*. The minimum value of this indicator is observed in municipal districts (26%). In the Vologda Oblast in recent years, it has been possible to strengthen the financial base of local budgets by replacing grants with additional deductions from individual income tax, hence the share of own revenues has increased in 2006–2016 in the districts by 19.6 p.p., in the settlements – by 8.1 p.p. However, we are worried by the fact that by 2016 compared to 2009 this figure declined markedly in urban districts: in Russia as a whole – by 9.3 p.p. (in the Vologda Oblast – by 16.8 p.p.).

Table 2. Share of own (tax and non-tax) revenues of the budgets of municipal entities of the Russian Federation and the Vologda Oblast in 2006–2016 in the total amount of revenues, %

Type of municipal entity	2006	2009	2015	2016	2016 to 2006, p.p.	2006 to 2009, p.p.
Rural settlements	-	-	-	40.7	-	-
- *including the Vologda Oblast*	-	-	-	27.8	-	-
Urban settlements	-	-	-	58.6	-	-
- *including the Vologda Oblast*	-	-	-	49.0	-	-
Urban and rural settlements	33.3	40.6	48.5	48.6	+15.4	+8.0
- *including the Vologda Oblast*	28.4	34.4	38.9	36.5	+8.1	+2.1
Municipal districts	27.6	24.9	25.2	26.0	-1.5	+1.1
- *including the Vologda Oblast*	15.4	17.7	29.7	35.0	+19.6	+17.3
Urban districts	49.6	51.6	43.3	42.3	-7.3	-9.3
- *including the Vologda Oblast*	44.8	62.7	44.5	45.9	+1.1	-16.8
Intracity municipal entities of cities of federal importance	77.0	55.0	75.7	75.4	-1.6	+20.4
Local budgets (2006**)	46.4	-	-	-	-	-
Intracity districts	-	-	-	33.1	-	-
Urban districts with intracity division	-	-	-	41.6	-	-
All municipal entities	39.7	39.6	36.6	36.5	-3.1	-3.1
- *including the Vologda Oblast*	32.2	38.9	36.9	39.8	+7.6	+0.9

** Budgets of municipal entities which did not belong to settlements, rural districts or city districts in 2006 (in those subjects of the Russian Federation in which Federal Law 131-FZ did not come into full force since January 1, 2006).
Calculation sources: Reports on execution of consolidated budgets of constituent entities of the Russian Federation and budgets of territorial state off-budget funds. *Official website of the Federal Treasury*. Available at: http://www.roskazna.ru/ispolnenie-byudzhetov/konsolidirovannye-byudzhety-subektov/

The share of own revenues (tax and non-tax budget revenues) of municipal districts of the Vologda Oblast in 2006–2016 was less than 50%.

The structure of expenditures of local budgets is dominated by expenditures on education (48.1% of all expenditures), housing and utilities (12.6%), national economy (10.7%), management – national issues (9.3%). In the budgets of settlements, the shares of expenditures on management, housing, and culture are higher (22.3, 35.1 and 15.1%, respectively). In 2006–2016 in general in the municipalities of Russia, there was a decline in the share of expenditures on healthcare (these powers were actually transferred to the level of Federation subject) and housing and utilities. At the same time, there was an increase in the expenditures on the national economy: from 1.4 to 13.8%. Nevertheless, this is mainly due to the fact that this section includes expenditures on road industry and transport. While the share of expenditures on the real sector of the economy (agriculture and forestry) in the structure of expenditures under the section "national economy" in the municipal districts of the Vologda Oblast in 2016 was only 3.9%.

The fifth problem lies in the fact that the sustainability of socio-economic differentiation of the territories is affected by lingering issues in the functioning of local self-government, and the lack of economically motivated and most productive innovations in its institutional structure. The ongoing changes in this regard are characterized by the absence of economic justification and clear goal setting.

Table 3. Evaluation of the changes under the reform of local self-government
(percentage of respondents – heads of municipal entities)

Answer	Municipal entities								
	Municipal districts			Urban settlements			Rural settlements		
	2006	2015	2016	2006	2015	2016	2006	2015	2016
Positive	57.1	41.2	16.7	77.8	30.0	35.7	63.5	27.3	25.3
The situation has not changed	42.9	35.3	72.2	0.0	30.0	57.1	21.2	36.4	37.4
Negative	0.0	23.5	11.1	22.2	40.0	7.1	15.3	36.4	37.4

Source: Database of the monitoring of the conditions of reforming local self-government institution of the Vologda Oblast. VolRC RAS (formerly named ISEDT RAS, Vologda, 2007–2017).

According to a questionnaire survey of heads of municipal entities of the Vologda Oblast[2], only from 17 to 36% of the respondents pointed out that the results of the changes caused by the reform of local self-government by the end of 2016 were positive. The proportion of positive assessments decreased significantly, compared with the 2006 level *(Tab. 3)*.

Local authorities are unable to address efficiently the issues of socio-economic development of municipal entities, because there exist several unresolved problems; the most significant of them, in the opinion of heads of administrations, are as follows:

– flaws in the legislation concerning the functioning and development of local self-government;

– lack of financial resources (lack of own revenue sources, lack of financial support from the state);

– lack of effective interaction with public authorities (red tape, lack of coherence in the policy documents aimed at the development of territories, inconsistency of the system of division of powers, etc.);

– lack of complete and reliable information on the socio-economic development of municipalities and their tax potential;

– non-involvement of the local population and absence of mechanisms that would take into consideration the balance of interests of business, government and people in the process of territories development.

The sixth problem consists in the fact that the current situation is aggravated by a shortage of skilled personnel in local self-government agencies. Effective functioning of local self-government is also hampered by low human potential of its employees. More than one third of the heads of districts of the Vologda Oblast point out that the number of the local administration staff is very low and low. In addition, according to most of them, the level of professionalism and competence of municipal employees can only be assessed as satisfactory (in 2016 this was indicated by 69% of the heads of municipal districts, by 79% of the heads of urban settlements, and by 46% of the heads of rural settlements).

Personnel problems are largely associated with low wages in local self-government agencies, a relative unpopularity of employment in such agencies among the most active young population, and the unattractiveness of life in rural areas. Thus, according to Rosstat, the average Russian wage in local self-government agencies in 2016 was only 78.7% of the average wage in the economy (excluding small

[2] For the purpose of studying the problems and prospects of local self-government reform, Vologda Research Center of the Russian Academy of Sciences (VolRC RAS, formerly named ISEDT RAS) since 2007 carries out a questionnaire survey of heads of municipal entities of the Vologda Oblast. Questionnaires (30–40 questions) are filled in annually by 160–210 heads of municipal entities out of 218–372, which allows sampling error to be 4–5%. The heads assess the results of the past calendar year: for example, in the 2017 poll, they assess the end of 2017.

businesses), and in the Central and Siberian federal districts – even less (63% and 78%, respectively).

The seventh problem consists in a low efficiency and effectiveness of interaction between regional state authorities and local self-government authorities.

The majority of heads of municipal entities of the Oblast in 2016 assessed the results of cooperation with state authorities of the Oblast as low and satisfactory, except for only 4–5 executive authorities. The heads see the main reasons for such a situation in the financial dependence of municipal authorities (this was indicated by 83% of the heads of municipal districts, by 79% of the heads of urban districts and by 69% of the heads of rural settlements), in the fact that the state authorities do not have the information about the real situation in the municipalities (50%, 29% and 64%, respectively), the absence of a differential policy concerning the territories with different levels of socio-economic development (50%, 50% and 42%), and the inconsistency of the system of separation of powers (44%, 36%, 42%).

In addition, effective management of municipal development is hampered by legislative and legal difficulties, obstacles and limitations. Despite the fact that, compared with the initial one, the number of local issues of districts, urban districts and urban settlements increased 1.5-fold, there was no substantial redistribution of the respective income sources of the budget between the levels of government. At the same time there was a significant increase in the number of state powers transferred to the municipal level. In addition, sectoral legislation does not define clearly the powers of local self-government. We can also point out the inconsistency of the system of separation of powers, and the discrepancy between some issues of local importance and the nature and content of local self-government.

The territorial structure of municipal entities remains inefficient. The network of municipalities was formed on the basis of transport and walking distance of the center of the municipal entity mainly within the boundaries of the former rural and town councils, but without taking into account the criteria of formation of financial-economic basis of municipal entity in modern conditions. These problems are typical of the majority of municipal entities in all constituent entities of the Russian Federation. In order to solve them it is necessary, first of all, to have an effective system of public administration in the development of territories, and the support of local self-government institution.

Managing spatial development of the country should be based on a unified regional policy, a clear understanding of the priorities, specifics, and prospects of development of various territories of the country. Conceptual provisions of the policy should be enshrined in legislation.

In accordance with the Decree of the President of the Russian Federation No. 13 "On approving the fundamentals of state policy of regional development of the Russian Federation for the period till 2025" dated January 16, one of the principles of this policy is the necessity to apply a differentiated approach to the provision of state support to regions and municipal entities according to their socio-economic and geographical features.

According to Federal Law 172-FZ "On strategic planning in the Russian Federation" dated June 28, 2017, the strategy for spatial development of the Russian Federation is developed in accordance with the principles of state policy of regional development of Russia in order to implement main provisions of the strategy for socio-economic development and the national security strategy of Russia, determines the priorities, goals and objectives of

regional development of the Russian Federation and measures for their achievement. It is planned to develop this Strategy in 2018.

As of the beginning of October 2017, no draft Strategy has been officially published. However, since 2016, various scientific and public circles are discussing the draft spatial development strategy of the Russian Federation. On the Internet we cam find a draft "Concept of the spatial development strategy of the Russian Federation for the period up to 2030"[3], so we can assume that this very document is being discussed and, in general, it is still being finalized. Having reviewed the existing version of the Strategy, we can make several essential conclusions.

1. The draft Strategy provides for three scenarios of spatial development of the country: conservative, polarized development, and diversified spatial growth. However, in this case, the real possibilities, conditions, threats and risks in the implementation of each scenario were not analyzed. Declaring the implementation of the third scenario as a target one may remain only a "beautiful picture", as it is not supported by any specific mechanisms.

2. An important objective of the Strategy for spatial development of Russia in the long-term period is to create macro-regions that will make it possible to integrate all regions into one economic space while maintaining their independence. At the same time, the draft Strategy has no understanding of the criteria on the basis of which these regions will be formed, given the fact that there is a coherent system of management in the framework of federal districts. In addition, the envisaged gradual formation of macro-regions until 2050 is unlikely to ensure effective management of integrated spatial development of the country.

3. The Strategy has completely ignored rural areas, in which 26% of the population now lives. Reliance on the metropolitan areas, conurbations, and the "cluster network model" will cause the population abandon rural areas, because the influence of agglomeration effects cannot spread to the entire territory of large constituent entities of Russia. Therefore, in this case the task of development of the regional periphery will not be addressed, in fact.

The draft Strategy for spatial development does not consider problems of local self-government and development of municipal entities.

Thus, in our view, it is necessary to carry out large-scale discussion of the spatial development strategy of the country with participation of relevant scientific and educational institutions, federal and regional authorities, local self-government authorities, and non-governmental organizations with the aim of preparing an actual high-quality and up-to-date document rather than another example of lofty rhetoric that will never be implemented.

We should also point out that local self-government institution in Russia is in the continuous and sometimes unpredictable process of reformation. For 14 years, since the adoption of Federal Law "On general principles of organization of local self-government in the Russian Federation" dated October 5, 2003 (hereinafter – 131-FZ), more than 100 amendments were introduced in it. However, as practice shows, the majority of these amendments focused on the organizational basis of the functioning of local self-government (addressing new issues of local significance, refinement and modification of elements of the system of municipal management, etc.) rather than on the strengthening of financial and economic independence of municipal entities.

[3] Draft concept for the spatial development strategy of the Russian Federation for the period up to 2030. Available at: http://карьеры-евразии.рф/uploadedFiles/files/Kontseptsiya_SPR.pdf.

In recent years (2014–2017), the following amendments introduced by various federal laws in Law 131-FZ were the most significant decisions made at the federal level and aimed to influence the functioning of local self-government institution.

1. Federal Law 136-FZ dated May 27, 2014 reduced the number of issues of local importance of rural settlements to 13. At the same time, a law of the constituent entity of the Russian Federation can assign certain issues of urban settlements to rural settlements.

2. Public authorities of Russian Federation subjects have acquired the right to determine on their own the procedure of formation (election) of local self-governments bodies throughout the region, by adopting a relevant law. Before Law 136-FZ was adopted, this procedure was determined at the local level (in the charters of municipal entities). The adoption of this law led to the fact that in a large number of Russia's constituent entities (including the Vologda Oblast) the direct election of heads of municipalities by the population in municipal elections was replaced by the election of the head by a representative body of the municipal entity from among its members. In this case, heads of local administrations ("city managers") are appointed by a representative body of the municipal entity according to the results of a contest held by the contest committee, half of whose members are elected by a higher official of the subject of Federation (the Governor). In some cases (including in the Vologda Oblast) the contest committee was headed by the Governor himself. Therefore, in reality, it means the weakening of local self-government institution and further strengthening of the power vertical, rather than improving the efficiency of functioning of local self-government, as it was stated.

In accordance with Federal Law 8-FZ dated February 3, 2015, the head of the municipal entity can now be elected by the representative body of the municipal entity from among the candidates presented by the contest committee according to the results of the competition, and be in charge of the local administration. In this case, residents of the municipality do not participate in the formation of the local executive power at all.

3. Federal Law 62-FZ dated April 3, 2017 established the possibility of actually converting municipal districts into urban districts by uniting all of the settlements within the municipal district with the urban district.

Our general impression of Federal Law 62-FZ is that it represents another attempt to weaken the role of local self-government institution. One gets the feeling that, despite the fact that the draft law (Draft Law 768237-6) was submitted to the State Duma on April 13, 2015 (however, in its original version it provided only for changing the procedure of decision-making on several conversions of municipal entities), it was adopted in a hurry, without wide public discussions, and its possible consequences were not analyzed. In addition, there certain contradictions that arise in 131-FZ after introducing amendments into it; in particular, now the urban district (Article 2, 131-FZ) means "one or several settlements united into one territory...", but it remains unclear whether the presence of urban settlement (city, urban-type settlement) is obligatory in this case. However, according to Article 11 of Federal Law 131-FZ, "the boundaries of the urban district are defined with regard to the necessity of creating the conditions for the development of its social, transport and other infrastructure, provision of the unity of municipal economy by local self-government authorities of the urban district...".

The majority of municipalities in Russia are sparsely populated. For instance, according to the Federal State Statistics Service of Russia (Rosstat), as of January 1, 2017, population size was less than 50 thousand people in 52.6% of urban districts of Russia; population size was less than 20 thousand people in 46.8% of municipal districts (in the Vologda Oblast – in 65.4% of its districts); population size was less than 10 thousand people in 59.9% of urban settlements (in the Vologda Oblast – in 68.2% of settlements); population size was less than 1 thousand people in 45.2% of rural settlements (in the Vologda Oblast – in 41.7% of rural settlements).

The presence of an excessive number of small and underdeveloped municipal entities leads to irrational expenditure of budget funds. Such municipalities often spend more than half of local budget funds on the functioning of their own authorities, and very little funding remains that is allocated to the development of the territory and solution of local problems.

In the Vologda Oblast since January 1, 2006, there are 372 municipalities. As a result of two phases of unification of settlements (2008–2010 and 2013–2016), the total number of municipalities in the Oblast decreased by 154 units and was 218 at the beginning of 2017, including two urban districts (Vologda and Cherepovets), 26 municipal districts, 22 urban settlements, and 168 rural settlements. The Vologda Oblast Government made a decision that the financial means that were saved after reducing the number of employees of local self-government bodies of abolished settlements will be allocated to local budgets in the form of transfers. From 2018 forward, the Vologda Oblast is planning to launch the unification of the settlements with population less than 1,000 people. In this regard, studies carried out by ISEDT RAS [7] show that as a rule, the unification procedure included underdevelo-ped settlements, and we cannot expect any significant improvement in their development. According to annual questionnaire surveys of heads of municipal entities of the Vologda Oblast carried out by ISEDT RAS, only 17% of the interviewed heads of districts and only 21% of heads of rural settlements positively assess the changes that have occurred on the territory of the united municipalities.

Therefore, the discussion of whether the settlement level of local self-government is necessary is going on in different scientific and governmental structures, and it started almost immediately after the entry of Federal Law 131-FZ into force.

However, the liquidation of settlements and the transformation of rural districts into urban districts, in our opinion, will reduce the availability of government bodies and relevant services to the population of remote territories, the possibilities of the population in the direct exercise of power on site will be reduced (it could happen that people's initiatives would not be heard because the authorities would be far from them and they would be engaged in addressing the issues of overall development of the municipality rather than those of the territories of abolished settlements).

In the Vologda Oblast, the possibility of such reforms was declared immediately after the entry of Federal Law 62-FZ into force. It is proposed to unite all settlements of Kaduysky Municipal District and to create an urban district instead of the rural district, thereby eliminating the settlement level of management. The initiative of this conversion came from from the head of the district and was supported by the Vologda Oblast Governor. At the end of April 2017, in Kaduysky District, a public hearing on this issue was held; however, the majority of its participants voted against the establishment of an urban district. At the same time a working

group was created, and it will consider in more detail the possibility and feasibility of these reforms in Kaduysky District[4].

In the Vologda Oblast, 15 municipal districts out of 26 have urban settlements. In addition, the administrative centers of Vologodsky and Cherepovetsky districts are the cities of Vologda and Cherepovets, which are urban districts, and they can include all of the settlements of these districts into their composition. Accordingly, in the territory of the Vologda Oblast there is a possibility of converting its municipal districts to urban districts and forming 17 new large urban districts. Thus, it is premature to make any definite conclusions about the consequences of adopting Federal Law 62-FZ. We think that now the most important thing that should be done in this case is to prevent the strengthening of the vertical and centralization of power and the reduction in the availability of authorities to the population and in the quality and availability of public services.

Conclusion. We think it is important to make some essential comments and suggestions concerning further improvement of the legislation regulating municipal structure and elimination of possible negative consequences of adoption of Federal Law 62-FZ.

1. The possibility and desirability of transforming municipal districts into urban districts and eliminating rural settlements must be considered individually for each district after analyzing[5] all socio-economic aspects, consequences, and risks of such a decision and calculating and assessing the effectiveness of this transformation.

2. When making a decision about the unification of the settlements with the urban district, the transformation of urban settlements into rural and vice versa, it is advisable to take into account the views of the people expressed by voting provided for in Part 3 and Part 4 of Article 24 of Federal Law 131-FZ (that is, at the local referendum). Such referendums can be held in nationwide election days simultaneously with the election of the President of Russia, governors, and deputies of all levels; this will help save a significant amount of funds.

3. If a municipal district is transformed into an urban district, it is necessary to ensure representation of local self-government bodies of the newly-formed urban district in the former settlements (to create territorial units of the urban district administration). When designing and implementing the strategy for socio-economic development of such urban districts, it is important to take into account the specifics, conditions and development prospects of the entire urban district rather than the administrative center alone.

4. Transformation of a municipal district into an urban district in the presence of appropriate economic prerequisites can be used as a model for managing an urban agglomeration. In this case all the municipal entities (including districts) that are part of the agglomeration are unified, and a single urban district is formed. Here it is also necessary to form territorial divisions of the district administration in the former settlements. The activities to prepare the recommendations on the mechanisms for management of agglomerations are set out in the road map on the development of agglomerations in Russia[6].

5. It is necessary to resolve all the contradictions and ambiguities that appeared after the adoption of Federal Law 62-FZ, to check the consistency of these decisions with

[4] Unbreakable Union... *Newspaper "Premier"*, 2017 May 9, no. 18 (1017). Available at: http://premier.region35.ru/gazeta/np1017/s29.html

[5] The algorithm of such analysis is presented, for example, in the article [18].

[6] The action plan (road map) "Development of agglomerations in the Russian Federation". *Ministry of Economic Development of the Russian Federation*. Available at: http://economy.gov.ru/minec/activity/sections/planning/wg/dk

other legal acts (urban development and land codes, etc.) in this field.

Based on the above analysis, we should also note some points concerning the development of local self-government institution in general.

1. It is necessary to make an inventory of the powers of local self-government: to eliminate vague and ambiguous wording; to eliminate overlapping responsibilities between different management levels; to ensure consistency between the powers of local self-government bodies identified in Federal Law 131-FZ and the powers identified in other federal laws.

2. It is important to implement a set of measures to strengthen the financial-economic foundations of municipal entities, that is, to ensure that the volume of own and delegated powers assigned to that level of power corresponds to the volume of revenue sources of the budgets. This can be achieved by transferring to local budgets the tax rate of corporate income tax (with the exception of consolidated groups of taxpayers) at the rate of 2% (from 2017 forward, the federal budget receives revenues at the rate of 3%), the proceeds from which are allocated to the federal budget; this measure, according to our calculations, would increase the total revenues of local budgets in 2016 throughout Russia by 223.7 billion rubles, or by 6.1% (in the Vologda Oblast – by 834.2 million rubles, or by 2.8%). As a result, the share of own revenues of local budgets in Russia as a whole will rise from 36.5 to 40.2% (in the Vologda Oblast – from 39.8 to 41.5%). Revenues from this tax will make it possible to abandon the allocation of subsidies to several municipalities and to eliminate the deficit of local budgets.

3. It is necessary to resolve the issues and remove legal obstacles to the development of various forms of inter-municipal cooperation. To do this, it is possible to adopt a special federal law "On inter-municipal cooperation" or "On inter-municipal economic cooperation". For example, the experience of Germany shows the importance and effectiveness of such collaboration in addressing local issues and problems [19].

4. It is important to provide conditions for increasing the role of territorial public self-government (its role is substantiated, for example, in [20]), local referendums and other institutions of people's self-organization in addressing issues and problems of local importance. According to a monitoring held by the Ministry of Justice[7], in the territories of more than 4.8 thousand municipal entities that represent 76 Russian Federation subjects there are 27.6 thousand territorial public self-government units, whose charters are registered with the local self-government authorities, of which about 2.5 thousand are registered as nonprofit organizations. About 15.5 thousand territorial public self-government units were created in the territories of urban settlements, urban districts and cities of federal importance; about 12.1 thousand – in the territories of rural settlements. More than 400 municipalities cooperate with 2.5 thousand territorial public self-government units on the basis of agreements that provide for their use of budget funds to implement site improvements and also to address other local issues. Territorial public self-government is developed to the greatest extent in the republics of Bashkortostan, Buryatia and Mari El, in Krasnodar Krai (in this region there are six thousand territorial public self-government units, covering the territory of all municipalities), and in the Arkhangelsk, Belgorod, Voronezh, Kirov, and Tambov oblasts.

[7] Information and analytical materials on the development of local self-government in the Russian Federation (data as of 2016 – beginning of 2017). *Ministry of Justice of the Russian Federation*. Available at: http://minjust.ru/sites/default/files/monitoring-msu-2017_11283.docx

Local referendum is one of the forms in which the people can directly engage in local self-government. According to the same monitoring of the Ministry of Justice, in 2016, 1,555 local referendums were held in 10 constituent entities of the Russian Federation. In the vast majority of cases, local referendums were associated with the introduction of a mechanism of self-taxation (1,554 referendums). Village chiefs have been appointed (elected) and now work in 24.1 thousand rural settlements covering about 4.3 thousand municipal entities (of which 3.8 thousand are villages) within 42 constituent entities of the Russian Federation. This institution is most prevalent in the Udmurt and Chuvash republics, in the Vladimir, Vologda, Leningrad, Tver, Tula, and Nizhny Novgorod Oblasts; moreover, in the Tver Oblast (7.1 thousand) and in the Udmurt Republic (2.1 thousand), they operate in the majority of rural settlements. At the same time the most common forms of civic engagement are meetings of citizens (in 2016, they were carried out 85.9 thousand times) and public hearings (95.6 thousand times in 2016). Surveys of citizens are conducted less frequently – 5.1 thousand times in 2016, as well as conferences (meeting of delegates) – 5.5 thousand times in 2016.

5. It is advisable to create (possibly on the basis of the All-Russian Congress of Municipal Entities) an annually updated database of best practices of municipal administration on all the matters of local importance.

6. The necessity to develop municipal statistics is currently a pressing issue. Managing the development of territories requires the availability of timely and reliable statistical information on the socio-economic development of municipal entities. However, in this case there are certain problems that require urgent solving:

– there is no official indicator similar to GDP and GRP for the municipal level;

– there is a reduction in the amount and completeness of statistical reporting in the context of municipal entities (e.g. since 2014, in the Vologda Oblast, the data on the indices of physical volume of investments in fixed capital in the context of rural and urban districts are not published; the data on several indicators do not consider the subjects of small entrepreneurship; individual indicators do not reflect the data on some municipalities; the indicator "volume of industrial production" is replaced by "shipped goods of own production", the data on which, as well as the data on the volumes of production in physical quantities, are missing for some rural districts and types of economic activity; the data on the number of employees and the financial and economic performance of enterprises by types of economic activities of manufacturing, etc. are not published);

– there is no widely accepted methodology and appropriate statistical accounting of indicators to valuate the capacity (resources) for the development of municipal entities.

7. In our view, it is also necessary to develop and adopt a concept or strategy for development of Russian local self-government institution.

In addition, it is advisable to develop a new presidential decree "On the foundations of governmental policy in the field of local self-government development in the Russian Federation" instead of Decree 1370 dated October 15, 1999. Subsequently, this will probably require the adoption of a new federal law "On general principles of organizing local self-government in the Russian Federation". In our opinion, this policy needs to be systemic, and it should include economically substantiated measures of "leveling" the territories (there can be no full alignment; consequently, some reasonable measure should be justified); flexible state support for different

types of municipalities, including the system of intraregional fiscal relations, by methods of economic justification of transformation of the institutional structure of local self-government in the region, etc. In this case, it is important to classify municipal entities within the constituent entity of Russia for the purposes of carrying out flexible target policy of spatial regulation of regional economy. There are certain difficulties in such classification; they are due to the necessity to combine different approaches to classifying, based on quantitative and qualitative indicators of certain territories for the purposes of management of territories.

The analysis of differentiation trends and factors for municipalities, their growth potential and so on is a "universal key" to addressing many issues in the framework of the policy of socio-economic development of territories. These issues are as follows: a) the rationale for the measures in the system of program-target methods of management of spatial development of the region's economy, including target measures to support and "pull out" the depressive and backward municipalities; b) the rationale for flexible approaches in the system of interregional fiscal relations at the sub-regional level; c) the choice of methods and institutions of cluster policy in economic development of territories; d) justification of solutions to the social problems of different types of territories, including the regulation of migration processes, etc.; d) justification of informal, economically motivated approaches to institutional changes in the system of local self-government.

Thus, the results of the study showed the presence of many problems in the development of municipal entities. This requires serious scientific research on the formation of an effective model and system to manage spatial development of the country and its regions; development of conceptual framework to improve and further develop local self-government institution and to solve more specific applied problems, for example, relating to determining the acceptable level of inter-municipal differences that would not lead to negative consequences. The ideas and activities proposed in the present article are partly polemical, and they provide opportunities for further discussions on the subject. Thus, the contribution of the research, the results of which are presented in our article, to the development of theoretical science consists in the scientific understanding of the impacts of reforming local self-government institution on the development of municipal entities; its contribution to the development of applied science consists in the substantiation of specific recommendations on improving governmental policy in the field of development of local self-government and elimination of negative effects of its reform.

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Models of Revitalization of Old-Industrial Cities: Case Studies of Siberia*

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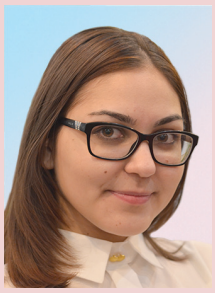

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Abstract. The study of re-industrialization processes in relation to the Russian economy as a whole, to macro-regions, federal districts, separate constituent entities, single-industry towns is a fairly common area of scientific research, both theoretical and applied. However, for many Siberian cities the issue of economic restructuring is also relevant. With the transition to market economy Siberian cities turned from points of economic growth into lagging territorial entities with a full range of socio-economic problems. At the moment, most of them are currently searching for their own way and development model. The main purpose for the research is to assess the prospects of economic re-industrialization in Siberian cities of different size. We introduce the term "economic revitalization" which is more suitable for determining the process of economic restructuring of individual cities. In order to collect information we performed field research in the Kemerovo Oblast, Altai Krai, and Irkutsk Oblast using the methods of observation, monitoring, systematization, and survey. The paper describes the established models of economic

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revitalization in the framework of the Triple Helix concept. The specification of models for cities with the allocation of key actors, as well as the identification of closeness of interaction between the government, business and the scientific community in the territory is certainly new. The results are presented in the form of case studies using comparative analysis. The studied territorial formations (Novokuznetsk, Bratsk, Biysk, Usolye-Sibirskoye, Sheregesh) differ in scale, status and industry specialization. The models of their development are quite similar: dependence of the economy on key enterprises whose interests are extraterritorial is high; there is an acute problem of preserving the population and improving the quality of labor resources; the dependence of the economy on the conditions of individual markets is significant; the attitude to Public Private Partnership (PPP) is restrained, there are imbalances between the obligations, the powers of local authorities and budget revenues; the mechanism of interaction between administrations and small businesses is insufficiently developed, the existing potential of inter-municipal interaction is not implemented. The bottleneck of all models is lack of consolidation of interests and interaction intensity of participants. The research results can be used in strategic planning at the municipal level, in developing and adjusting concepts and programs of territorial entities development, in developing draft interregional agreements. The prospects for further research are to monitor changes in the described institutional models of revitalization and expand the field of cases.

Key words: old industrial city, economic revitalization, case study, triple helix, interaction, single-industry town, science city, cluster.

Introduction

In the late 19th century in the South of Siberia large enterprises started mining and processing of coal; later, they engaged in production of ferrous and nonferrous metals, agriculture was rapidly developing. Since the 1930–s, intensive industrialization has contributed to a significant influx of the population, economic diversification, and the rising living standards. Siberia is currently an important element of the Russian economy (Siberian Federal district comprises more than 10% of GRP).

With the transition to market economy in the 1990–s, cities and towns experienced a sharp decline in the pace of socio-economic development: they tuned from points of economic growth into lagging municipal units with a full range of socio-economic problems and limited means and powers to reach sustainable growth. At the moment, most of them are still searching for a way to achieve it, choosing a model of development.

The main purpose for the study is to assess the prospects for economic reindustrialization in Siberian cities of different size[1].

To achieve this goal, the following objectives are addressed:

1. Identify the features of studying the prospects for reindustrialization at the city level.
2. Choosing case cities of Siberian reindustrialization and primary collection of data on their socio-economic development.
3. Complex field studies to obtain in-depth information about the state of the economy in the settlements. Systematization and analysis of the obtained data.
4. Description and schematic representation of urban development models indicating close interaction between the participants and identification of an initiative leader in the restructuring process.
5. Identification of models' common features and their weaknesses ensuring the basis for acceleration of the economic development.

[1] Capitals of constituent entities were not included in the analysis deliberately.

1. Research methods.

The study of reindustrialization processes in terms of the Russian economy as a whole [1, 2], the economy of macro-regions [3], federal districts [4], individual regions [5, 6], single-industry towns [7, 8, 9] is a fairly common area of scientific research, both theoretical and applied. The number of research works dedicated to the study of reindustrialization of Russian cities (the existing ones are not very extensive [10, 11] and focus on world experience without application to specific objects), despite the generally recognized significant role of large and medium-sized cities in the socio-economic development of territories. However, the issue of economic restructuring is very relevant to many Siberian cities.

Traditionally, a set of policy documents operating in the territory serves as an important source in such studies. However, practice shows that documents of the highest level do not often have sufficient detail in terms of describing the implementation mechanisms and the documents of the municipal level are outdated or absent. The amount and quality of statistics on basic indicators of socio-economic development of settlements are also insufficient to understand the essence, build models of development or identify its bottlenecks.

A set of works on the prospects of development of Russia's single-industry towns serves as a starting point for the authors to formulate the research methodology. For example, the "Basic element" [7] is based on the field method of collecting information (in-depth interviews) and analysis of statistical data. To solve the problem of single-industry towns "Basic element" offers three typical models: controlled compression, sustained single-industry town, industrial diversification. In order to classify the town in this or that development model it is offered to take into account the condition and development plans of a city-forming enterprise. The roles of administration and research and educational complex are put in the background. On the contrary, N.Yu. Zamyatina and A.N. Pilyasov [9] in their work pay special attention to the role of knowledge infrastructure in the development of Russian single-industry towns. At the same time, the authors recognize that the role of the administrative resource in the formation of the new industrial policy and removal of development locks is also significant. The work by V.V. Didyk and L.A. Ryabova [8] classification of eight single-industry towns in the Murmansk Oblast is carried out considering the leading actor in the implementation of complex investment plans of the cities: federal and regional government, city-forming business or small business. The present work considers a different structure of participants: business (large, medium, small), the state (municipal, regional and federal authorities), research and educational complex. The interaction of a similar triplex of actors is considered by the developers of the reindustrialization program of the Novosibirsk Oblast in the article [6].

In order to study the existing models and collect relevant information on Siberian cases of reindustrialization, in July 2015 and July 2016, expeditions were undertaken in central and southern regions of the Kemerovo Oblast, south-western regions of Altai Krai, northern regions of the Irkutsk Oblast with the participation of the authors. During the field research methods such as observation, monitoring, systematization, and surveys were used. The team members held meetings with heads of administrations of municipal units (MU), managers and employees of large industrial enterprises, conducted interviews with local residents, representatives of small and medium businesses in the area territory study.

The research results are presented in the form of case studies of five settlements in Siberia (cities of Novokuznetsk, Bratsk, Biysk, Usolye-Sibirskoye town and Sheregesh rural settlement) with the use of comparative analysis on an equal basis with the practice of Russian and foreign scholars (see, for example, [12]; [13, pp. 70–73]). The description of the development models is based on the concept of a triple helix with selecting the key actor, as well as an indicating close interaction of the government, business and the scientific community in the territory.

Case study is a common method of studying the processes and mechanisms of territory's restructuring. Thus, one of the works [14] describes the transformation of Pittsburgh steel industry amid extremely tense environmental conditions into a center of high-quality medicine, education, nanotechnology, and financial services. Other works [15, 16] analyze the transformation of textile Manchester into a cradle of cultural life through the reconstruction of urban areas, development of creative industries, and modernization of the transport infrastructure. The success of Emscher Park – the symbol of the new economy of cities in the Ruhr Area (once the center of coal and steel industry in Europe) – is explained by the following factors [17]: the initiators and executors of numerous projects were commercial companies, non-profit organizations, as well as residents of the region who independently attracted the necessary resources. The state mainly performed the coordinating function.

Taking into account the peculiarities of Russia and Siberia in particular, it should be noted that the use of best foreign practices for managing the development of old industrial territories is possible only to a limited extent. An integral part of each strategy is the implementation of transport, housing and environmental projects aimed at improving the quality of life in the city abroad [8], while in Russia the emphasis is put on the prospects of the city-forming enterprises, their investment plans, social responsibility, liabilities to production diversification [18] or their preservation.

Research results

The settlements under study are old industrial: their parent enterprises have functioned for a long time *(Tab.)* and require technical, ideological and social modernization.

Primary comparison of case cities

Indicator	Novokuznetsk	Bratsk	Biysk	Usolye-Sibirskoye	Sheregesh
Status	Single-industry town	-	Science city	Single-industry town	Single-industry town
Population as of 01.01.2016, people	551 253	234 147	203 826	78 569	10 101
Population trend for 25 years	Decline	Decline	Decline	Decline	Rise
Budget revenues in 2015, million rubles	18 094	5 542	3 001	1 350	75.2
Year of establishment of major industries	Late 19th century	1955–1966	1942–1991	1936–1983	1952–1981
Branch specialization	Non-ferrous metallurgy	Power engineering, non-ferrous metallurgy, pulp and paper	Chemistry, tool engineering, pharmaceuticals	Chemistry	Ferrous metal extraction, tourism

Source: compiled from: Russian regions. Socio-economic indicators, 2016. Federal State Statistics Service. Available at: http://www.gks.ru/bgd/regl/b16_14t/Main.htm (Accessed: 12.10.2017); data from field research.

Since the settlements of old industrial territories do not always have sufficient resources to carry out large-scale reindustrialization, we assume that Siberian urban settlements should apply specific development models – model of revitalization.

Revitalization is the process of "reviving" the economy by opening up new opportunities for traditional forms of management within the framework of the existing sectoral structure taking into account their modern functions (social, innovation, integration). It is a "softer" technique and a less extensive process than reindustrialization [19].

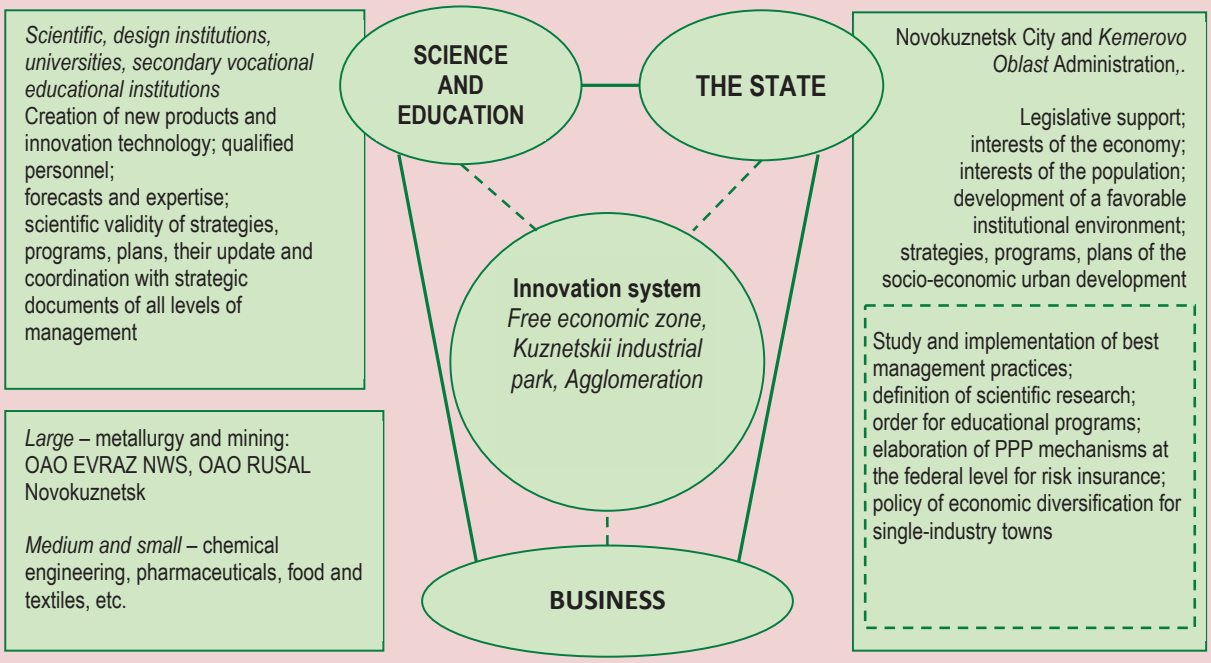
The Table demonstrates that the territorial formations under study differ in scale, status, and branch specialization. According to the research hypothesis, the issues of economic development and ways to solve them in the context of modernization of economic systems and reindustrialization are likely to be different. At the same time, territorial proximity opens up opportunities for these issues to be jointly addressed, as well as maximum use of synergy of space [20].

Case "City of Novokuznetsk"

The existing revitalization model in the city can be called "Industrial diversification" (*Fig. 1*).

The key economic actors in the city are large metallurgical enterprises. Their development strongly depends on the policy of the central administration of the holding company, in particular, on its strictly set framework for the expenditure level. At the same time, considerable pressure is also put on by the administration of the city and the region. As a result, the city-forming enterprises explicitly perform the social function. The enterprise administration maintains the policy of jobs even taking into account the projected loss of commercial effect.

Figure 1. Model of industrial diversification of the city of Novokuznetsk



Source: compiled by the authors.

In some cases, the process of technological modernization of industrial enterprises takes place under the pressure from the city administration rather than with the aim of reducing costs. For example, OOO RUSAL Novokuznetsk has implemented a program to improve energy efficiency of the enterprise, put into operation a closed water supply system, etc.

Product diversification within firms is influenced by global market conditions. As a result, the dependence of income on the world market and the corresponding risks for enterprises increase. Business representatives believe there are opportunities of using the mechanism of public-private partnership (PPP) in the field of sharing these risks.

One of the major directions of The Comprehensive Program of Social and Economic Development of Novokuznetsk up to 2025 is the diversification of the sectoral structure of the economy. It should include the development of existing non-core industries mainly by small and medium businesses. The most promising areas are technological waste processing, energy, constructions, innovation-driven mechanical engineering, and food industry. The following projects have been implemented: ferroalloy production, recycling of waste from magnetic ore separation, production of marketable fire-resistant products from fire-resistant waste, etc. At the same time, the administration notes that, unfortunately, the bank of real projects aimed to significantly change the situation in the near future is extremely small.

There is a shortage of technical specialists in the city. At the moment the most important role in training personnel belongs to major enterprises themselves. They implement training programs, internships; acquire specialized sponsored classes in major educational institutions. A special place in the personnel policy belongs to large-scale competitions among the employees such as "Project 250|, "RUSAL Professional", corporate championship of professional skill standards WorldSkills held at EVRAZ North-Western Smelter (NWS) which we visited during field research. In the long term, with support from the city administration the following mechanism should operate: market needs – secondary vocational education – higher educational institution.

A specific feature of the model is intensive yet clear pairwise interactions between the administration, science and business. The city's innovation system is weak as it does not involve all three elements at the same time.

In our opinion, the role of the "Science and education" unit in personnel provision, development and implementation of innovative products and technology, project examination, and forecasting should be significantly increased.

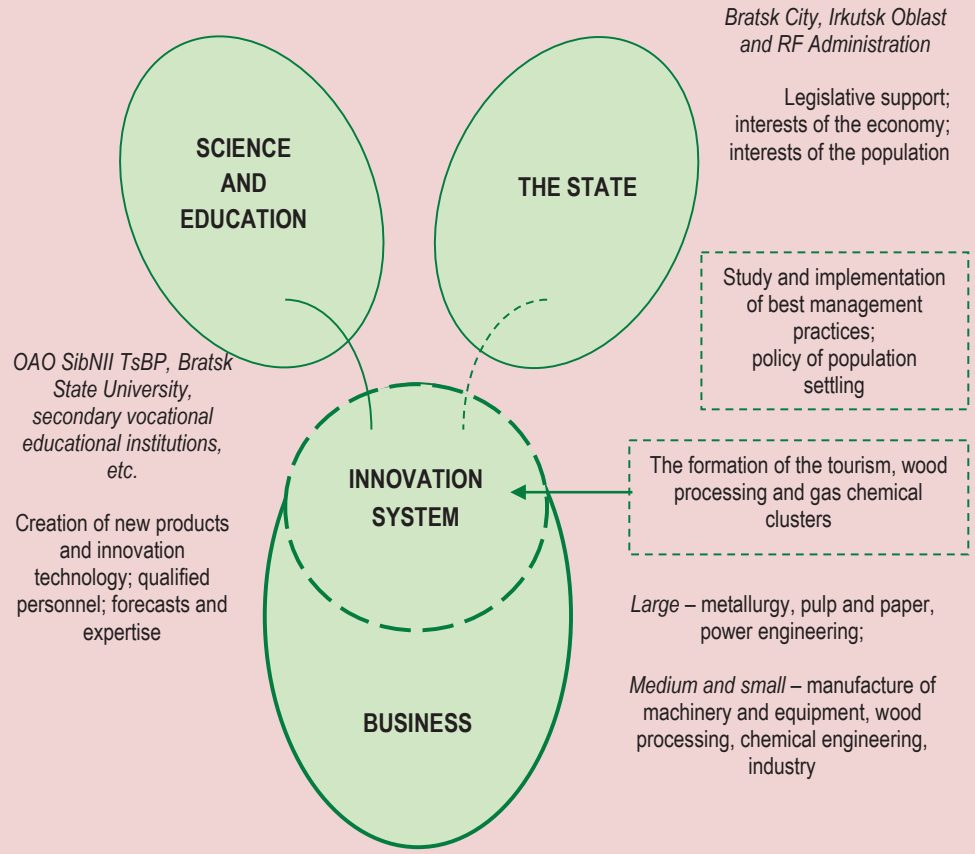
Case "City of Bratsk"

The main types of industrial production in the city are metallurgy and pulp and paper formed on its own natural resource base. The energy sector is also of great importance.

The established model of revitalization is titled "Innovative diversification of the city of Bratsk" (*Fig. 2*). It involves all 3 institutions (the state, business, and science and education complex) which form the image of current economy due to productive capacity of the existing enterprises and the innovation support infrastructure.

Giant enterprises (Bratsk Hydroelectric Power Station, Bratsk Aluminium Smelter, Bratsk LPK (forest industry complex)) constantly upgrade their technological capacity by introducing innovative technologies mainly supplied by Bratsk State University

Figure 2. Model of innovative diversification of the city of Bratsk



Source: compiled by the authors.

and OAO SibNII TsBP (Siberian Forest and Paper Research Institute) [21]. Most of the products of large enterprises are focused on the foreign market and are, accordingly, developing within the framework of the global environment increasing the burden on the city's environment[2].

Extraterritorial interests of the owners of key related businesses forming a single economic complex, the variety of tools for redistributing the effects within corporate structures, their non-transparent activities often lead to infringement of regional and public interests. Searching for mechanisms to regulate the activities of large companies in resource regions such as the one under study is a very urgent issue. The solution should be developed with the participation of the scientific complex.

Large enterprises of Bratsk industrial hub are quite stable, carrying the social burden to some extent. The key enterprises have spare capacities which could be used for new processing projects related to promising projects in neighboring regions (Nizhnee Priangar'e region, projects of the Sakha (Yakutia) Republic). At the same time, however, there is no progress towards strategic cooperation either at the level of production facilities or at the level of municipal units.

[2] City of Bratsk investment passport for 2014–2015. Available at: http://www.invest.bratsk-city.ru (Accessed: 14.10.2016)

The city of Bratsk lags behind other cities of the region in terms of development of the service sector and, accordingly, small business. When it comes to the socio-economic development, a special place is given to large and medium businesses. The city has more than 20 investment projects (industrial production, medicine, tourism, transport infrastructure, etc.) and most of them are under implementation[3].

Bratsk actively works on increasing its investment attractiveness, creating a bank of projects, and platforms for their promotion. From the point of view of the strategic vision of the city's own development, the authorities point to the need for a planned objective anticipated at the level of the national economy. Starting from the regional and even municipal levels, it is difficult to draw up such an objective, especially in terms of assessing the capabilities of the neighboring regions and schedule compliance. Having not received the status of the Priority Social and Economic Development Area (TOSER), the municipal authorities of the Northern regions of the Irkutsk Oblast led by Bratsk still do not give up this idea completely.

The problems of the forest industry are particularly relevant for the region under study. Restoration of forests is carried out too slowly (less than 10% of the cutting area), related industries are not being developed (the plywood manufacturing plant of Bratsk LPK is partially sold, the rest is not functioning), major industry actors are lobbying to reduce the minimum age of cutting from 102 years to 60, which, obviously, will accelerate the depletion of the resource base.

[3] The concept of the socio-economic development of the city of Bratsk up to 2018: approved by the Decision of the Bratsk Duma no. 228/g-D, dated 01.12.2006. Available at: http://www.bratsk-city.ru (Accessed: 14.10.2016).

The survey conducted among young people confirmed the highly relevant problem of preserving the population in the territory. Most of respondents prefer to live in another major city (Novosibirsk, Krasnoyarsk, Saint Petersburg) rather than in Bratsk. Almost all students who participated in the survey have friends or acquaintances who decided to move from Bratsk. As a rule, the age of those who decide to move is between 18 and 25 years, they have higher education and move to continue their studies or find a better paid job; 40% of respondents are going to leave Bratsk in the next one or two years [22]. The elaboration of a set of measures to keep young people in the city taking into account the preferences highlighted in the survey should become one of the priorities of municipal and regional authorities.

The city has a well-coordinated system of training in local universities and secondary vocational educational institutions depending on the needs of the city's leading enterprises.

Despite the intense pair-wise connections of the model blocks, the innovation system is not institutionally designed. The peculiarity of the model is the relative independence of large business.

Case "City of Biysk"

The scientific complex of Biysk was formed in the 1950-s after the establishment of large industrial defense enterprises in the city. In the 1990-s, the absence of state defense orders caused increased unemployment and a decline in the population's standard of living. In this regard, in the post-reform period the sphere of small and medium businesses became increasingly important, the wholesale and retail network as the main sphere of population's employment began to develop. At the same time, the primacy of the research and manufacturing complex (RMC) remains:

industry is mostly represented by enterprises manufacturing science-intensive products. This feature, as well as the efforts of the city administration made it possible fro Biysk to become one of Russia's science cities in 2005. The administration's work is aimed at preserving this status, studying the paths of development and using the experience of other science cities in the country.

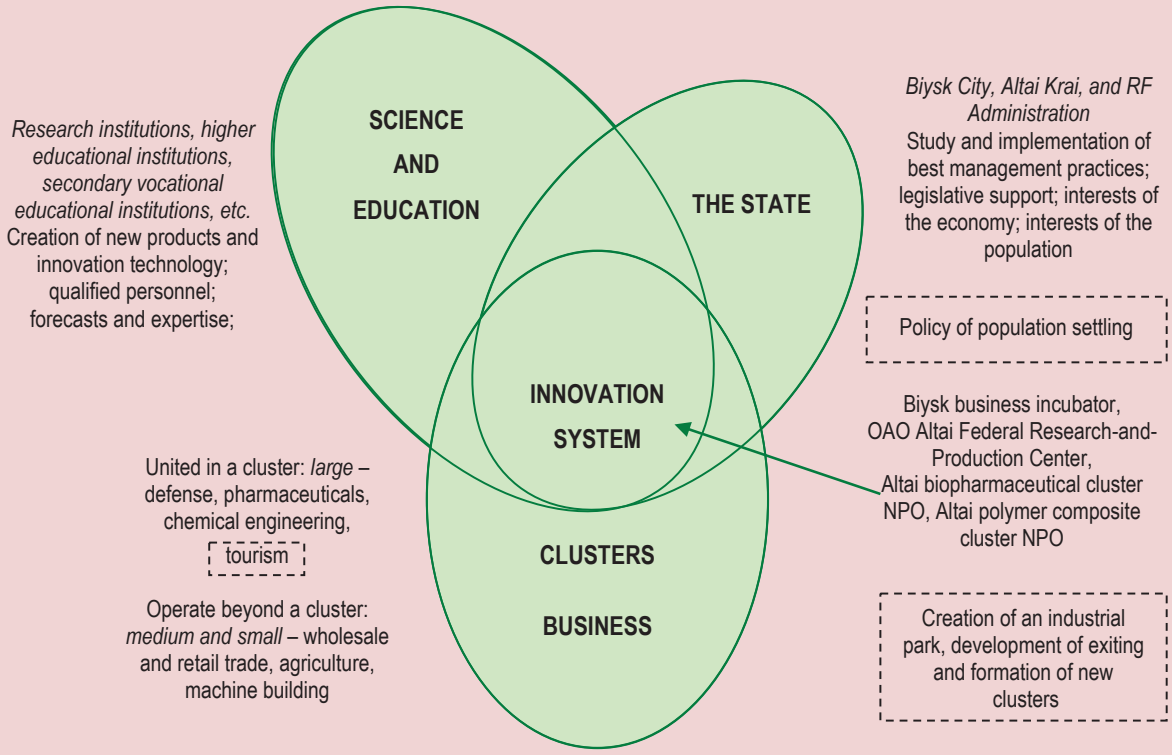
The revitalization of Biysk economy is realized within the framework of the classical model of "triple helix" [23]. It involves all three key institutions – the state, business, science and education – in close cooperation. The natural leader in Biysk is the science and education complex (*Fig. 3*).

The city of Biysk has a fairly diverse economy and has succeeded in creating clusters of small and medium enterprises. In the post-Soviet period, large state-owned enterprises in the city were divided into many small ones, many of which soon ceased to exist. The survived and new businesses merged on a voluntary basis.

In 2008, a non-profit organization (NPO) Altai biopharmaceutical cluster was established. The main activities of the cluster members are chemical and pharmaceutical production, biopharmaceuticals, production of food products with specified useful properties and production of medical equipment. The organization of more than 35 participants operates on its own raw materials, seeking to implement the maximum processing chains within the cluster.

At the beginning of 2015, Altai polymer composite cluster NPO was established. Its activity is mainly aimed at the development and

Figure 3. Model of development of the science city of Biysk



Source: compiled by the authors.

industrial production of composite materials and products used in constructions, power engineering, mineral extraction, and housing and utilities. The Russian market of polymer composite materials is in its infancy but its sharp increase is projected (up to 10 times by 2020) with an emphasis on domestic consumption.

Inside the clusters there is a system of training, employees annually receive international certificates, competitions to support individual initiatives (Umnik (Smart Guy)) and educational programs for beginner entrepreneurs are held. At the same time, the policy of keeping young population is poorly elaborated at the municipal level: the city administration does not arrange doors open days, career fairs which could really (taking into account the timetable) be attended by school students. This is a weak point of the current model of the science city development.

Business incubators are available in almost all industrial parks in the world. At the same time, a business incubator is a kind of super-structure serving the needs of residents of an industrial park. In Biysk, a business incubator exists separately (since 2012) performing the same functions for "free" small business. The local administration and RMC have not yet been able to implement a project to create an industrial park.

In our opinion, amid specific conditions of Biysk it is possible to create an international industrial park similar to Suzhou Industrial Park (China) [24].

Over the past 10 years, the attitude towards tourism as a significant area of economic diversification has changed significantly for the better. The administration has developed a project of the auto-tourist cluster "The Golden Gate" which is currently going through the process of concept approval and organizational and financial elaboration. The cluster project implies the implementation the following activities based on PPP: construction of domestic infrastructure facilities, a tourist information center, trade enterprises, two motorway service complexes, a recreation centre, catering facilities, collective accommodation facilities including a roadside inn, a motel and small luxury hotels, camping with facilities (toilets, showers, kitchens). In addition to this, it is recommended to restore old buildings in the city center or develop abandonment tourism[4].

In the transport sector, the emphasis should be put on improving the capacity of the transport network, as well as ensuring adequate access to remote areas of the city. It is necessary to join the Chinese project on renewal and operating of the Silk Road (China – Mongolia – Russia). It should be noted that China in this project focuses on high technology (innovation) and Biysk can offer them.

Case "Usolye-Sibirskoye town"

The dominant branch of the city is chemical industry (up to 60%) whose importance significantly reduced since 2013 as the city-forming enterprises such as OOO Usol'ekhimprom and OOO Usol'e-Sibirskii Silikon ceased their production operations. The program of the city's socio-economic development up to 2017 implies the formation of a chemical and pharmaceutical cluster; however, none of the four potential production initiatives has been established yet. Apart from creating new industries there is a need to modernize the existing enterprises. This would solve a number of economic and environmental issues in the city.

In the framework of measures to support single-industry municipal units in Russia in 2016 a mixed-type PSEDA was established. It

[4] Guided tours in abandoned buildings (Urban Trip).

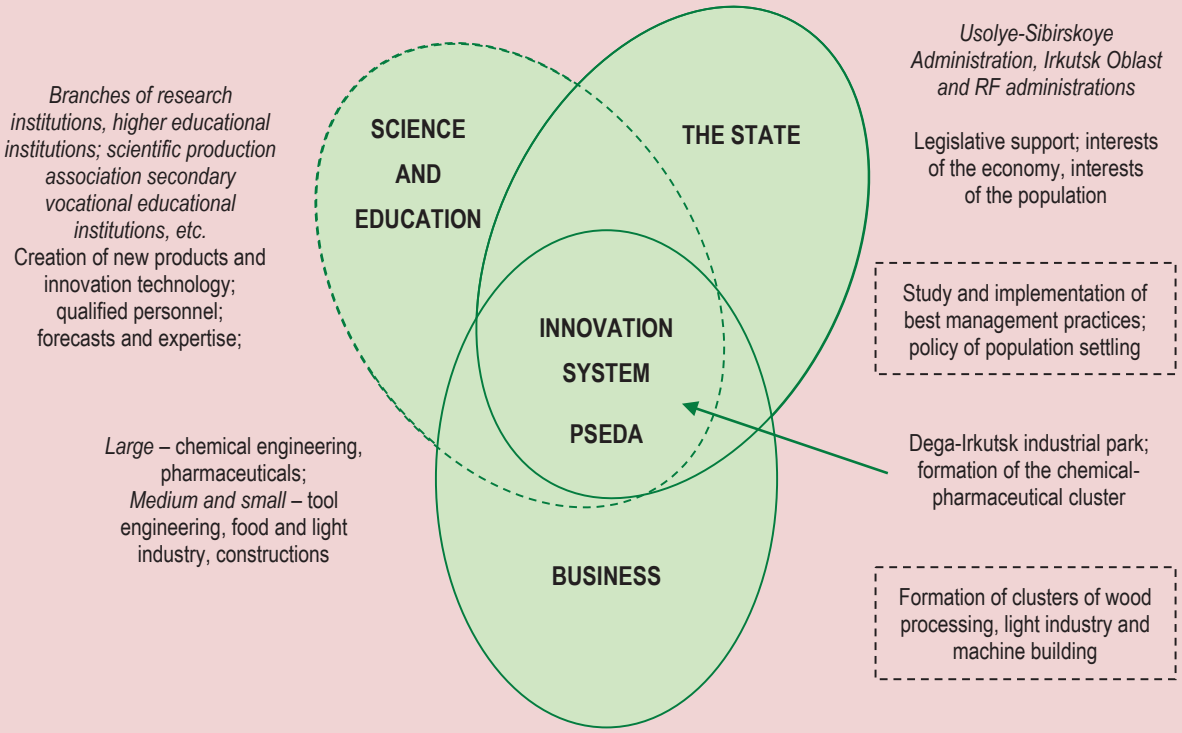
currently involves one resident – Dega-Irkutsk industrial park. It will be mainly focused on innovation activities (center for 3D printing and prototyping, projects to develop and implement IT and robotics). It is planned to create clusters of woodworking, consumer goods and mechanical engineering. Another PPP project is planned in the framework of the program of import substitution in Russia: AO Farmasintez plans the construction of a plant to produce active pharmaceutical ingredients at PSEDA Usol'e-Sibirskoe which will be produced using its own raw materials[5].

The development of the city is carried out within the framework of the model of innovation and industrial diversification according to the triple helix of interaction. Its distinctive negative feature is a small share of scientific participation due to the fact that there are no large research institutes and universities in the city (*Fig. 4*).

The city's system of strategic planning is based on medium–term plans which do not specify the main strategic development objective – innovative diversification.

The major deterrent to development is the outflow of the local population and the shortage of highly qualified personnel for new production. The local administration carries out a number of programs on training, retraining and advanced training of the population [25]. Due to proximity to the administrative center of the region one should rely on its educational potential.

Figure 4. Model of innovation and industrial diversification in Usol'e-Sibirskoe



Source: compiled by the authors.

[5] Official website of AO Farmasintez. Available at: http://www.pharmasyntez.com/node/303 (Accessed: 19.10.2016).

Case "Sheregesh rural settlement"

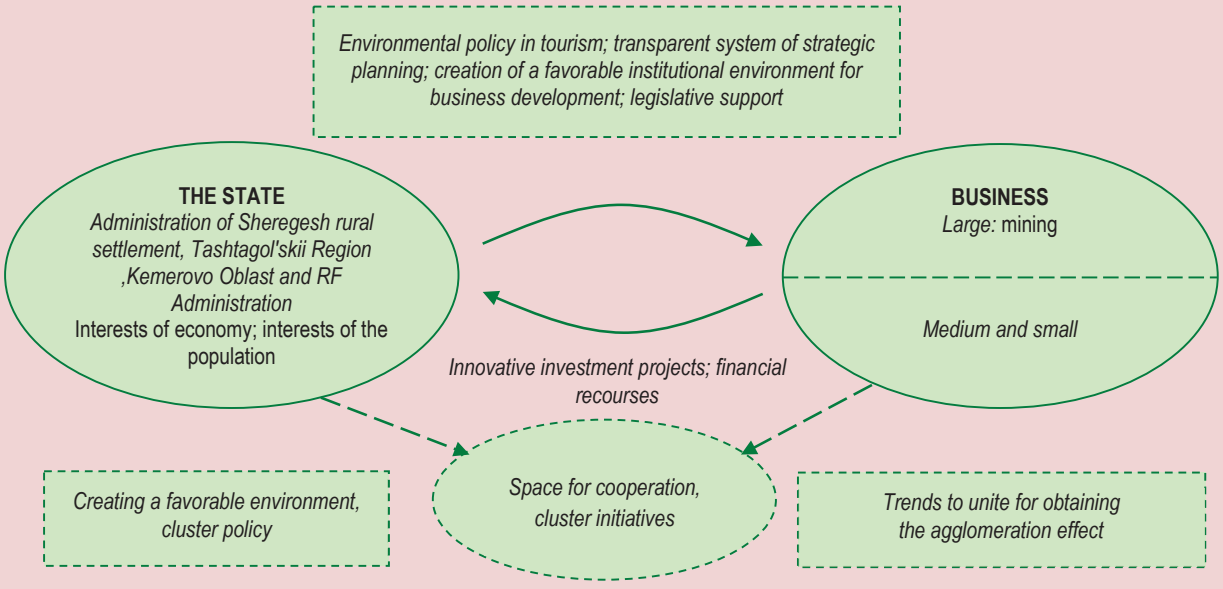
The main economic activities of the rural settlement involve mining and tourist and recreational activities.

Sheregesh has implemented a model of a double helix of interaction between the government and business (*Fig. 5*). Business invests in modernization and diversification of the economy and the government is engaged in social aspects: choosing socially responsible partners, improving the investment environment, forming a favorable institutional environment, etc.

Currently, the Gornaya Shoriya branch of OAO Evrazruda is developing an eponymous iron ore deposit and supplying it to the plants in Novokuznetsk. The work and plans of this city-forming enterprise are mostly defined outside the settlement – the parent company is located in Novokuznetsk. The requirements of the holding to the level of profitability led to the launch of the reconstruction project: the company will completely switch to a new ore mining technology with the use of high-performance self-propelled equipment. The implementation of the project will also partially reduce the severity of the personnel problem.

Due to natural and climatic conditions in the settlement it became possible to create a new major industry based on the development of the Sheregesh winter tourist resort. In the early 1990–s, the demand for domestic tourism increased and Sheregesh initiated active development of the tourist infrastructure: construction of modern hotels, development of new mountain ski routes. The creation of the road to the resort in 2011 significantly improved its transport and geographical position. In order to increase the investment attractiveness, all new tourist facilities will be included in the economic zone with preferential tax treatment (the Gornaya Shoriya free economic zone of tourist and recreational type was created in 2010). At the moment, the

Figure 5. Model of the double helix interaction in Sheregesh rural settlement



Source: compiled by the authors.

development of the resort and bringing it to the international level is a point of growth not only in the whole Tashtagol district, but also in the Kemerovo Oblast[6]. This is why it is included in the analysis.

The development of the ski resort puts high infrastructural demands. It is necessary to maintain the quality of the roadway of transport approaches to the resort, expand the network of accommodation infrastructure, provide housing and communal services in connection with the growing fund of hotels, cafes, saunas, provide a sufficient quantity of rental services. At the same time, there is a particularly pressing issue of using the created capacities during the summer period. According to the district administration, the workload of hotels in the summer is maximum 23%; the flow of tourists is reduced to 7% from the stress period in the winter. Thus, the revenues in the industry are currently subject to seasonality, the ways of using the infrastructure in the summer are not fully elaborated. In order to reduce the dependence of industry revenues on seasonality we propose to develop the following types of tourism in the village: recreational, sports, industrial, business, as well as cross-cutting tourism in cooperation with the Republic of Altai, Altai Krai, and the Republic of Khakassia. The administration of the settlement should play a significant role (initiative, consolidating) in the development of the tourism cluster. Effective marketing, work on consolidation of interests, involvement of foreign partners and consultants, study of the Russian and international experience (South Africa, France, Turkey, the USA, Krasnodar Krai, the Samara Oblast, Northern Caucasus) [26, 27] are also the success factors. In the context of limited financial resources, it is required to intensify cooperation with the regional administration regarding the promotion of the ski resort.

Intensive development of the new industry is complicated by staffing shortage: attracting the necessary number of qualified specialists will be extremely difficult taking into account the current level of the settlement's development and its living conditions.

At the same time, the administration faces the challenge of organizing work with small businesses: it requires identification of common interests and their consolidation. After all, taking into account the specific features of tourism it is fair to rely on small and medium business. Large network business is away from the settlement's projects. This is partly due to lack of information about the opportunities, partly due to the non-transparency of the business environment. The authorities point to a large number of concomitant issues of small business expansion, for example, entrepreneurs' mass tax evasion, land manipulations, and unfair competition. There is currently no experience in dealing with such issues.

It should be noted that the system of strategic planning in the settlement is not structured: documents are not drafted, the website only demonstrates individual investment projects (information on which is not always updated).

In this case, the block "Science and education" is not included in the revitalization model as it only indirectly participates in the economic modernization (through the training system beyond the municipal unit). The prospects for including the block in the model consist in the development and application of a systematic approach to the problems of regulation of small and medium business taking into account the specific features of tourism.

[6] Strategy of the socio-economic development of the Kemerovo Oblast up to 2025: approved by the Council of People's Deputies of the Kemerovo Oblast no. 74-OZ, dated 11.07.2008. Available at: http://www.docs.cntd.ru (Accessed: 21.09.2016).

Conclusion

The settlements of old industrial territories do not always have sufficient resources to carry out large-scale reindustrialization. So far, they have formed rather sustainable models of revitalization, i.e. economic revival.

The following aspects are common to the distinguished models of urban development:

1. The economy is highly dependent on major enterprises whose interests are often extra-territorial.

2. The issue of preserving the population and improving the quality of human resources is acute.

3. The economy is highly dependent on the situation at individual markets.

4. Lack of resources to perform the functions of managing the socio-economic development is associated with an imbalance between the obligations and powers of local authorities and budget revenues.

5. The attitude to PPP is restrained. In the settlements under study, economic agents consider PPP primarily as a tool as a mechanism to ensure stability, rather than initiate and/or intensify work on projects. Municipal and regional powers and resources are often not enough to remove or separate the existing risks, so it is necessary to strengthen the role of the federal center.

6. The mechanism of interaction between administrations and small businesses is not sufficiently developed. In all municipal units the respondents pointed to the absence of an organizational and legal mechanism of influence on the size of the shadow economy. With the exception of Biysk, small business support is targeted and insufficient to achieve the goals of economic diversification.

7. The municipal units' level of activity regarding the study of best practices of territory management is different. With the exception of Biysk, the interest in inter-municipal comparisons is minimal. It is recommended to join one or more associations such as the Association of Siberian and Far Eastern Cities, the Association of Small Tourist Cities, and the Association of Small and Medium-Size Cities to study best practices of municipal management.

8. The existing potential of inter-municipal interactions is practically not realized. It is possible to elaborate through tourist routes instead of splitting tourist flows amid tough competition. It is also advisable to establish cooperation in pharmaceuticals: organization of inter-municipal and inter-regional value added chains will reduce the dependence on imports of raw materials in the main cluster of Biysk.

The bottleneck of all models is lack of consolidation of interests and intensity of interactions.

In general, the certainly new author's comprehensive approach to the study of the development models formed during the field research from the point of view of key participants' interaction mechanisms help identify the bottlenecks of development, opened up the opportunity to develop recommendations to accelerate the processes of economic revitalization of the settlements under study.

The presented institutional models with their identified problems and proposed solutions can be used in strategic planning at the municipal level, in developing and updating concepts and programs, elaborating drafts of inter-regional agreements. Taking into account the leadership of an particular institutional participant of the revitalization process, as well as close interaction between them, can significantly adjust the mechanisms for achieving the goals of socio-economic

development set in the policy documents. The vicinity factor of case-cities under study points to potential opportunities for intensifying inter-municipal interactions.

The research materials are included in the training courses on Regional Economics and a special course "Siberia in the system of state regional economic policy" taught within Bachelor's programs at the Department of Economics of Novosibirsk State University and at the Department of Geology of Irkutsk State University.

The prospects for further research are seen in the expansion of the field of revitalization cases. This will help develop a network of possible inter-municipal and interregional interactions, ensuring the socio-economic development of cities and regions in Siberia. Monitoring revitalization processes in the already studied settlements would help assess the sustainability of the existing models and identify the factors with the strongest impact on their institutional transformation.

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The Quality of Labor Potential Outside Large Cities*

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Abstract. Sustainable development of rural areas in the context of reducing labor force caused by the natural loss of population and migration outflow to major cities is possible to ensure only through economic modernization, enhancement of the quality of labor potential and improvement of its efficiency. The goal of the research presented in the paper is to assess labor potential quality in the territories outside major cities. The information base of the work is the data of the monitoring of the qualitative state of labor potential of the Vologda Oblast population, an unprecedented longitudinal sociological research carried out by Vologda Research Center of RAS since 1997. The questionnaire survey takes place in eight districts of the Oblast and in the cities of Vologda and Cherepovets. The sample size is 1,500 people of working age. The assessment technique is based on the concept of qualitative characteristics of the population developed at RAS Institute of Socio-Economic Studies of Population and allows us to evaluate in index form (from zero to one) eight basic qualities of labor potential: physical health, mental health, cognitive potential, creativity, sociability, cultural and moral levels, achievement need. The originality and novelty of our approach described in the article lies in the fact that the assessment of labor potential quality is carried out in the context of age and is accompanied by a comparative analysis of "urban" and "rural" indicators. The analysis was carried out for three age groups: working age youth (16–30 years old), pre-retirement age persons (women aged 50–54, men aged 55–59), middle-aged persons (women aged 31–49, men aged up to 54). The use of this approach allows us to show that although the average quality

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of labor potential of rural areas (the average index of social capacity) is steadily lower than in major cities, the quality of rural youth, in general, is not inferior to that of urban youth: the villagers "lose" to urban residents in terms of energy potential, but compensate for this by their high development of social and psychological potential, including communicative potential. Thus, a widespread perception of the low quality of population outside major cities has not been confirmed with regard to working age youth. Under the current conditions, it is strategically important to "retain" young people in rural areas and provide them with an opportunity to implement their labor potential for the benefit of their home region.

Key words: labor potential, labor potential quality, major cities, districts, rural territories

Introduction

In the 1950s–1960s, centripetal internal migration was perceived by economists around the world as a positive phenomenon, which helped withdraw excessive rural labor from traditional agriculture to provide cheap labor for the growing industrial complex [25; 27; 24]. Later, numerous studies found that in all developing countries, rural-to-urban migration rates exceed the rate of job creation and the capacity of urban social services [26, pp. 361-362]. In addition, there emerged the problems in the development of rural territories[1], due to natural deterioration in the quality of the population outside large cities[2].

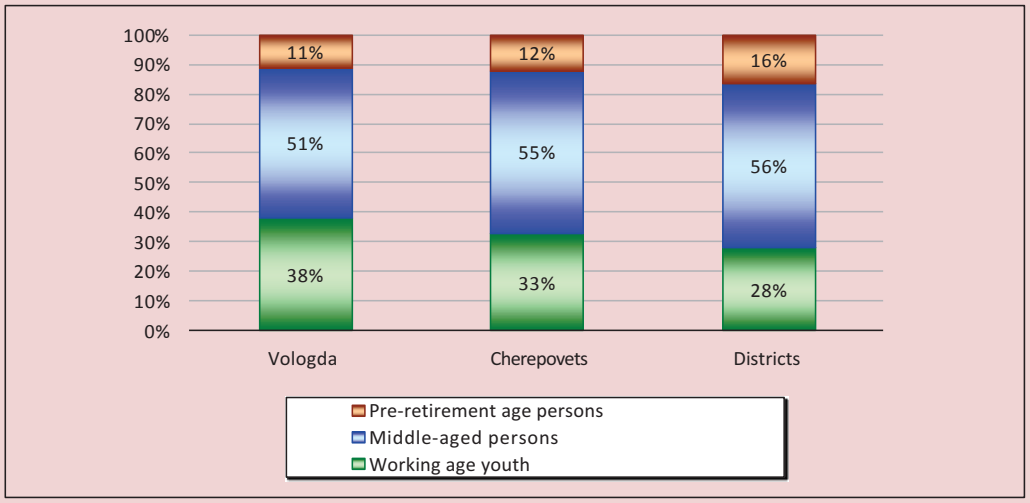
The outflow of qualified personnel creates significant obstacles to sustainable economic development, the relationship of which with the quality of the population and human capital is admitted by both domestic and foreign researchers [11; 21; 22; 23]. In Russia, the situation is exacerbated by the overall demographic crisis. The last decade in our country witnessed a systematic reduction in working age population, and in rural areas, too. According to *L.L. Rybakovskii*, "there can be only two ways out of this impasse: either to continue attracting millions of unskilled migrant workers to the Russian economy, reducing the already low level of wages of the employed Russian population, or to implement intensive modernization of the economy on an innovative basis" [17, p.57]. The first option is the easiest to implement, it helps solve the problem in a relatively short time, but entails many negative consequences. The second option is more correct strategically, but requires significant time and financial costs. In addition, it gives rise to related personnel issues: modernization of jobs significantly increases the requirements to the quality of labor potential. It is not enough to modernize the economy alone, it is necessary to "upgrade" the people and prepare them to work in new conditions. Cities have a leading role to play in this process.

Large cities become "centers of modernization for the economy and human capital" [2], forming the "supporting framework of resettlement" [9]. In modern Russia, both internal and external migrants still "strive to move to big cities, where there are many opportunities for employment, higher earnings, and self-realization" [13, p. 66]. Cities serve as

[1] According to the approach used by the EU, rural areas are defined as the territories outside large cities, with their own population, way of life, traditions, material and cultural heritage, natural conditions and resources (Merzlov A.V., et al. *Introduction to the sustainable development of rural areas: major concepts and theoretical foundations: textbook*. Moscow, 2012. 57 p. P. 9). According to this definition, the terms "rural territories" and "territories outside major cities" are further used as synonyms.

[2] Urban geography and urban planning have the following classification of cities by their size: small towns – up to 50 thousand inhabitants, average cities – 50–100 thousand, large cities – 250–500 thousand, largest cities – 500–1 million, millionaire cities – more than 1 million inhabitants (Lappo G.M. *Geography of cities*. Moscow: Vlados, 1997. 478 p. P. 43).

Figure 1. Age structure of working-age population in major cities of the Vologda Oblast and beyond as of the beginning of 2016



Source: Age and gender composition of the Vologda Oblast population in 2015: statistics collection. Vologda, 2016. 97 p.; our own calculations.

"centers of growth" [4]; they are "engines" of development that define trends and prospects of the whole country [3].

N.V. Zubarevich points out that "accumulating human and economic resources gives the cities objective advantages", and "despite the lack of an adequate policy of the authorities, natural trends in spatial development will continue to pull the population into large cities and their suburbs" [2, p. 5, 19]. What remains for the rural territories, whose sustainable development is now one of the major priorities of state policy in the Russian Federation [8]?

Domestic researchers think that "the quality of rural population was and remains low" [5, p. 136]. In our view, this is true to the same extent to which the average salary indicates the standard of living in the region. In particular, if we talk about labor potential, it is not quite correct to compare the indicators for the population of working age in general: as we calculated earlier on the example of the Vologda Oblast, the average age in the districts is higher than in the cities [19].

As an example, *Figure 1* shows the structure of working-age population in major cities of the Vologda Oblast and beyond as of the beginning of 2016. When allocating young people, we have traditionally followed an approach consistent with Russian law[3] and included in this category the population 14 to 30 years of age [14]. Due to the fact that working age population is the object of our research, then persons aged 14 and 15 remained outside the scope of our analysis, and the residents of the relevant territory aged between 16 and 30 were classified as young people of working age. The person's pre-retirement age was considered to be five years or less before reaching retirement age. The rest of the working-age population was conditionally named as middle-aged.

[3] About the main directions of the state youth policy in the Russian Federation: Resolution of the Supreme Soviet of the Russian Federation dated June 3, 1993, No. 5090-1. Available online at: *Reference and Legal System ConsultantPlus*.

As can be seen from the diagram, the proportion of working-age youth outside major cities is significantly lower and the proportion of persons of pre-retirement age is higher, which naturally affects the average indicators of population quality.

The purpose of our research was to assess the quality of labor potential of territories outside major cities. The evaluation was carried out in the age context and was accompanied by comparative analysis of "urban" and "rural" indicators.

The analysis was carried out on the example of the Vologda Oblast and included three age groups:

– working-age youth – young people 16–30 years of age;

– persons of pre-retirement age – working-age persons that have not more than 5 years left before they reach retirement age – women aged 50–54, men aged 55–59;

– middle-aged persons – women aged 31–49 years and men up to 54 years old.

Methodology

In our research, we understand labor potential of the territory as a "generalized characteristic of the measure and quality of a set of capabilities for work" [12, p. 14]; the characteristic is estimated quantitatively by the size of working-age population and qualitatively – by the level of development of qualitative characteristics of working-age population. It corresponds to the comprehensive economic approach to the interpretation of this concept [10].

It should be noted that the term "labor potential" is the result of original development of Russian economic thought. The substantiation for the necessity to introduce this concept "in order to characterize personal factor of production in multidimensional terms" [15, p. 5] can be found in the works of *A.S. Pankratov*. Modern foreign textbooks and lectures on labor economics[4] do not mention this term, and the potential production capabilities of the population are considered in the framework of the theory of human capital [22; 28]. At the same time, if in Russia it is customary to talk about qualitative characteristics of working-age population, then foreign studies focus on the education and skills of workers.

The quality of labor potential is a broader concept than the skills acquired at school and university. In particular, such qualitative characteristics of the population as morality and internal culture are not skills, they can not be "trained", and they are acquired in the process of upbringing. At the same time, as shown by the assessments carried out in the Vologda Oblast, these qualities are significant and in demand in the workplace: more than one third of employees in working age indicated that for the successful implementation of labor activity it is very important for them to have high moral qualities (35.5%) and a high level of general culture (38.3%). However, only 5 and 7% of employees, respectively, noted that these qualities are not important at all in their work *(Tab. 1)*.

This fact testifies in favor of taking into account and assessing the diversity of qualitative characteristics of working-age population. There is a need for measurements that can provide the authorities with detailed information on the state and development of local labor potential; such information should go beyond the limited statistical indicators of

[4] Acemoglu D., Autor D. *Lectures in labor economics*. MIT, 2011. 299 p.; Borjas G.J. *Labor economics*. New York: McGraw-Hill, 2013. 576 p.; Ehrenberg R.G., Smith R.S. *Modern labor economics: theory and public policy*. Upper Saddle River: Prentice Hall, 2012. 672 p.

Table 1. Distribution of answers to the question "What qualities does your present occupation require from an individual engaged in it?", %

To succeed in my present occupation it is necessary to have...	Answer				Total
	Not important at all	More or less important	Important enough	Very important	
1. Good physical health and well-being	2.8	13.8	43.6	39.9	100
2. High resistance to mental stress (stressful work)	4.4	15.6	41.1	38.8	100
3. Having versatile knowledge, great erudition, high qualification	9.8	23.8	40.4	26.0	100
4. Have creative abilities (to invent, create something new, solve new problems, etc.)	19.0	25.1	33.5	22.4	100
5. Sociability, ability to get along with people	3.2	12.7	34.5	49.6	100
6. Have a high general culture (be well-mannered, polite, reserved, always look good)	6.6	18.9	36.2	38.3	100
7. Have high moral qualities (honesty, truthfulness, sense of duty, decency, etc.)	5.2	17.5	41.8	35.5	100
8. Constantly strive to be promoted, improve one's own skills, show initiative and entrepreneurial spirit	12.1	26.2	35.8	25.9	100

Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.
Note: the table shows the distribution of answers obtained from the employed working age population of the Vologda Oblast according to data of the 2016 survey.

health and education and provide real "food for thought" and help take adequate management measures.

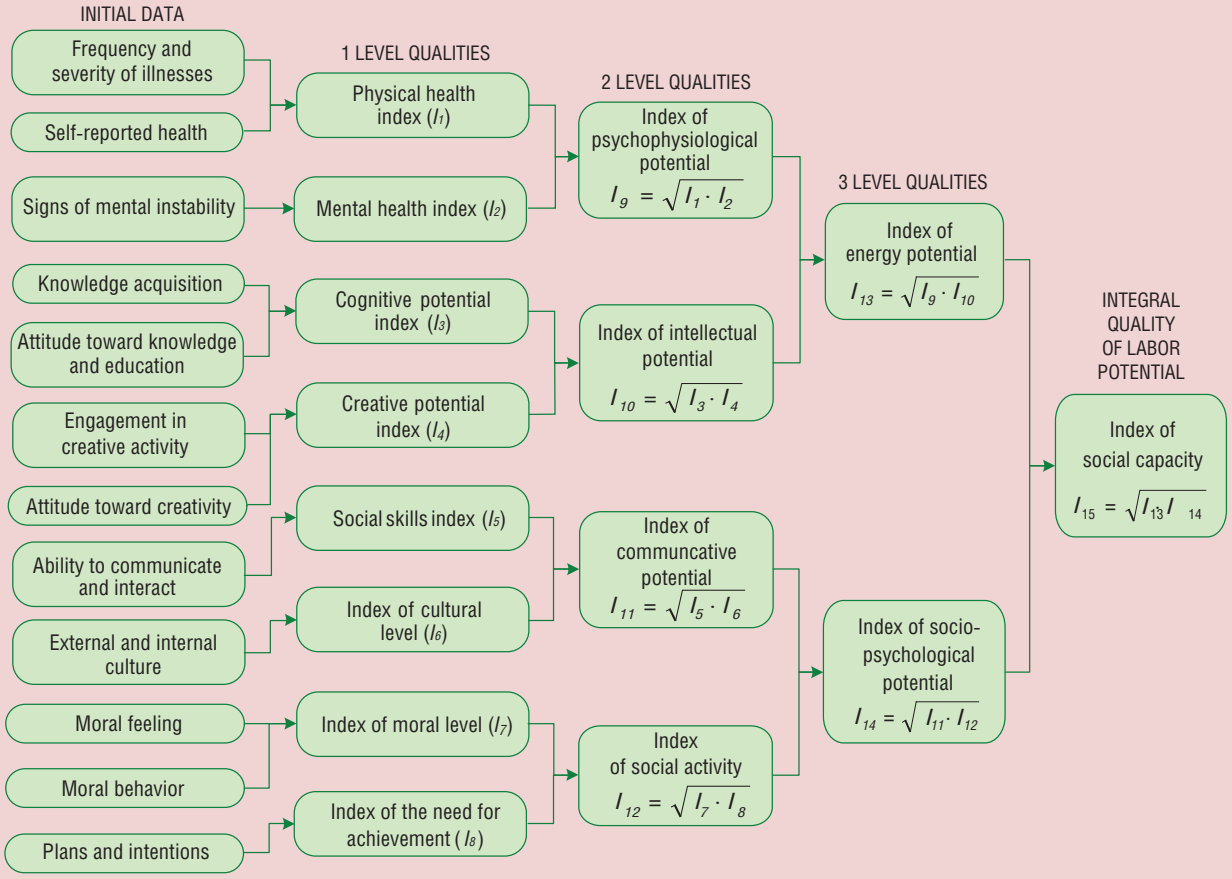
Recognizing the strategic importance of reliable and timely information at the regional level, Vologda Research Center of RAS carries out a regular sociological monitoring of the qualitative state of labor potential in the Vologda Oblast for twenty years already [1; 6; 18][5]. The results of the measurements form the information base of the present study.

The characteristics of the survey are as follows. The object of the study is the working age population of the Vologda Oblast. The surveys are held annually in August–September in the cities of Vologda and Cherepovets and in eight districts of the Oblast (Babaevsky, Velikoustyugsky, Vozhegodsky, Gryazovetsky, Kirillovsky, Nikolsky, Tarnogsky and Sheksninsky). The sample size is 1,500 people. Sampling method is zoning with proportional location of observation units. Sample type: quota by gender and age. Random sampling error: 3–4% at a confidence interval of 4–5%. The method of the survey is a questionnaire poll at the place of residence of the respondents.

The method of measurement is based on the concept of qualitative characteristics of the population, developed by scientists of the Institute of Socio-Economic Studies of Population under the supervision of N.M. Rimashevskaya [7; 16]. According to the approach we use, an integral indicator of the quality of labor potential is social capacity, which has a comprehensive hierarchical structure and incorporates eight qualitative components of the first level: physical and mental health, cognitive potential, creativity, social skills, cultural and moral levels, and the need for achievement.

[5] In 1996, we conducted a pilot survey; since 1997, sociological measurements of the quality of labor potential are conducted in a monitoring mode (until 2009 – annually, now – every two years).

Figure 2. Technique of assessing labor potential quality



Source: our compilation.

Sociological evaluation of these qualities is carried out with the help of Likert scales[6]. The questionnaire consists of the sets of statements mostly with five-point rating scales of evaluation, they assess the level of agreement of the respondents with the statements. Each of the basic components of labor potential corresponds to its own set of questions. Based on the results of the measurements, all eight qualities are given a numerical score in the form of indices ranging from zero to one, which are calcu-lated as the ratio of the actual number of points on the scale to the maximum possible one. The indices are interpreted as follows: the closer the index value to one, the better the quality is developed in the respondent, and vice versa.

The quality of labor potential of the upper levels of the hierarchy is assessed by calculating the geometrical mean of the indices of the lower levels. The integral index of social capacity is calculated as the average geometric of the indices of energy potential and socio-psychological potential *(Fig. 2)*.

[6] A Likert scale is a kind of questionnaire for measuring attitudes. It is named after its author – R. Likert, who invented it in 1932. Likert scales consist of a set of statements with a five or seven-point rating scales, which establish the degree of agreement of an individual with the statement. More detailed description of the scale of measuring basic qualities is presented in the work: Ilyin V.A., Smirnova N.A., Timofeeva Ya.B. *Quality of labor potential of the population of the Vologda Oblast*. Vologda: VNKTs TsEMI RAN, 1998. 76 p.

Results and discussion

Throughout the whole assessment period, the areas outside large cities have lower average values of social capacity indices *(Fig. 3)*. At present (according to the results of measurements of 2016), the integral index of labor potential quality in the Vologda Oblast districts makes 0.673 units, in the city of Cherepovets – 0.692 units, and in the city of Vologda – 0.702 units.

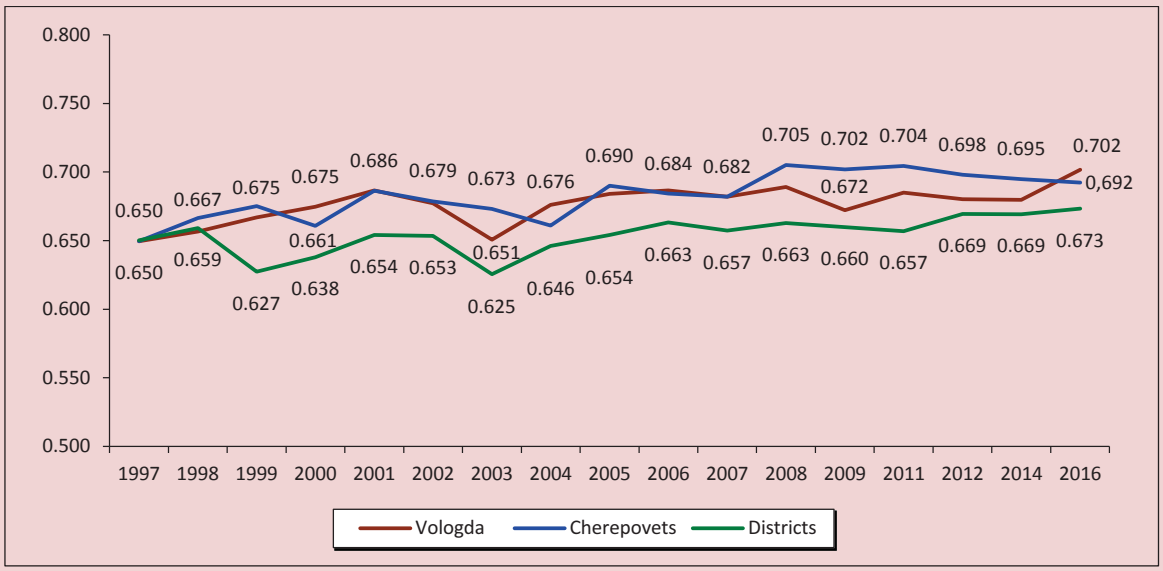
If we consider the primary qualitative characteristics of labor potential that form the integral index, then, judging by the average indicators, rural areas lag behind major cities according to the majority of basic qualities. As we have shown earlier [19], the exception is the indices of social skills, cultural, and moral levels. That is, outside large cities, people on average are more sociable and conservative in the matters of culture and morality.

Analysis of the dynamics of the basic qualities of labor potential showed that over two decades, the able-bodied population of rural areas lost 2% of cognitive and 7% of creative potential, 5% of physical health and 3% of moral level *(Tab. 2)*.

Next, let us focus on the current quality of labor potential of the territories of the Vologda Oblast located outside major cities. According to the approach substantiated in the introduction, in order to reflect the current situation adequately and make accurate comparison of the data with the indicators for Vologda and Cherepovets, we carried out the analysis for three age groups.

The measurements showed that currently the index of social capacity of working age youth outside major cities is not inferior to the indicators for Cherepovets *(Tab. 3)*: the villagers have lower energy potential, but compensate for this with the high development of socio-psychological potential, including communicative potential. The quality of labor potential of middle-aged and pre-retirement age people in the districts of the Oblast is significantly lower than in large cities. At the

Figure 3. Dynamics of social capacity indices in major cities of the Vologda Oblast and outside them



Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.

Table 2. Dynamics of labor potential quality outside large cities of the Vologda Oblast in 1997–2016, index

Quality	Year							Δ, units	Δ, %
	1997	2000	2003	2006	2009	2012	2016		
Physical health	0.756	0.678	0.639	0.706	0.715	0.720	0.716	-0.040	-5.2%
Mental health	0.682	0.676	0.642	0.738	0.715	0.748	0.783	0.101	14.8%
Cognitive potential	0.634	0.614	0.599	0.636	0.599	0.619	0.620	-0.013	-2.1%
Creative potential	0.581	0.560	0.552	0.557	0.548	0.525	0.540	-0.042	-7.2%
Social skills	0.729	0.718	0.685	0.735	0.726	0.768	0.751	0.021	2.9%
Cultural level	0.603	0.589	0.605	0.644	0.663	0.705	0.689	0.086	14.3%
Moral level	0.795	0.774	0.714	0.774	0.737	0.790	0.772	-0.023	-2.9%
Need for achievement	0.595	0.611	0.663	0.624	0.631	0.616	0.641	0.045	7.6%
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

Table 3. Labor potential quality in major cities of the Vologda Oblast and beyond, broken down by age groups in 2016, index

Quality	Working age youth			Middle-aged persons			Pre-retirement age persons		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Basic qualities of the first level									
Physical health	0.772	0.780	0.766	0.733	0.745	0.714	0.672	0.671	0.647
Mental health	0.816	0.787	0.806	0.822	0.792	0.786	0.765	0.773	0.738
Cognitive potential	0.631	0.612	0.616	0.654	0.638	0.618	0.643	0.645	0.635
Creative potential	0.598	0.573	0.537	0.586	0.587	0.545	0.608	0.562	0.530
Social skills	0.748	0.764	0.763	0.773	0.766	0.746	0.774	0.727	0.745
Cultural level	0.697	0.674	0.710	0.688	0.706	0.684	0.694	0.638	0.670
Moral level	0.773	0.765	0.769	0.788	0.790	0.768	0.829	0.800	0.787
Need for achievement	0.730	0.715	0.707	0.682	0.677	0.638	0.580	0.559	0.546
Qualities of the second level									
Psychophysical potential	0.790	0.780	0.782	0.771	0.764	0.742	0.711	0.715	0.686
Intellectual potential	0.608	0.587	0.571	0.614	0.608	0.576	0.621	0.599	0.576
Communication potential	0.719	0.712	0.731	0.726	0.730	0.709	0.728	0.674	0.702
Social activity	0.747	0.736	0.734	0.725	0.726	0.695	0.686	0.663	0.650
Qualities of the third level									
Energy potential	0.688	0.672	0.665	0.684	0.678	0.648	0.662	0.651	0.626
Socio-psychological potential	0.731	0.721	0.730	0.723	0.726	0.700	0.705	0.666	0.673
Integral index of labor potential quality									
Capacity	0.708	0.695	0.696	0.702	0.700	0.671	0.681	0.656	0.646
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

same time, the greatest gap is observed in the components of energy potential, which in rural areas is significantly depleted when approaching retirement age, which indicates the existence of problems in social infrastructure and quality of life (including working life) outside major cities.

Self-reported health among the working age population in the districts of the Vologda Oblast is lower in all age groups *(Tab. 4)*. For example, 62% of rural youth (in Vologda – 67%, in Cherepovets – 65%), 42% of middle-aged persons of working age and 18% of persons of pre-retirement age consider their health to be "excellent" and "good". Negative self-assessments of their own health were given by 4%, 6% and 11% of the age groups, respectively.

Table 4. Self-reported health among the working-age population, %

Self-reported health	Working age youth			Middle-aged persons			Pre-retirement age persons		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Excellent	14.0	16.2	11.7	10.5	9.6	5.2	5.9	5.3	3.3
Good	53.4	48.7	50.0	36.2	51.2	36.5	13.7	24.6	14.2
Satisfactory	30.3	32.5	34.4	49.3	34.0	52.1	72.5	54.4	71.7
Poor	2.2	2.6	3.3	3.3	4.8	4.0	5.9	15.8	9.2
Very poor	0.0	0.0	0.6	0.7	0.5	2.1	2.0	0.0	1.7
Total	100	100	100	100	100	100	100	100	100
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

In addition, according to the results of the monitoring, 7% of young people, 17% of middle-aged people, and 32% of people of pre-retirement age who live outside major cities complained of having very frequent minor ailments (headache, general weakness, exacerbations of chronic diseases, injuries, etc.), which do not reduce the overall working capacity. At the same time, 51% of young people have never experienced the illnesses that would lead to loss of their ability to work and study. This figure is significantly lower among middle-aged persons and people of pre-retirement age: 39% and 27%, respectively.

If we talk about mental health of the working-age population, them we can point out that along with the tendency toward increasing the corresponding index observed during the monitoring study (see Tab. 2), at present, such signs of psychological instability as sleep problems, difficulties with attention focusing, and a feeling of unreality of what is happening are more widespread among rural residents *(Tab. 5)*.

One of the problematic points in the development of labor potential outside large cities is the intellectual potential of the population, which includes a tendency toward the decrease in the cognitive and creative potentials. At the same time, if we move away from analyzing average indicators, we can see that the cognitive potential of young people in

Table 5. Manifestation of some signs of mental instability in the population of working age, %

Sign	Working age youth			Middle-aged persons			Pre-retirement age persons		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Sometimes it is difficult to fall asleep and I have to use sleeping pills	9.5	18.8	19.4	15.7	23.9	25.4	37.3	31.6	46.7
Sometimes I have fits of uncontrollable laughter and crying	22.3	16.9	17.8	17.6	13.9	15.9	3.9	7.0	11.7
I am continuously worried about some things	34.1	31.2	26.7	37.3	32.1	33.9	43.1	29.8	47.5
Some things trouble me so much that I can't talk about them.	21.8	20.1	27.8	20.3	17.2	23.5	19.6	19.3	35.0
It's hard to concentrate on anything	9.5	11.0	10.6	5.9	6.7	18.7	5.9	10.5	20.0
I am worried about the possibility of getting infected with any disease	19.0	17.5	20.0	19.0	17.2	22.9	11.8	21.1	19.2
I often have a feeling as if everything around me were unreal	8.4	9.7	13.9	2.6	9.1	14.4	0.0	7.0	16.7
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

Table 6. Activities of the working-age population aimed at gaining knowledge, %

Feature of activity	Working age youth			Middle-aged persons			Pre-retirement age persons		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Regularly read special, scientific and other literature on at least one topic, communicate with experts	27.8	28.8	39.4	30.3	38.0	38.4	29.4	31.6	37.3
Read popular scientific literature	33.0	32.7	21.1	25.7	26.4	16.7	35.3	22.8	19.5
Read only what is found in newspapers, social and political magazines, TV and radio, and the news on the Internet	30.7	31.4	30.6	39.5	30.8	33.7	29.4	45.6	35.6
Don't read anything, but participate in discussions with friends, acquaintances, colleagues	7.4	5.2	5.0	4.6	2.4	7.4	2.0	0.0	5.9
Don't read anything or just don't care	1.1	2.0	3.9	0.0	2.4	3.7	3.9	0.0	1.7
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VolRC RAS.									

the districts of the Oblast is not inferior to the indicators of Cherepovets residents, although it is less than the cognitive potential of Vologda residents (see Tab. 2). At the same time, the proportion of young people of working age who regularly read special literature in large cities is 10% lower than outside them; in the cities, the proportion of those who read popular scientific literature on at least one topic is about 10% higher *(Tab. 6)*. In general, about 60% of young people both in large cities and outside them read special or popular scientific literature. Only 9% of rural youth, 11% of people of average working age, and 8% of people of pre-retirement age do not read anything.

The majority of the working-age population has a positive attitude toward knowledge and education. It is interesting that, regardless of the age category, 68% of the respondents outside large cities believe that "knowledge make a person's life better, makes them happier". However, the largest share of consonants with this statement is observed among the youth of the city of Vologda – 83%. The youth living in Cherepovets is more skeptical – 67%. It is important to understand that positive public sentiment forms a favorable environment for the development of the intellectual potential of the population, so such sentiment should be supported and used. The spread of negative attitudes toward knowledge will inevitably cause destructive practices, and the value of education will be denied not with words, but in practice. Currently, one in two able-bodied residents of the districts of the region is of the opinion that "it is possible to succeed in life and to be useful to people, even if you do not possess any special knowledge" (53% of working age youth, 52% of middle-aged people, and 51% of pre-retirement age people). The lowest approval of this position is found among the persons of pre-retirement age who live in large cities: 42% – in Vologda, 44% – in Cherepovets.

The weak demand for the creative abilities of workers also contributes to the reduction of the intellectual potential of the population. Table 1 shows that the abilities to invent, create something new, and solve previously unknown tasks are the least important for achieving success in professional activities, according to the respondents' estimates.

According to the results of the survey, in the districts of the Oblast, 3% of young people, 5% of middle-aged people and 6% of pre-

retirement age people are constantly engaged in creative (rationalization, inventive) activity. As practical necessity arises, 17%, 19% and 14%, respectively, are engaged in creative work; 58%, 56% and 63% of respondents never do any creative work *(Tab. 7)*, which is significantly different from the corresponding indicators in large cities. In our opinion, this phenomenon is explained, first of all, by the difference in the structure of employment in urban and rural areas, and the prevalence and objective demand for creative professions there.

The attitude toward creativity and creative people is ambiguous. On the one hand, in the districts of the Oblast, at least 64% in each age group hold the opinion that "if one has creative abilities, one should implement them to the fullest extent". On the other hand, at least one in four people believes that "enough has been invented already, we need to work and do things". At the same time, 19% of young people of working age, 24% of middle-aged and 20% of pre-retirement age persons agree that "someone who is always making a fuss about their ideas prevents others from living and working normally".

In modern conditions, when the services sector is developing vigorously, it is not creativity but social skill that becomes the most popular quality (see Tab. 1). During the period of the monitoring study, the growth of the index of social skills in the districts of the Oblast amounted to 3%: from 0.729 in 1997 to 0.751 in 2016 (see Tab. 2). Currently, one in two people experiences difficulty in finding a suitable topic for conversation in a company of others *(Tab. 8)*; 58% of working age persons are easily irritated when communicating with others; 41% of young people, 39% of middle-aged persons and 47% of pre-retirement age persons feel awkward if they become the center of attention in a group of people. However, pre-retirement age and middle aged persons enjoy collective entertainment more and find it easier to meet new people in comparison with the representatives of the younger age group. At the same time, young people from large cities talk more often to strangers in public transport, and residents of the districts are more sociable at pre-retirement age.

If we analyze the indicators of internal and external culture of the population, it should be

Table 7. Distribution of answers to the question: "To what extent are you currently engaged in creative (rationalization, inventive, etc.) activities?", %

Answer	Working age youth			Middle-aged people			Pre-retirement age people		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
1. I constantly invent, write, compose something, etc. It is my lifestyle	8.0	5.9	2.9	10.6	6.3	5.3	2.0	5.5	6.0
2. I invent something when there emerges a practical need to do it, and it is unknown how it should be done, there are no ready solutions	29.7	28.1	16.9	22.5	29.8	18.9	42.0	21.8	13.7
3. I invent, compose, etc. something, when I receive such a task from my superiors	22.3	16.3	22.1	23.2	21.6	20.1	16.0	16.4	17.1
4. I never invent anything, I do what I have been taught before, or what others suggest, or what I can read about in books, reference books, etc.	40.0	49.7	58.1	43.7	42.3	55.7	40.0	56.4	63.2
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

Table 8. Characteristics of the ability to communicate and interact in the working age population, %

Feature	Working age youth			Middle-aged people			Pre-retirement age people		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Experience difficulties in finding a suitable topic for conversation in a company of other people	54.2	50.6	51.7	61.4	60.3	50.8	52.9	56.1	51.7
Get irritated easily when communicating with people	51.4	58.4	58.3	69.3	63.6	58.4	62.7	57.9	58.3
Feel awkward if they find themselves the center of attention in a group of people	42.5	43.5	41.1	48.4	45.5	38.8	47.1	42.1	46.7
Enjoy collective entertainment	12.3	11.7	13.9	19.6	22.0	25.1	21.6	35.1	19.2
Find it easy to meet people, feel comfortable in a company of others	6.7	10.4	8.9	12.4	12.0	10.4	9.8	14.0	16.7
Often talk with strangers on the train, bus, etc.	53.1	49.4	37.2	44.4	40.2	30.9	33.3	36.8	37.5
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

noted that the ability to speak well and express one's own thoughts is least developed in all age groups, regardless of territory of residence *(Tab. 9)*. However, the ability to listen to the interlocutor and delve into the meaning of their statements is one of the most developed abilities. The ability to yield and compromise is developed more poorly, especially among pre-retirement age people in the districts of the Oblast. At the same time, they consider their own courtesy and manners to be very good, although they are inferior to Vologda residents in this indicator.

The internal culture of an individual is largely determined by their moral development. Throughout the entire measurement period, the index of moral level has the highest values among the eight qualitative characteristics

Table 9. The level of development of some indicators of internal and external culture of the working-age population, average score on a 4-point scale

Qualities and abilities	Working age youth			Middle-aged people			Pre-retirement age people		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Courtesy, good manners, knowledge of etiquette	2.99	2.97	3.01	3.01	3.05	2.89	3.10	2.88	2.90
Ability to dress tastefully	2.71	2.68	2.84	2.72	2.77	2.65	2.65	2.35	2.49
Ability to speak well, express their thoughts eloquently	2.53	2.40	2.66	2.50	2.64	2.55	2.61	2.32	2.55
Ability to listen to the interlocutor, delve into the meaning of the statements	3.03	2.79	2.91	3.03	3.00	2.83	2.92	2.72	2.74
Ability to compromise, to yield	2.73	2.67	2.79	2.72	2.81	2.68	2.76	2.56	2.55
Tactfulness, ability to respect the self-esteem of others	2.87	2.75	2.80	2.84	2.90	2.83	2.86	2.81	2.77
Ability to keep emotions in check in any critical situation and "not to lose face"	2.70	2.58	2.72	2.72	2.86	2.65	2.90	2.49	2.69
Ability to maintain health	2.68	2.62	2.84	2.59	2.66	2.68	2.49	2.37	2.63
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

of labor potential (see Tab. 2). Respect for parents and relatives, decency, honesty and justice are of the greatest subjective importance to rural residents. Respect for people of other nationalities and equality between people are less valued *(Tab. 10)*.

Moral feeling is closely related to moral behavior. Thus, 34% of working age youth, 43% of middle-aged people and 53% of pre-retirement age people living outside major cities cannot blame themselves for the lack of attention to their parents: there was no such case in their lives; 18%, 24% and 30% of the relevant age groups have never failed to fulfill their promises given to anyone; 22%, 24% and 35% have never deceived anyone by accident or deliberately. On average, the moral level of pre-retirement age people is currently higher than that of the younger age groups.

In addition, many indicators of the need for achievement also differ significantly from age to age. For example, if 51% of young people plan to become high-class specialists, then such a desire becomes less common among middle-aged and pre-retirement age people: only 37% and 21%, respectively, plan to achieve that *(Tab. 11)*. Naturally, the observed difference is largely due to the fact that the older generations have the plans and achievements that have already been implemented in the course of their long-term professional activity.

It is important to note that young people outside large cities are often no less ambitious than those living in the center. For example, in Vologda every fifth young individual intends to achieve public recognition (to receive awards, distinctions), in rural districts – one in three.

At the same time, the level of realization of the quality of labor potential [20] in rural areas lags significantly behind the indicators for the city of Vologda *(Tab. 12)*, which brings to the fore the issue concerning the improvement of the efficiency of labor resources accumulated outside large cities.

We agree with *N.V. Zubarevich*, who points out that "population reduction is inevitable, and in such conditions the most important thing is to use human resources efficiently, to reproduce and increase their quality in the first place". [2, p. 5].

Table 10. Self-assessment of the importance of moral values (moral sense) of the working-age population, average score on a 4-point scale

Qualities and abilities	Working age youth			Middle-aged people			Pre-retirement age people		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Honesty, truthfulness	3.30	3.32	3.31	3.38	3.39	3.28	3.47	3.42	3.27
Decency	3.33	3.30	3.36	3.54	3.46	3.36	3.73	3.54	3.37
Compassion, mercy	3.03	2.93	3.03	3.13	3.07	3.03	3.25	3.09	3.04
Justice	3.31	3.23	3.20	3.34	3.28	3.20	3.47	3.35	3.18
Dignity	3.25	3.14	3.27	3.42	3.33	3.20	3.47	3.26	3.08
Respect for others' (private, public) property	2.97	2.97	3.04	3.06	3.00	2.94	3.18	3.12	2.83
Respect for parents, relatives	3.51	3.46	3.50	3.60	3.56	3.50	3.73	3.53	3.44
Respect for people of other nationalities	2.86	2.66	2.90	2.99	2.74	2.87	3.00	2.91	2.74
Tolerance, respect for the views and opinions of others	3.11	3.04	3.13	3.23	3.17	3.05	3.39	3.11	3.00
Equality between people	3.03	2.80	2.94	3.07	2.85	2.90	3.29	3.07	2.84
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

Table 11. Prevalence of certain types of social aspirations among the working age population, %

Plans and intentions	Working age youth			Middle-aged people			Pre-retirement age people		
	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts	Vologda	Chere-povets	Districts
Improve one's knowledge, become an erudite person	54.2	42.9	50.6	39.5	39.2	24.6	20.0	21.4	16.7
Become a highly qualified specialist, who enjoys respect of the colleagues	57.4	50.0	51.1	53.6	44.5	36.6	26.0	21.4	20.8
To get promoted, to make a career	58.5	57.8	51.1	42.8	40.2	31.4	16.0	8.9	9.2
To achieve a high financial position	61.7	64.9	62.8	58.3	56.0	50.2	20.0	30.4	18.3
To occupy a high position in society	35.4	31.8	41.1	26.5	22.5	19.7	4.0	5.4	10.0
To achieve social recognition (receive awards, honors)	21.1	17.5	33.3	18.0	15.8	20.3	4.0	8.9	15.0
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

Table 12. Level of realization of the quality of labor potential in the major cities of the Vologda Oblast and outside them, broken down by age categories in 2016, %

Territory	Quality								*Average*
	Physical health	Mental health	Cognitive potential	Creative potential	Social skills	Cultural level	Moral level	Need for achievement	
Working age youth									
Vologda	83.5	87.5	83.7	69.4	87.4	86.9	86.5	74.6	*82.4*
Cherepovets	82.0	82.4	76.2	70.5	82.4	81.0	81.7	74.3	*78.8*
Districts	82.8	81.1	78.1	70.3	85.7	83.0	82.8	78.8	*80.3*
Middle-aged people									
Vologda	85.7	87.1	86.0	72.4	88.7	86.6	86.9	74.3	*83.5*
Cherepovets	84.3	82.4	80.7	71.5	84.9	81.9	83.6	75.7	*80.6*
Districts	82.7	78.6	76.7	68.3	81.7	78.9	79.2	73.4	*77.4*
Pre-retirement age people									
Vologda	82.7	87.2	84.0	72.4	88.2	87.8	87.2	69.9	*82.4*
Cherepovets	80.4	78.0	79.2	66.1	78.0	73.2	78.0	62.5	*74.4*
Districts	84.2	80.6	78.1	66.0	82.3	77.8	80.0	64.4	*76.7*
Source: Monitoring of the qualitative condition of labor potential of the population in the Vologda Oblast; VoIRC RAS.									

Conclusion

Summing up, we briefly state the key points of the study. First, the monitoring of labor potential quality is objectively necessary in the context of the decline in the number and proportion of working age population, because such a study makes it possible to identify specific problems and develop adequate differentiated measures. Second, the quality of labor potential in the territorial context is more reasonable to carry out on comparable age groups, which allows us to take into account the structure of the population and to neutralize the effect of a more rapid demographic aging of rural areas. Third, the widespread notion concerning the low quality of the population outside major cities is not confirmed with respect to working age youth. In particular, despite the fact that rural youth lags behind urban youth in terms of creative potential, the former have good mental health, developed social skills, and high cultural and moral levels. In modern conditions, it is

strategically important to "retain" young people in rural areas, to give them an opportunity to realize their labor potential for the benefit of their home region, to become a "driver" of socio-economic development of territories outside large cities.

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Dynamics of Socio-Cultural Indicators of Labor Competitiveness of the Population of a Large Siberian Region (2010–2016)*

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Abstract. The goal of the paper is to study the dynamics of competitiveness of the population in one of the large Siberian regions (on the materials of Krasnoyarsk Krai). We use the socio-cultural approach (RAS Corresponding Member N.I. Lapin) and appropriate methodological tools in the research. Traditional and market motivation of people and their labor preferences are analyzed for the first time as socio-cultural indicators of competitiveness. Labor preferences act in the form of orientation toward working at enterprises (organizations) belonging to various forms of ownership. We show that in the majority of foreign economic studies, competitiveness is considered as the quality and ability to achieve one's own goals at the international level with one's own products and services. Many publications are devoted to comparative studies of competitiveness at the level of enterprises (firms). Interdisciplinary phenomena such as human capital and education are also studied in this context. The paper reveals the content and importance of international comparative studies of competitiveness and the formation of this phenomenon from the standpoint of management theory and psychology, among various categories of young people, as well. The article is based on the data of mass surveys of the region's residents through formalized interviews conducted in 2010, 2012, 2014, and 2016. We show that Krasnoyarsk Krai experienced a slight

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weakening of traditional labor attitudes and preferences of the population. But they have always occupied the most important position in the mass consciousness of the respondents. We found out that there is a slight increase in the proportion of residents with market labor orientation and preferences. We conclude that the competitiveness of the region's population decreases in conditions of market relations formed in the Russian society. We prove it is necessary to implement a comparative approach to studying the features of competitiveness of population of various Russian territories with use of the "Socio-cultural portrait of the region" technique. We propose to carry out further analysis of people's competitiveness in the regions broken down by social groups and age cohorts and to supplement the set of tools with the indicators used in several international comparative studies.

Key words: region, labor motivation, labor preferences, competitiveness, socio-cultural approach.

Introduction

The purpose for the research is to analyze the changes in the population's competitiveness in a large Siberian region (case study of Krasnoyarsk Krai). The novelty of the implemented approach lies in the analysis of labor motivation and labor preferences of the population as competitiveness indicators. Labor preferences are a rather multi-layered concept which includes people's orientations regarding different aspects of labor activity. In this work we consider the respondents' preferences concerning their work at the enterprises of this or that type of ownership structure. **The relevance** of the research is associated with the complexity and inconsistency of the process of formation of market labor preferences and people's motivation in modern transitive Russian society with pronounced regional perspective. **The problem** is expressed in the fact that this process does not clearly increase the employees' market motivation and their choice of enterprises of private ownership structure as a preferred place of employment. Nevertheless, it serves as an important socio-cultural background for the development of population's labor competitiveness in the market economy. It is obvious that the socio-cultural phenomena of an individual competitive in the labor sphere in the domestic market economy is the motivation to achieve success in it, on the one hand, and their choice of a production environment that would allow the most complete realization of their orientations.

It is logical to assume that with the development of market relations both in the regions and in Russia as a whole, the importance of the socio-cultural phenomena representing these relations should grow in people's mass consciousness. In our opinion, people who have market labor motivation and focus on employment at non-state enterprises are more competitive amid the socio-cultural situation in Russia.

The issue of labor preferences and population's motivation was widely studied in Russian sociology back in the Soviet period. However, it generated the researchers' special interest at the end of the previous century [1]. In our opinion, the regional aspects of this issue are particularly important for such analysis; they were analyzed mainly in works by L.A. Belyaev, as well as E.V. Andrianov. V.A. Davydenko, G.P. Bessokirnaya, E.V. Kargapolov [2; 3; 4; 5] and several other researchers. In particular, we should pay attention to a major publication analyzing the employees' labor motives amid the crisis situation in the financial-economic system of our country in the late 2000–s. Its authors revealed the prevalence of the "Soviet

patterns of behavior" in the people's system of labor values in the Tyumen Oblast [3].

An important element of the research novelty of this work is its territorial aspect. It focuses on Krasnoyarsk Krai as one of the most developed modern industrial regions in Siberia. We emphasize that modern foreign literature does not analyze these phenomena in the context of Siberian regions. The financial and economic crisis and the ways to overcome it coinciding with the contradictory modernization processes in our country are particularly relevant for studying the performance of these phenomena. Particular attention should be paid to lack of domestic scientific publications which would sue these indicators to analyze the population's competitiveness in the region.

Knowledge coverage, existing methodological and technical approaches

In modern foreign sociology and related sciences the analysis of competitiveness has a long tradition whose thorough analysis goes beyond the scope of our research. It is hard to disagree with the opinion of P. Bhawsar and U. Chattopadhyay that "competitiveness has become a buzzword like globalization. This has attracted the attention of researchers, governments and business organizations because of its close connection with the success of a company" [6, p. 665]. The authors analyze modern ideas about competitiveness, traditional and modern models of its study and measurement; offer new research areas of this phenomenon, which, in our opinion, can be effectively used in the Russian sociology.

In our opinion, of particular interest is the study whose authors carried out a qualitative content analysis of the text material of literature on competitiveness using special software for quality data analysis (QDAS) as a research tool. They examined 34 definitions of competitiveness (1998–2013) with separate 837 words used to describe the concept. The authors came to the conclusion that the "term "competitiveness" is equally related to the corporate level of the economy, as well as the country or nation as a whole. Specific sector, industry and regional competitiveness are much less common in definitions. It is obvious that "competitiveness"" is a quality and ability to achieve something at the international, global level with one's own products and services" [7, p. 379]. Analysis of publications on international competitiveness in the context of the economic theory indicates that in recent years interdisciplinary phenomena such as education and human capital have been repeatedly appealed to [8].

In addition to works on economic topics, most foreign publications devoted to empirical research devoted to competitiveness consider its multiplying factors from the standpoint of management psychology and management based on comparative research, as well as the study of individual organizations and spheres of activity. Among them, an important place belongs to analysis of factors in regional and national culture. For example, R. Takeuchi et al. considered cross-level (individual and orientation) effects of the influence of high-performance working systems on the employees' relations in 76 Japanese institutions (representing the total of 56 companies) [9]. Similarly, H. Peretz and Y. Fried (2012) analyzed the impact of cultural differences in 21 countries on performance appraisal and identification of the employees' competitiveness [10].

In our view, the prevalence of such studies is largely associated with the established foreign approach according to which the socio-cultural factors participate in the economic process at the level of individual organizations and the negative processes occurring within them

can also have an impact on the whole society. Therefore, socio-economic management in a competitive society begins with the analysis of management models. Its objective is to determine which characteristics yield the best results at the economic and social levels [11].

In the context of the topic under study, of particular interest are major national and international projects on competitiveness and its formation, primarily among social groups of young people, implemented in a number of countries around the world. In particular, special attention should be paid to the project "The system of indicators of youth competitiveness in Hong Kong" which was launched in 2011 for a four-year period. This project analyzed the concept of "youth competitiveness" in detail and studies the competitiveness of different categories of students. The research group, having analyzed more than 100 publications on this issue, identified 14 elements of the category "youth competitiveness": "abilities", "team spirit", "communication skills", "integrity", "civic awareness", "sustainability", "emotions", "work experience", "employment structure", "education system", "personnel policy", "internal competitiveness", "management", and "social system" [12].

Another project was implemented by the European Commission – "Erasmus + Competitive European Youth" – in 2015. The study covers young people aged 14–18 receiving education in ICT and project management and living in different European countries: Spain, Hungary, Cyprus and Lithuania [13].

"The Programme for International Student Assessment" (PISA) includes a "bank" of questions on students' cognitive abilities and competencies. It tests the focus on competition among school youth in a comparative inter-country perspective [14].

However, these works, as a rule, do not cover the actual sociological and socio-cultural problems; which, in our opinion, creates one of the serious problem areas in study of this phenomenon.

In modern domestic science, competitiveness also has different interpretations depending on both subject area (sociology, psychology, economics, management theory) and the level of the competition subject under analysis, for example: individual – organization – sector – region – state. The population's competitiveness is considered mainly in two aspects. A significant number of studies from the standpoint of economics and management is devoted to the research of labor resources competitiveness and ways to improve it, employees of an enterprise (organization), residents of the region or other social entity or territory as a whole [15; 16; 17; 18; 19]. For example, the study of competitiveness of regions of the Siberian Federal district puts an emphasis on economic, social and environmental competitiveness [20, p. 136]. It seems that the number of types of competitiveness is much greater than that indicated by researchers, but this issue is beyond the scope of our research. It is important that only statistical indicators are usually used for analysis, yet it seems to be clearly insufficient to study competitiveness. Moreover, the population of the territory as the most important social subject of competitiveness is left "behind brackets".

A slight exception is the study of personnel competitiveness of organizations in the framework of management, which also applies socio-psychological and psychological techniques. From the point of view of sociology, psychology and pedagogics, competitiveness is studied through survey and test methods. Such studies are mainly aimed at improving the

training of competitive specialists in educational institutions and analyzing the competitiveness of different categories of young people [21; 22; 23].

The underdeveloped aspect of the issue is the relations between labor motivation and employees' competitiveness; a positive exception, in our opinion, is the work by T.G. Ozernikova [24]. In particular, the author states that "a high level of motivation of internal and instrumental types characterizes the development of the social component of competitiveness and, consequently, a higher overall level of competitiveness" [24, p. 73]. However, the sociological analysis of the population's labor preferences as socio-cultural indicators of its labor competitiveness still remains beyond the scope of sociological research.

The methodological and technical approaches have been covered in various publications devoted to the socio-cultural processes in the regions carried out under the program "Problems of socio-cultural evolution in Russia and its regions" (supervisor N.I. Lapin) using the standard methodology "The socio-cultural image of a region" [2; 25; 26; 27] and others. At the same time, it is necessary to emphasize that there are no attempts to analyze the phenomena of labor preferences in the context of population's competitiveness in a region, which is rather relevant amid the current socio-cultural situation in Russia.

Taking into account the specific features of the applied approach, competitiveness in general can be considered as an integral characteristic expressing an individual's ability to compete in the labor market, having a complex hierarchical structure, and arising from various socio-cultural factors. Labor preferences are an important element of its structure. At the same time, they serve as determining socio-cultural factors.

We put forward **a hypothesis** according to which the share of respondents with market labor motivation and focus on employment at private enterprises in Krasnoyarsk Krai from 2010 to 2016. If it is confirmed, we can talk about the upward trend in population's competitiveness in the region in the existing socio-economic conditions.

Research methods

The studies researched in the present paper are based on the Standard program and methodology "Socio-cultural image of a region" by the Center for Socio-cultural Changes at Institute of Philosophy of the Russian Academy of Sciences (TsISI IF RAS) [26]. According to this methodology, "population surveys were carried out by means of a a formalized interview at the respondents' place of residence by a stratified, multi-stage, zoned quota sample represented by sex, age and level of education, random at the stage of respondents selection. The sample representativeness is ensured by observance of proportions between the population living in various types of settlements (districts of a large city, medium and small towns and rural settlements), the age and education structure of the adult population of Krasnoyarsk Krai". The survey covered a total of 28 settlements in the region [27, p.5]. The article is based on data obtained in the course of studies conducted in 2010 (n = 1000 respondents), 2012 (n = 1300), 2014 (n = 1000), and 2016 (n = 1000). The first three of them were implemented in the context of projects supported by the Russian Foundation for Humanities (RGNF), the fourth was proactive: its tools included a number of questions from the methodology of "The socio-cultural image of a region".

Labor motivation of the region's residents as an indicator of its competitiveness

The use of the methodology "The socio-cultural image of a region" makes it possible to identify changes in labor motives of the population for seven years – from 2010 to 2016. It should be noted that the methodology has been used for several years in many studies conducted in the context of this program (this makes it possible to perform comparative studies). Respondents were offered the statements describing different labor motives. In total, the methodology includes five statements, the respondent is asked a question "What kind of work would you prefer today if you could choose?, choosing one of the statements (*Fig. 1*) [27, p. 228].

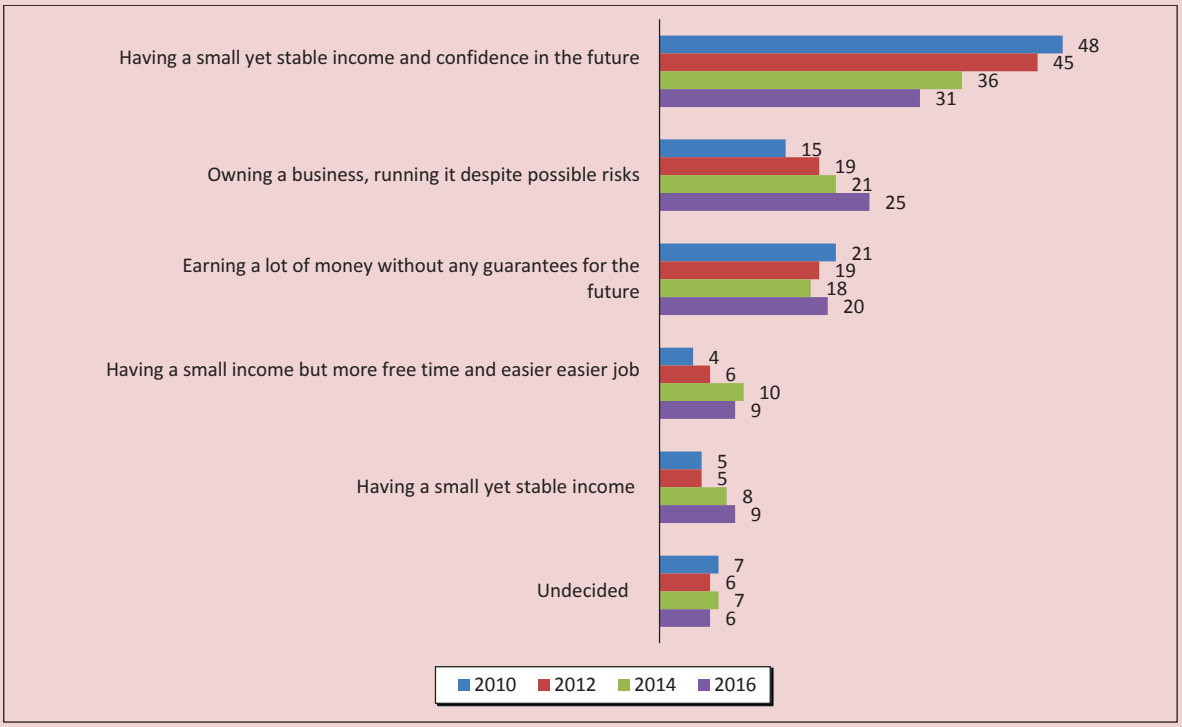
The first two indicators express market labor motives, the next three, respectively, non-market ones.

The results of surveys conducted in Krasnoyarsk Krai, indicate significant dynamics in labor motivation of its population. But, at the same time, as can be seen from the figure, the main labor motive remains the same: in 2010, almost half of respondents chose the first statement. Seven years later, their share declined by 17%, but the motive also remains a priority for almost one third of respondents.

During the research period, the value focus on possessing one's own business rose to the second position (an increase from 15% to 25%).

The desire to have a high income regardless of any guarantees retained the number of its

Figure 1. Performance of labor motives of the population in Krasnoyarsk Krai
(% of the number of respondents)



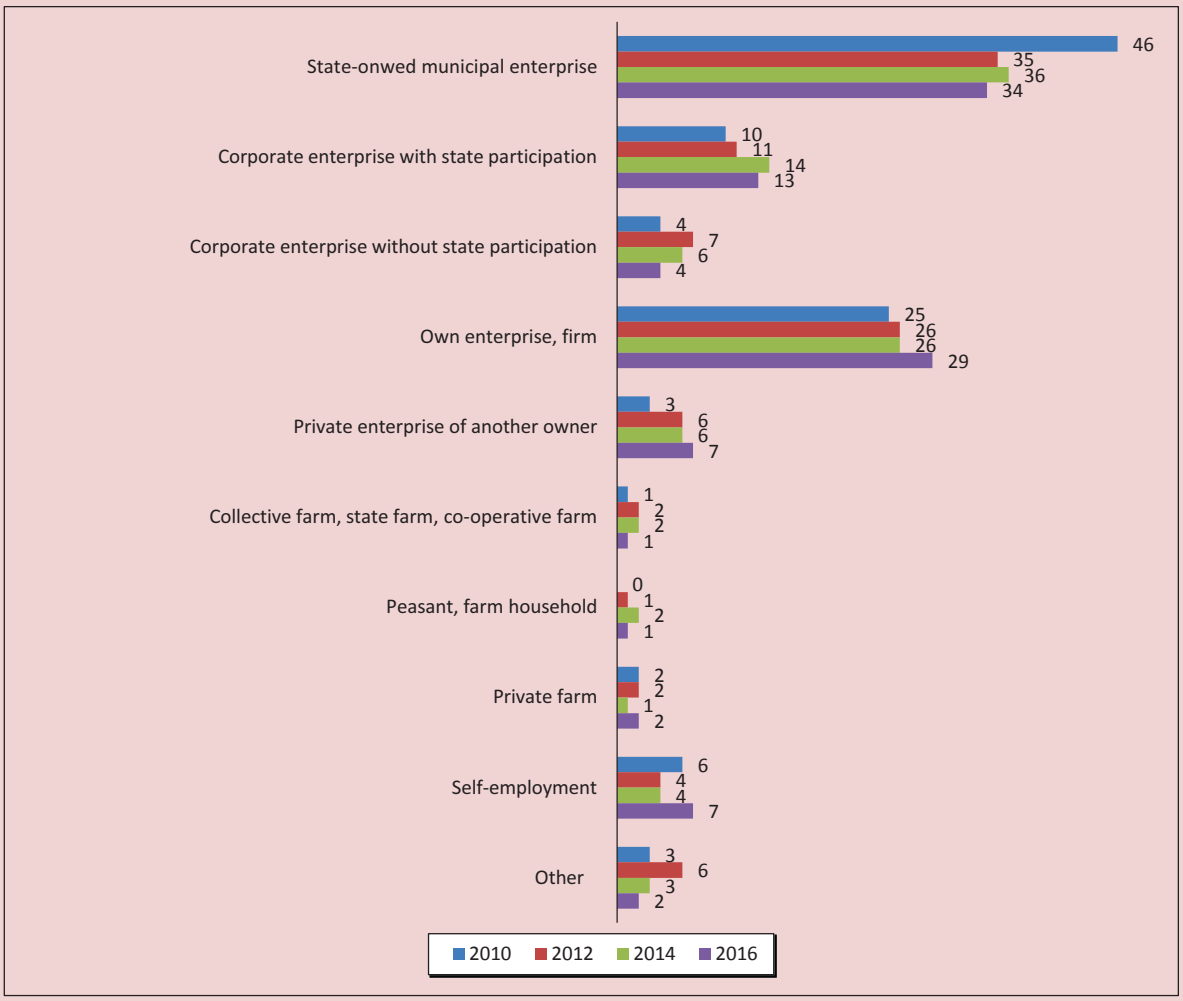
Source: data from residents' surveys in the Krai.

"supporters": 21 and 20%, respectively. But at the same time it moved from the second to the third position in the general hierarchy of labor motives among the residents of Krasnoyarsk Krai. The focus on easy job with a lot of free time has become more common in seven years, although it occupies one of the last positions in the hierarchy of respondents' labor values: 4 and 9%, respectively. The motive "having a small yet stable income" also became somewhat more attractive (5 and 9%).

For each survey, the share of respondents who chose "Undecided" was about 6%.

As can be seen, respondents living in the region began to focus a little more on values of labor characterizing its market motives. In 2010, such labor motives were in general marked by 36% of respondents, while in 2016 – by 45%. Nevertheless, non-market values continue to prevail among the respondents, although their prevalence has decreased slightly (57 and 49%, respectively). This suggests the conclusion that traditional labor motives are predominant in the mass consciousness of the population in Krasnoyarsk Krai in 2016, just like seven years ago.

Figure 2. Performance of labor preferences of the population in Krasnoyarsk Krai (% of respondents)



Source: data from residents' surveys in the Krai.

An important reason explaining such a situation may be the outflow of competitive qualified young professionals with developed market labor motivation to Western Russian regions and abroad.

Labor preferences of Krai's residents in the context of their competitiveness

Studies show that from 2010 to 2016 the share of respondents working at private enterprises and organizations increased significantly. But given the actual employment, the analysis of the competitiveness of the population must not ignore the residents' preferences in the region regarding their possible employment at enterprises belonging to various types of ownership structures.

Analysis of the obtained data (*Fig. 2*) indicates that in 2010, almost half of the respondents preferred state-owned municipal enterprises as a place of their potential employment – 46%. Work in one's own or in a private (joint stock) company was not very popular. However, in 2012 the share of respondents who would like to work at a private enterprise owned by some other person (from 3 to 6%, respectively) increased slightly. At the same time, the share of respondents who would prefer to work "for the state" significantly decreased (from 46 to 35%). This trend continued in subsequent years.

It is possible to assume that at this stage already the share of employees with a passive life strategy in labor significantly decreased. However, this was not accompanied by a corresponding increase in private entrepreneurial practices among respondents, indicating that there are serious obstacles to their implementation. Moreover, such obstacles exist primarily at the institutional level. This certainly indicates that the region lack effective ways to realize human potential in the sphere of different kinds of private labor initiatives.

Data obtained in 2014 demonstrate a similar situation. However, the number of respondents who would prefer to work in a joint-stock company with state participation increased slightly.

In 2016, there was a downward trend in the number of respondents wishing to work at state and municipal enterprises (from 46% in 2010 to 34% in 2016) or engage in "part-time work" (from 10% to 7%, respectively). This can be simply explained by a decrease in the share of such enterprises in the structure of the region's economy.

On the contrary, the share of respondents who prefer to have their full-time job in a state-owned joint-stock company (10% and 13%, respectively) has increased slightly. The results of interviews with respondents indicate that they are mainly attracted by higher wages at such enterprises and social guarantees of for the employees.

During seven years the share of respondents focused on employment at enterprises of different types of private ownership increased slightly:

– an owned company, firm 25– 29%;
– a private company, other owner: 3 – 7%.

The focus on other forms of employment remained at the same level:

– a joint-stock company without state participation: 4 – 4%;
– self-employment: 6 – 7%;
– a private farm: 2 – 2%.

We note that in different years a small share of respondents expressed unwillingness to have a regular job.

As can be seen, the overall hierarchy of labor preferences of the population in the region from 2010 to 2016 did not change much; despite a slightly decreased share of respondents focused on work in state-owned enterprises, it dominates in the hierarchy of labor preferences of the population of Krasnoyarsk Krai.

Conclusions

We can conclude that the population's competitiveness is studied mainly from the economic and psychological and pedagogical viewpoints in the foreign and domestic literature. Russian sociologists did not pay sufficient attention to this interdisciplinary phenomenon including its analysis in the context of labor preferences and motivation of the population. Meanwhile, labor preferences and population's motivation are both an important factor in the formation of competitiveness of different age groups and one of the elements of its structure.

The analysis demonstrates that the hypothesis was only partially confirmed. In 2010–2016, there was a slight increase in the importance of statements expressing the labor market value. The most significant is the labor motive expressing the desire for a small but stable income with confidence in the future. Judging by the performance of the applied socio-cultural indicators, the professional competitiveness of the population in the region is not growing, but has a certain downward trend.

Non-market labor motivation continues to prevail in the mass consciousness of a considerable share of the surveyed residents in the region. This largely eliminates the positive changes in the labor competitiveness of its population. Moreover, there is a paradox: the increased number of residents in the region who work at various non-state enterprises (of a certain type of ownership structure) has not led to increased market labor orientation of the employees. Figuratively speaking, amid capitalism, there are many people in the region with a "socialist" mentality and relevant labor competitiveness. Moreover, according to the research results, the share of young people with similar orientations among the respondents slightly increased. It is obvious that the reproduction of the socialist cultural matrix takes place, which requires special in-depth study.

In Krasnoyarsk Krai, just like in in other regions of the country, skilled competitive workers often have to find employment in the "shadow" economy. Such labor activity is nowadays referred to as "gray" ("garage") economy. Mass migration of skilled competitive workers to other regions of the country and abroad also takes place.

It is important to take advantage of large comparative studies to study competitiveness. In particular, we demonstrate the opportunities and feasibility of using a number of indicators applies in the project supervised by N.I. Lapin to analyze the competitiveness of the population in a region [25]. This may include other indicators such as population's innovation activity. Taking into account the large amount of regional and all–Russian data obtained in the course of the project implementation, it can be said that it is possible to apply a comparative approach to the study of the features of population's the competitiveness in different territories of Russia, including in the context of certain social groups, primarily young people.

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Socio-Cultural and Value Paradigms of Public Civil Servants in Russia

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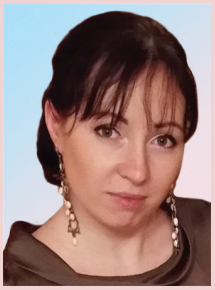

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Abstract. In the modern Russian society, there is a contradiction between the goals and objectives of civil service, its social relevance and applied nature, on the one hand, and the growing dissatisfaction of the population on the other hand. The article describes and analyzes the socio-cultural and value paradigms of civil servants in the Russian Federation, which define the characteristics of their activities. The authors emphasize the importance of a motivational resource such as socio-cultural and value paradigms in the process of reforming the modern institution of civil service. The research results revealed a number of problems. A significant part of the structure of life goals of civil servants is occupied by material interests; according to the respondents' estimates, the activities they do are not related to the categories of "favorite activity", "interesting job". Some government employees consider "service to the Fatherland", "useful contribution to the society and the state" as the main purpose for their professional activity. The research confirmed the hypothesis that the efficiency and effectiveness of occupational work of civil servants depends not only on motivational factors but also on life experience, moral principles, understanding

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of one's role in the process of implementing the state policy and life strategy. The routine nature of work does not live up to employees' expectations evening political activities and state administration. Bureaucratic values, lack of interaction with the external environment, authoritarian management style, and rigid subordination affect the employee's identity and behavior. Government employees due to personal characteristics and character specifics, assessing themselves and their experience higher at the career ladder, either search for a new position themselves, a different kind of activity to meet their life strategy, or stop developing professionally. Socio-cultural and value paradigms of government employees vary according to the category and group of positions. We also confirmed the hypothesis concerning the category "experts" of leading and senior groups of positions that public service is considered by employees and citizens not as a value-regulatory complex providing interaction between the state and the society in order to meet the interests of the latter, but as a mechanism for achieving financial success.

Key words: civil service, value paradigms of public civil servants, life strategies of a civil servant, image of public service, career.

Introduction. Civil service in modern Russia is an institution of administrative power reflecting the milestones in the history of the Russian statehood formation, constantly reformed in order to optimize and fight corruption.

According to Federal Law No. 58-FZ "On the system of civil service in the Russian Federation", dated 27.05.2003, state civil service is "a type of civil service representing professional civil activity of citizens occupying positions of state civil service in order to provide the execution of powers of federal state bodies, state bodies of constituent entities of the Russian Federation, people occupying substituting state positions in Russia and people occupying substituting state positions in constituent entities of the Russian Federation"[1].

In the broadest sense, state and municipal service is understood as a type of professional activity of citizens implementing the objectives and functions of state and municipal authorities. Civil service provides the implementation of state functions and powers. Civil service as a political institution performs the following functions: protection of the state's political system; creation of conditions for strengthening the relations between the state and the citizens, public associations; overcoming alienation of power from the citizens; building effective interaction of political elites and civil servants, etc. Civil service as a social institution performs functions of control over the realization of citizens' interests; promotion and protection of their rights and freedoms; organization and provision of state social services; regulation of the social status of civil servants, etc. The effectiveness of implementation of objectives set for the institution of civil service depends on the citizens' assessment of work performed by government bodies, the satisfaction of the society with the work of the system of public and municipal administration [1], the stability of the political system, citizens' interaction with the current government, which together determine the socio-economic well-being of the population.

In recent decades, there have been discussions about the crisis of civil service legitimacy, reducing citizens' trust in it and its

[1] Article 5 of Federal Law No. 58-FZ "On the system of civil service of the Russian Federation", dated May 27, 2003. Available at: http://base.garant.ru/185886/1/#block_100 (Accessed: 5.05.2016).

system, inability of the administrative system to respond to challenges of today and especially tomorrow. According to sociological surveys, in some countries the number of people who consider the amount of taxes they pay proportionate to what they receive from the state is declining, and, conversely, the share of those who believe that the state waste taxpayers' money is increasing. It is recognized that the existing systems of administration "proved completely inadequate for addressing both political and administrative objectives" [2, p. 233]. The reduction in corruption, the development of pluralism in public administration, and the focus on citizens' needs are the most important areas of modernization of the civil service in modern conditions [3]. "The most significant constraints for the country's socio-economic and political development are the ethical erosion of civil service, challenges in succession planning, and lack of competent leadership" [4]. Public services must meet the needs of the population and basic citizens' requirements [5].

Over the past decade, research works on preparation, training, career, construction of organizational culture [6; 7], and direct professional activity of civil servants [8; 9; 10] became particularly relevant. The development of a stable employer brand by civil service bodies is seen as an opportunity to attract and retain young professionals [11]. We stress the need to reform the bureaucratic system of public administration through using a competency-based approach to civil service [9].

The study and formation of the socio-cultural and value paradigms of civil servants is one of the topical areas of the scientific discourse. The complex of ethical an legal mechanisms is considered one of the most effective ways of overcoming the obviously unsatisfactory situation in this sphere of social life in modern conditions [12]. A number of scholars investigated the issue of formation of value paradigms of civil servants using an aspect-oriented approach [13; 14], others used the psychological-acmeological approach [15; 16].

In the framework of establishing a new model of civil service in Russia we should emphasize a special role of a motivational resource [17] such as socio-cultural and value paradigms. In a number of research works these concepts are treated as identical. However, the authors distinguish the key elements of their content the following way. The value paradigms of civil servants include the reflection of values, moral ideals, moral convictions and ethical principles formed during the socialization process. The socio-cultural paradigms of civil servants largely characterize their social expectations, standards, life strategies defined by their lifestyle, social status, and membership in a particular socio-professional group.

Method

The purpose for the study is to identify and analyze the major socio-cultural and value paradigms of civil servants.

The empirical framework includes the results of the following sociological research:

1. Sociological research "Development of social, cultural and moral values of state civil service" for 2013–2014 (R1). The research involved citizens who participated in competitive selection for civil service positions in the Government of the Moscow Oblast (N=365), as well as those occupying state civil service positions in the Government of the Moscow Oblast (N=130). The payroll-based probability sampling method is used.

2. Sociological research "Building a positive image of civil service" (R2). Single-stage sampling is used: 97 civil servants of the Central Office of the State Duma of the

Federal Assembly of the Russian Federation, 42 – of the Beskudnikovo Council of Northern Administrative Okrug of Moscow, 30 – of the Lyublino Council of Moscow, 89 – of the Ministry of Labor and Social Protection of the Russian Federation, 38 – of the Prefecture of South-Western Administrative Okrug of Moscow, 58 – of the Department of Education of Moscow (N=354), 73 state and municipal management students from Russian State Social University. The study was conducted from October 2014 to April 2015.

3. Sociological snapshot surveys of state and municipal management graduates from Russian State Social University through distribution of questionnaires on the Internet (R3). The survey included graduates from 2008, 2009, 2014 and 2015 (N=103). Among the graduates were selected those who work or worked in civil service. The survey did not take into account the tenure of civil service at the moment.

We also used research results from VTsIOM (Russian Public Opinion Research Center) and FOM (Public Opinion Foundation).

Research results.

Life strategies of civil servants. Today, due to the personnel policy pursued by the government over the past 10–15 years, citizens who have extensive experience in commerce pursue civil service. "The statement that to increase the efficiency of civil service and successfully fight corruption in public organizations people should work with special motivation, is considered axiomatic" [18]. The most important incentives are the stability of civil service amid economic crisis (68% of respondents applying for the senior group of positions) and the opportunity to benefit the society and the state (47% of respondents pursuing leading and main groups of positions). However, only 34% of respondents chose the variant "working peacefully until I retire" (R1, N=365).

An important issue is how civil servants and citizens participating in competitive selection for civil service positions see themselves, their contribution and their place in the state. As shown by the research results (R1), almost half of respondents think that they deserve more than they have at the moment. During the working process there is a contradiction between the citizen's life strategies, their position in the society and their current service occupation. After two or three years of work the labor efficiency of a service employee begins to decline, their interest in professional activity subsides. Forty-eight percent of respondents claimed "I would like to change my current position more frequently within career development", and 35% – believe that their "personal and professional experience and knowledge exceed their job functions". It is probable that personnel reshuffling within modern civil service do not reflect the real needs of the employees; more efficient work with personnel reserve would improve labor performance of the entire state system. According to the results of assessment, 1/3 of the employees undergoing the procedure shall be enrolled in the personnel reserve, while only less than 5% of candidates get the real promotion during the next 1–3 years. The practice of carrying out personnel-related activities for the development of the potential of civil service candidates is not widespread. Civil servants due to their personal characteristics and specific characteristic features of those considering themselves and their experience above their current position try to either search for a new job satisfying their life strategies or stop developing professionally; it becomes difficult to motivate them to effective action (R1, N=130).

The algorithm of life strategies of civil servants depends both on their personal potential and self-esteem and on socio-cultural paradigms, spiritual and moral development. In many surveys civil servants of leading and main groups note that the main purpose for professional activities is "to benefit the society and the state", "to serve the Fatherland", "to solve important public issues", "patriotism", etc. Forty-eight percent of respondents mark the priority of patriotic values, 36% – sustainable social situation, 29% – material well-being (R2, N=354). These indicators conclude that for them, there is no direct dependence of labor productivity from incentive payments; the performance is significantly affected by life experience and life strategies.

The values and personality characteristics of modern Russian civil servants.

Modern civil service in Russia is a prestigious job with a closed recruitment system despite the declared principles of transparency and citizens' equal access to it. Despite government actions and implemented personnel selection information technology, the gap between the state and the society remains significant. The study of moral contradictions of the society and state authorities remains relevant: creation of unified standards and ideals, overcoming citizens' moral degradation, implementation of moral and ethical principles in everyday life. The studies show that professional culture of civil servants is focused on bureaucratic values since there is no open interaction with the external environment; authoritarian management style is used, rigid subordination takes place. It affects the personality of civil servants, their behavior and manner of interaction. Thirty-five per cent of respondents believe that government employees are a special category of citizens with a specific style and external features of behavior (R3).

Many state and municipal management graduates after receiving higher education venture into civil service, but only 5–10 % stay in office after 3 years. This is due to a number of reasons: inflated expectations in the level of material security and its compliance with labor efforts (76%); excessive bureaucracy and red tape (72%); specific features of corporate culture of public authorities (25%); psychological problems within the team (18%).

During the survey of civil servants (R1, N=354) 31% of respondents said that in the early years of working in civil service they experienced certain socio-psychological discomfort due to changes in perception and submission of information, demeanor and interaction with colleagues.

According to the results of the VTsIOM survey, civil servants are characterized by certain limits in the system of values defining possible behavior parameters in order to achieve success. Only 38% of respondents gave an affirmative answer to the question: "Do you personally agree with the following opinion: in order to succeed in our days, one has to break all the rules?"

Contrary to the stereotypes about a great significance of personal contacts for career in civil service, the survey results indicate the opposite and illustrate the role of factors such as personal motivation and professionalism. Civil servants, choosing significant factors of success in life, prioritize financial resources (31%) and education (25%). The role of personal motivation was stressed by 31% of respondents: "desire and determination" (19%), "purpose in life" (12%)[2].

[2] VTsIOM sociological database. Available at: http://wciom.ru/zh/print_q.php?s_id=894&q_id=62143&date=17.02.2013 (Accessed: 12.07.2014).

In the system of socio-cultural values, the most important are characteristics of individual's life goals. The respondents were asked a question: "What would you like to achieve in your life?"; a number of options was offered to them in order to assess their significance. Considering the option "doing business", only a third of civil servants feel that they "already achieved what they wanted", but each fourth said they did not set such a life purpose[3]. Another option of a life purpose was "having an interesting job". Considering the categories of respondents who felt they have already achieved their goal include businessmen and entrepreneurs – the majority (74%) consider their work interesting. Similar results are typical for professionals with higher education. The results obtained for the group of civil servants (46%) are only identical to the category of low-skilled workers. Thus, each fifth civil servant is pessimistic considering that hardly ever will they be able to achieve their life goals; 12% claim they did not set the goal to have an interesting job, this share is 2 times higher than the average (this answer was chosen by only 6% of all respondents). Becoming wealthy is the goal for a half of respondents, while 25% of them think that it is unlikely, and 25% said "they have not yet achieved it, but it is likely"[4]. More than one third of respondents do not set such life goals. Of course, achieving material well-being is a justified living strategy of any human; however, we are not talking about the parameters of a middle-class life, but about a very high level of life – "becoming a rich person". Thus, civil service is seen as a mechanism for achieving financial success; the structure of needs of government officials is dominated by material values. It is interesting that "becoming famous" is not included in the life plans of the vast majority of respondents (69%), the share of government officials seeking wide public recognition is much higher. Only each second civil servant claims his life plan is not related to "becoming famous"[5].

Democratic principles in the system of value orientations. Analysis of value paradigms revealed imbalances in the perception of democratic values. The respondents were asked a question: "What in your opinion is "democracy"?" The responses of state and municipal government officials differed from other socio-professional groups surveyed by VTsIOM in rather negative attitudes. The answer such as "freedom of speech, press, religion" was chosen by 47% of respondents in general and by only 22% of civil servants. Democracy is described as "economic prosperity" by each fourth respondent (24%) and by only each tenth government official. The survey results indicate that public authorities do not yet realize the "need" to develop democratic processes as they are not associated with positive trends in the minds of civil servants. According to the survey, it is possible to assume there is a contradiction between citizens' democratic demands and authoritarian trends in civil service due to specific features of value paradigms of its employees. Thus, the negative perception of democracy is characteristic of civil servants rather than of the general population. The answer "idle talk" was chosen by 22% of public servants, which is 14 p.p. above the average. The answer "anarchy and power vacuum" was chosen 10 times more often by government employees than by the respondents in general:

[3] VTsIOM sociological database. Available at: http://wciom.ru/zh/print_q.php?s_id=925&q_id=63927&date=01.09.2013 (Accessed: 11.07.2014).

[4] VTsIOM sociological database. Available at: http://wciom.ru/zh/print_q.php?s_id=925&q_id=63920&date=01.09.2013 (Accessed: 12.07.2014).

[5] VTsIOM sociological database. Available at: http://wciom.ru/zh/print_q.php?s_id=925&q_id=63922&date=01.09.2013 (Accessed: 12.07.2014).

each third civil servant (33%) chose this answer. Such results can be explained by several factors:

1. Lack of information, contradictory views about the nature of democracy due to the experience and specific perception of Russia's historical peculiarities, when in 1990–s democratic transformations were associated with prevalence of corruption.

2. Lack of willingness to cooperate with the civil society among Russian government officials, which implies openness and accountability. In addition, modern civil servants are not fully skilled and competent to effectively interact with the institutions of the civil society, which is determined by lack of democratic traditions in the Russian society [19].

Discussion. According to Zh.T. Toshchenko, "demagoguery has led to the fact that the word "democracy" became even dirtier than the word "communism" for people. It is manifested, first of all, in unjustified and often irresponsible allegations. On the one hand, government's commitment to democratic principles is observed, on the other hand, simulation of activities to support freedom of speech, autonomy of local government, discredit of the phenomenon of multi-party system" [20].

The country's sustainable socio-economic development is largely determined by efficient management activity organically linked to human resources in civil service. High correlation of the level of efficiency of decisions and conditions, the quality of life of a large number of individuals put high demands on the personnel in civil service.

On the one hand, in the Russian society there is currently a contradiction between the goals and objectives of civil service, its social relevance and applied nature, on the other hand, the population's increasing dissatisfaction and distrust of it.

Reluctance of the Russian society and, first and foremost, its government to form and develop real democratic practices is expressed in the declaration of "new", "special" forms of democracy in Russia, such as "sovereign democracy", "supercontrollable democracy" etc. Russian society popularizes conservative, statist concepts; actively replicates ideas about malicious influence of democratic values on the society; emphasizes the priority of the state over private institutions. The democratic inversion is related to the peculiarities of the Russian mentality, firstly, among the representatives of the older generation. The Soviet ideology has left a mark on the formation of their value orientations. Underdeveloped civil society during that period was manifested in lack of democratic values such as: trust in the civil society, proclamation and pursuit of a free independent personality, which is emphasized by Western countries. In the Soviet society, however, the Soviet ideology formed its own specific values: patriotism, collectivism, readiness to sacrifice, and predominance of public interests over private ones [21]. In line with these values, the idea of priority of an individual, government's accountability to its citizens, institutions of the civil society, appears to be entirely alien.

As a consequence, the main determinants defining the content of social justice in Russians' value perceptions are the principles of the statist doctrine based on priority of the state over an individual. Analysis of the socio-group differences in perception of justice, according to the survey conducted by VTsIOM, indicates the following patterns: the idea of state regulation is supported, firstly, by military personnel (73%), state and municipal officials

(64%), to a lesser extent by businessmen and entrepreneurs (45%). State and municipal officials act as a conservative social group and support tighter control functions of the state (58%). Only each tenth respondent among state and municipal officials claimed that strengthening state control over the media would now be to the detriment of Russia[6].

The inclusion of tools forming moral values and ethical principles of behavior, which would form a new image of a civil servant, new internal moral principles of behavior, in the professional development of an employee will help convert modern civil service into highly moral one: with a special understanding of the role of service to the Fatherland. The transformation of modern civil service from the standpoint of improving its moral aspect will create a positive image of this institution, reduce the level of corruption within the government, ensure the efficiency of public employees focused on serving the society, which in turn will improve the population's welfare and ensure the state's socio-economic development.

Conclusions. Analysis of the socio-cultural and value paradigms of civil servants revealed a number of common issues. In the system of their life goals, a significant part is occupied by material interests; according to respondents' opinions, their activities are not related to categories such as "favorite activity" or "interesting work". However, civil servants pursuing leading and main groups of positions note the importance of their work from the point of view of benefit to the society and the Fatherland.

Analysis of the research results revealed a contradiction between the life strategies of civils servants, their position in the society and their workplace. After two or three years of working labor efficiency of government employees begins to decline, their interest in professional activity subsides. The research also made it possible to assume that the routine nature of work of modern civil service does not live up to the expectations of employees who even political activities and state administration. This is the conclusion we came to when analyzing the needs of public servants in public recognition ("becoming famous", "being among the elite"). Another significant issue is the distortion of professional culture of civil servants focused on bureaucratic values since there is no open interaction between the external environment; the managers use the authoritarian management style; tough subordination takes place.

Another issue is the contradiction between the citizens' increasing needs for democratization of civil service (primarily among the representatives of the younger and middle generation) and authoritarian trends in public administration. Democratic principles are declarative and are not supported by modern civil servants; this acts as a limiting factor to the development of civil initiatives and the formation of the system of public control over the activities of government authorities.

Thus, it is advisable to begin socio-economic transformations in the country, region, or settlement with the mobilization of intellectual, cultural, moral, and professional potential of civil service. The identified value issues of modern civil servants emphasize the importance of accounting and including the mechanisms and technology of formation of morality and moral values among government employees into the concept of civil service reformation and modernization.

[6] VTsIOM sociological database. Available at: http://wciom.ru/zh/print_q.php?s_id=706&q_id=51051&date=09.01.2011 (Accessed: 12.07.2014).

The main steps towards resolving the specified issues are: training and workshops promoting ethical standards within the framework of activities aimed to prevent corruption; consideration of socio-cultural and value paradigms in selecting candidates for vacant positions in civil service; modernization of the personnel policy, individual approach to developing career paths of civil servants. Exclusion of corruption, high level of responsibility and priorities of public interest in activities of government employees are priority determinants of management efficiency, citizens' increasing welfare and improving socio-economic indicators of the development of the country and its regions.

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FOREIGN EXPERIENCE

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Ecological Capital Operation Mode and Path of Poyang Lake Eco-Economic Zone*

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Abstract. In recent years, ecological capital has begun to draw the attention of the theoretical circle as a concept by which people enhance their understanding of the importance of ecological resources. Through market-oriented means, people strengthen the ecological capital operation to solve the problem of the deteriorating ecological environment, which also gradually get attention from all sectors of society. However, there are still few scholars to carry out in-depth studies on regional ecological capital from the perspective of operation mode and operation path. This study constructs a ecological capital operation mode of Poyang Lake Eco-Economic Zone and explores a mode operation path with Poyang Lake Eco-Economic Zone as specific object of study. Poyang Lake Eco-Economic Zone has abundant ecological

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resources, therefore how to convert these ecological resources into ecological capital is the key to achieve green development in Poyang Lake Eco-Economic Zone, and also an important link in Jiangxi's ecological civilization construction. Based on the description of the current situation of ecological resources in Poyang Lake Eco-Economic Zone, this article points out that the ecological capital operation in Poyang Lake Eco-Economic Zone is a way to achieve eco-economic development in this area, so as to realize the preservation and increment of ecological capital. The main bodies of ecological capital operation in Poyang Lake Eco-Economic Zone (government, enterprises and social organizations) should clarify their respective responsibilities, vigorously develop ecological industry, ecological agriculture and ecological service industry, promote the organic integration of these three industries, construct an ecological capital operation benefit feedback mechanism and experience summary mechanism, convert the ecological resources in Poyang Lake Eco-Economic Zone into ecological capital, promote the regional economic development and change the "beautiful scenery" into "treasure and fortune" through the operation mode of marketization and the selection of a reasonable development and operation path. The purpose of this study is to solve the growing contradiction between the economic development and the resource environment contradictions in Poyang Lake Eco-Economic Zone. It also provides reference for other regions, especially the economically underdeveloped regions, to achieve the harmonious development of ecology and economy. In the future, we will strengthen the identification of the ownership of the ecological resources and the accounting of the ecological capital value at the practical level, so as to enhance the operability of the effective operation of ecological capital.

Key words: Poyang Lake Eco-Economic Zone, ecological capital, operation mode, path selection

I. Introduction

The endowment difference of ecological resources is the basis of operation of ecological capital, and the selection of operation mode of ecological capital is the key to efficient utilization of ecological capital. At present, some areas in China still fail to get rid of the extensive development mode of "GDP", which leads to difficulties in transition to intensive and efficient development mode, thus resulting in waste and losses of ecological resources. How to realize the harmonious development of economy and ecological environment, not only maintaining the "beautiful scenery", but making it become "treasure and fortune", is the key to promote the sustainable economic and social development.

Since the 18th National Congress of the Communist Party of China incorporated the construction of ecological civilization into the overall layout of "Five-in-One", scholars have conducted a lot of studies on issues related to the construction of ecological civilization and ecological capital utilization, mainly the concepts of ecological capital and operation, system of ecological capital operation, the externalities of ecological capital etc. However, there are still few studies on the operation mode of ecological capital. Taking the mode of ecological capital operation as the research perspective, this article analyzes the objective situation of Poyang Lake Eco-Economic Zone, and puts forward a mode and path of ecological capital operation in Poyang Lake Eco-Economic Zone based on the related research results of domestic and foreign scholars.

II. Literature review

1. *Research on the Concept of Ecological Capital*

At present, the use of ecological capital terms by domestic and foreign scholars is mainly based on the concepts of natural capital and environmental capital. Vogt (1948) believed that natural resources were actually the capital of national development, which were called natural capital. In 1987, the World Environment and Development Commission pointed out in the report Our Common Future that human's living environment could be recognized and treated as ecological capital. Kerry Smith (1988) believed that it was necessary to treat both natural and environmental resources as valuable assets. In 1990, Pearce and Tumer put forward officially the concept of natural capital in academic circles, and their works "Natural Resources and Environmental Economics" had thoroughly elaborated on the concept of natural capital, and divided the capital of the production function in economics into two major categories, namely artificial capital and natural capital. Sarag Eldin (1995) suggested that natural capital or ecological capital referred to all natural resources. De Groot et al. (2003) maintained that the functions of ecosystem mainly included the invisible service function and the cultural function. Costanza (1997) was the first to acknowledge and evaluate the economic value of global ecological capital. Aronsson and Lofgren (1999) analyzed the value composition of the national account, and believed that the ecological environment capital was an important component of the contemporary national capital system, and measuring the losses of ecological capital could reflect the true value of the national financial composition. As can be seen from above, the domestic and foreign scholars mainly define the concept of ecological capital from the perspective of natural capital, and reach an consensus on the concept of natural capital, i.e. natural capital actually exists in the nature, and can provide the goods or services of natural resources and the availability of environmental stock assets for human current and future development.

In recent years, many domestic scholars have discussed the ecological capital. Liu Sihua (1997) divides ecological capital into two parts, i.e. ecological resources and ecological environment. Huang Xingwen et al. (1999) defines the ecological capital as "the ecological landscape entity over which the owner can exercise the ecological ownership and from which the owner can obtain the economic benefits". Fan Jin et al. (2000) believe that ecological capital is a comprehensive concept. Zhang Junlian et al. (2003) hold that all natural resources, ecological environment and their service function to human beings are ecological capital. Niu Xinguo (2003) maintains that the attributes of ecological capital include the overall growth, long-term profitability, symbiotic competition, open integration, immobility fugacity and social equity. Li Haitao et al. (2005) believe that capital is certain material resources existing in a time node or information variables existing in some form, while ecological capital is resource conditions formed by ecological system and the sum and reserve of its matter, energy and information, and its role is to provide marketized services so that the resource elements can achieve capital quantification, thus promoting the mutual coordination of economic and social development and natural environment protection as a special form of capital. Li Zhongmin (2010) deems that the consumption and production of environmental resources shall be included in the cost of economic development and enterprise production, and

the concept of environmental cost may also be applied in the field of social consumption. Yan Lidong (2010) put forward several key elements of ecological capital, i.e. the use value, property rights, ecological market and ecological technology, and deeply analyzes the conversion form and value realization form of ecological capital. The form of conversion is first defined by the property rights of ecological resources, after that the ecological resources are converted into ecological assets which form the ecological capital through the marketization operation, while the marketization operation of ecological capital inevitably forms ecological products of social demand. In recent years, the academic circles widely recognize the following delimitation: ecological capital refers to ecological resources and ecological environment that can bring economic and social benefits, mainly including quantum of natural resources, environmental quality, self-purification capacity, ecological potential to produce use value for the future, ecological environment quality and the whole use value of ecological system. In this study, the author also agrees with the delimitation.

2. Research on Operation of Ecological Capital

The study on ecological capital operation abroad is still in the initial stage. Epstein and Roy (1997) analyze in detail the impact on the environment capital at the micro level of enterprise growth, believes that the enterprises must take into comprehensive account of investment of environmental capital and enhance the understanding of environmental capital acting force based on processing of financial capital while making investment decisions, so as to improve the efficiency of enterprise operation and management. Terry L. Anderson (2000) put forward the concept of "environmental capital operation" while exploring the transition from the "passive input" protection to the "active value-added" protection in the environmental protection activities. Thamnapillai and Thangavelu (2004) study the pricing and accounting of environmental capital, and propose to determine in categories different prices of different ecological and environmental capital. Azqueta and Sotelsek (2007) discuss the value attributes and evaluation methods of natural environmental resources from a methodological point of view, and propose that the depreciation and devaluation of the ecological environment capital and the environmental assessment are two important factors that affected the environmental value. As the environmental problems become more and more serious, more and more people are beginning to realize the value attributes and market function of the ecological capital. Some pioneer investors start to pay attention to and actively promote the conversion and utilization of ecological capital, incorporate the environmental cost and the performance of energy saving in corporate operation into the enterprise financial management while valuing the project and the enterprise, and then take corresponding technical means and environmental protection measures so as to achieve green production and green operation.

Domestic scholars start the studies on ecological capital operation from the beginning of this century. Wang Haibin (2005) believes that the ecological capital operation is a practical means to realize the value of ecological services. Yan Lidong et al. (2011) discuss the significance of ecological capital operation from the perspectives of ecological utility, ecological elements, social culture etc. According to Song Xianping (2011), whether the ecological capital can be fully utilized for ecological economization depends on the fact

that it can be accurately priced to achieve the externalization of its value, but the difficulty is that the ecological capital belongs to natural systems, different from the modes of material and human capital under economic systems. Its value cannot be realized before a unique business model is developed. Chen Guangju (2014) advocates that the ecological capital operation is a process in which enterprises take it as a production element in the ecological capital market to produce ecological products or realize the ecological value maintenance by converting the value of ecological capital through technologies. Chang Longran (2013) conducts empirical studies in combination with the specific areas, redefines the concept of ecological capital, constructs a theoretical system of ecological capital operation, and hopes the harmonious development of regional ecology and economy. According to Zhang Zhujun (2012), ecological capital operation is to obtain corresponding economic returns through the reasonable use of the use value of ecological capital with developing the whole service value of ecological capital as a means, so as to support the regional economic development and ecological environment construction; to promote the accumulation of the ecological capital with the redevelopment of social economy and ecological environment quality, thus forming a virtuous cycle of mutual promotion and development of ecology, economy and society. He Yiqing (2013) constructs an ecological capital operation mode for the Poyang Lake Ecological Zone from a perspective of financial support with this area as object of study by means of system dynamics, and concludes that the best ecological capital operation mode covers at least four modes, i.e. agriculture, industry, tourism and financial support. Zeng Xiangang et al. (2014) maintain that the ecological capital operation is also tending to marketization, more specifically, to achieve a product supply and demand mode of marketization by converting the value through marketized outsourcing or franchising. Zhang Nairen (2016) analyzes the peculiarity of Poyang Lake Ecological Zone with the water resources in this area as object of study, and concludes that the conversion of ecological capital cannot do without the leadership of government, and an organic system of ecological capital operation is constructed based on the organic transfer of agriculture, industry and tourism. In the opinion of Gao Jixi (2016), the ecological capital operation mainly relates to five modes, i.e. research and development of ecological products, optimization of ecological resources, ownership of ecological property rights, transaction of ecosystem services and operation of ecological industry.

From the above literature review we can see that in recent years, there are many studies on the concept of ecological capital and the theory of ecological capital operation in academic circles, and the perspective of these studies is showing a trend of diversification. However, there are relatively few studies on the mode of ecological capital operation, especially in-depth studies on the mode of ecological capital operation of Poyang Lake Eco-Economic Zone. This article intends to construct the mode of ecological capital operation of Poyang Lake Eco-Economic Zone and to explore the mode operation path with Poyang Lake Eco-Economic Zone as object of study based on the results from previous studies, so as to resolve the increasing contradictions between the economic development and resource environment in Poyang Lake Eco-Economic Zone, and to provide reference for other regions to achieve the harmonious development of ecology and economy, especially the economically underdeveloped regions.

III. Concept and Agent of Ecological Capital Operation in Poyang Lake Eco-Economic Zone

(i) Basic situation of Poyang Lake Ecological Eco-Economic Zone

Poyang Lake Eco-Economic Zone is a special economic zone with Poyang Lake in Jiangxi Province as the core, Poyang Lake urban circle as the basis and protecting the ecology and developing the economy as an important strategic vision, including 9 counties (districts) in Nanchang City: Nanchang County, Jinxian County, Anyi County, Donghu District, Xihu District, Qingyunpu District, Wanli District, Qingshanhu District, and Xinjian County (later renamed as Xinjian District); 12 counties (cities) in Jiujiang City: Xunyang District, Xingzi County (later renamed as Lushan City), De'an County, Lushan District (later renamed as Lianxi District), Yongxiu County, Hukou County, Duchang County, Wuning County, Gongqingcheng City, Jiujiang County, Pengze County and Ruichang City; 4 counties (cities) in Jingdezhen City: Fuliang County, Zhushan District, Changjiang District and Leping City; 3 counties (cities) in Yingtan City: Yujiang County, Yuehu District and Guixi City; Yushui District in Xinyu City; 2 counties (districts) in Fuzhou City: Linchuan District and Dongxiang County; 3 cities in Yichun City: Fengcheng City, Gao'an City and Zhangshu City; 3 counties in Shangrao City: Yugan County, Poyang County and Wannian County; Xin'gan County in Ji'an City, 38 counties (cities, districts) in total and the whole Poyang Lake (as shown *in Picture 1*) with a land area of 51,200 square kilometers.

As the most developed area in Jiangxi Province, Poyang Lake Eco-Economic Zone has obvious comparative advantages with abundant natural resources and tourism resources, and good ecological protection and industrial base. However, with the vigorous progressing of industrialization, urbanization and agricultural industrialization, the resources and environment of Poyang Lake Eco-Economic Zone are facing great pressure, and some places are caught in the dilemma of "survival or environmental protection". The

Figure 1. Location of Poyang Lake Eco-Economic Zone

theory of ecological capital operation provides a new way of thinking to solve the problem of ecological environment. The goal of ecological capital operation is to realize the preservation and appreciation of ecological capital. Only by giving full play to the natural ecological advantages, carrying out the ecological capital operation and finding the mode and path of ecological capital operation with its own characteristics can Poyang Lake Eco-Economic Zone achieve the sustainable development of Ecology, Economy and Society.

(ii) Concept of ecological capital operation in Poyang Lake Eco-Economic Zone

As mentioned above, many domestic and foreign scholars have defined the concepts of ecological capital and ecological capital operation. The author believes that the ecological capital in Poyang Lake Eco-Economic Zone is the ecological resources and ecological environment within the scope of Poyang Lake Eco-Economic Zone that can bring economic and social benefits, mainly including total amount of natural resources, environment quality, self-purification capacity, ecological potential to produce use value for the future, ecological environment quality and the whole use value of ecological system in this area. The ecological capital operation in Poyang Lake Eco-Economic Zone means, with the ecological resources in the area as the basis, to realize the continuous circulation and accumulation of ecological capital in Poyang Lake Eco-Economic Zone in the process of maintenance and appreciation of ecological resources in the area by means of government promoting and market directing through reasonable use of resource conversion mode, thus achieving the sustainable ecological development. In short, it is to realize the ecological economization in the region.

Conclusion: This article studies the mode and path of ecological capital operation in Poyang Lake ecological economy on the basis of former studies results, and holds that to achieve the coordinated development of ecological economy and green industry as well as complementarities of ecological environment and sustainable development in Poyang Lake Eco-Economical Zone, we need to fully develop the ecological resources in the area, convert the ecological resources in Poyang Lake Eco-Economical Zone into ecological capital by selecting a reasonable development and operation path through the marketized operation mode, thus promoting the regional economic development and making the "beautiful scenery" become "treasure and fortune". This article has certain theoretical significance as it further broadens the study field of ecological capital operation and deepens the study on the theory of ecological capital; in addition, this article deeply explores the specific mode and realization path of ecological capital operation in Poyang Lake Eco-Economic Zone, which not only has instructive significance to the harmonious development of ecological environment and economy in Poyang Lake Eco-Economic Zone, but also provides reference for other regions to resolve the contradictions between economic development and environment protection, especially the economically underdeveloped regions.

(iii) Motivation of Ecological Capital Operation Mode and Path of Poyang Lake Eco-Economic Zone

1. The good ecological resources and industrial base of Poyang Lake Eco-economic Zone provides practical condition for the ecological capital operation.

Poyang Lake Eco-economic Zone was formally upgraded to national strategy in 2009.

The strategy mainly aims to protect and develop the economy in Poyang Lake and surrounding regions, adopt ecological civilization guiding thought and build the low-carbon demonstration area of ecological economization. The Eco-economic Zone covers land area of 51,200km^2, 38 county-level organizations and has the function of impoundment, climate regulation and environmental control around the zone. It possesses plentiful natural ecological resources and good industrial base, it's the important hub node connecting the south and north, east and west in the "Belt and Road" initiative and it has important strategic function.

(1) Land resource

Poyang Lake Eco-economic Zone is main agricultural land in the province, possesses plentiful and complicated land resources, and has soil types like red soil, rice soil, dry hand, etc. and mountainous types including hill and downland. Wherein, the core ecological resource is Poyang Lake wetland, occupying above 80% of Poyang Lake area, covering resources like water area, island, beach, internal lake, etc.

(2) Water resource

Poyang Lake Eco-economic Zone boasts plentiful water resources, with water from Ganjiang River, Fuhe River, Xinjiang River, Raohe River and Xiushui River, which belongs to throughput-type lake. The Poyang Lake water system basin has an area of 162,200km^2, occupying 9.0% of the area of the Yangtze River Basin, and has the annually average runoff volume of about 152.5 million m^2, occupying 16.3% of that of the Yangtze River Basin. Meanwhile, it possesses rich underground water resource and some underground water has plentiful mineral water resource.

(3) Animal and plant resource

Poyang Lake possesses diversified and plentiful animal and plant resources, mainly including zooplankter, mollusc, fish, insect, bird and mammalia, totally nearly 1,000 categories. Wherein, there are dozens of national first and second class protection animals, and over 90% white crane in the world inhabit here in winter. The plant category includes sand dune terraced plant communities and lake gleyzation marsh plant association, totally 39 associations, with the characteristics of north-south intersection, east-west integration. In addition, there is Lushan botanical garden.

(4) Industrial foundation

In recent years, Poyang Lake Eco-Economic Zone: firstly, greatly developed eco-tourism industry and realized ecological economization; secondly, made full use of soil and water resources of the region, greatly developed planting and breeding industry, primarily formed the large-scale ecological agriculture and became main rice and oil and grain deep processing base in China; thirdly, gave full play to the industrial comparative advantage industry and greatly developed medicine, precision manufacturing, electronic information industry. The good industrial foundation provides practical condition for the ecological capital operation. 2. The ecological capital operation is required for realizing the harmonious development of Poyang Lake Eco-Economic Zone

The ecological capital operation of Poyang Lake Eco-Economic Zone aims to realize the ecology economization and realize the preservation and appreciation of ecological capital. The price maintenance is the premise of operation and the appreciation is the upgrade and objective of operation. The appreciation of

ecological capital can realize monetary return and improve the economic development level of Poyang Lake Eco-Economic Zone. On this basis, further increase the ecological resource protection input force of Poyang Lake Eco-Economic Zone, and promote the good cycle of "preservation of ecological environment – ecological economy development – appreciation of ecological environment".

With the great promotion of industrialization, urbanization and agricultural industrialization, Poyang Lake Eco-Economic Zone is facing great pressure in resources and environment and some place has the selection dilemma of "adequate or ample food and clothing or environment". Although Poyang Lake Eco-Economic Zone enhanced the protection of ecological environment in the region, there are still many problems. For example, the water basin of Poyang Lake is not optimistic, even the water quality of Poyang Lake is deteriorated. Some ships steal sand and snails, tourists drop litter and some enterprises privately discharge sewage to the lake, which appear repeatedly. For example, the economic operation of Poyang Lake Eco-Economic Zone is still the extensive development, which consumes much ecological resource. If no reasonable operation is made, the resource may be exhausted. Therefore, the ecological capital operation of Poyang Lake Eco-Economic Zone is extremely urgent, which is the urgent need for the economic development, and the key for solving resource structure imbalance and restoring the ecological environment.

(iv) Subject and Function of Ecological Capital Operation Mode and Path of Poyang Lake Eco-Economic Zone

1. Government

The ecological resource of Poyang Lake Eco-Economic Zone is public product and belongs to the country or collective, corporate and individual possessing use right, operation right and profit distribution right. Therefore, from the economic perspective, it must be guided and regulated by the government; otherwise, the "tragedy of the commons" will appear. The ownership property decides that the government is the first responsible person and investor of ecological capital operation of Poyang Lake Eco-Economic Zone and the first guarantee body promoting the ecological capital operation of the region.

2. Enterprise

The government ability is limited, so all the subjects shall orderly operate under the market economy to maximize the benefits of interest subject on the premise of preservation and appreciation of ecological environment. The enterprise is the specific operation subject as well as consumption subject for ecological capital operation of Poyang Lake Eco-economic Zone. On one hand, the enterprise can obtain the operation right of ecological capital of Poyang Lake Eco-Economic Zone by various means, perform transformation and operation of ecological capital under the supervision of government, constantly research and develop ecological products with high added value by technological innovation and realize transformation and upgrade of "ecological resource-ecological capital-ecological value". The enterprise can obtain benefits and further promote the development. On the other hand, the enterprise also pur-chases ecological resource or ecological products and service from the government and other enterprises, and the purchasing should be done under the marketization. Therefore, the enterprise is indispensable to the ecological capital operation.

3. Other social organizations and individuals

The government and enterprise represent the guarantee and operation subject of

ecological capital operation of Poyang Lake Eco-Economic Zone and other relevant social organizations and individuals exercise the responsibility of social supervision and consumer subject of ecological capital operation of Poyang Lake Eco-Economic Zone. On one hand, under the market economy, the government supervision is limited; other third party shall exercise the supervision responsibility to supervise the whole process of ecological capital transformation and restrict possible right seeking, ecological resource and environment damage behaviors in the process. On the other hand, many individuals are main consumers of ecological products and service. Improve the green consumption awareness to lead the enterprise's supply behavior, so as to improve the operation ability of ecological capital in Poyang Lake Eco-Economic Zone.

IV. Building the Ecological Capital Operation Mode of Poyang Lake Eco-Economic Zone

(I) Laying a foundation for the construction of ecological capital operation mode

The system is the "cage" of economic development. The complete system and policy system is the premise of ecological capital operation and the key for development. Be sure to clarify the rights of ecological capital of Poyang Lake Eco-Economic Zone, divide the responsibilities of government and market, and form the healthy mechanism of market in reasonable operation under the guide of the government.

1. Completing the operation system of ecological capital marketization

The ecological capital operation needs the support of non-government organizations. The transformation and upgrade of ecological resources can be realized effectively only if the government, organization and other social organizations and individuals participate in the marketization platform. Ecological resources belong to public products, with characteristics of large capital investment but slow effect. The government shall launch relevant incentive measures to make the private capital rapidly and bravely enter the market and give full play to the function of private capital.

2. Clarify the ownership of ecological resources and the allocation of rights of each subject

The definition of ownership of ecological resources is the key to avoid "tragedy of the commons". In China, as the responsibility, right and benefit in the ecological resource property right arrangement is non-symmetrical, on one hand, it causes the contending for power and profit and buck passing between local places, departments and local government and department, which is one of important reasons of ecological environment deterioration in China. Poyang Lake Eco-Economic Zone also may have dispute among interest bodies caused by unclear property right of ecological resources, which may influence the smooth transformation and upgrade of ecological resources. Therefore, build the natural resource property right, land development, ecological compensation, environment governance reward and punishment, ecological market operation, ecological performance appraisal and responsibility investigation and other mechanisms of Poyang Lake Eco-Economic Zone as quickly as possible and enhance the system construction of Poyang Lake Eco-Economic Zone.

(II) Specifying main content of ecological capital operation mode

Build proper ecological capital operation mode for the ecological capital operation. As per the actual condition of Poyang Lake Eco-Economic Zone, the author regards that the ecological capital operation mode should be built in following aspects:

1. Ecological environment protection system. The environmental protection is the foundation for ecological development, the ecological environment is rare, so it is required to reasonably make use of it. The government should launch relevant policy, take strict punishment measures, eliminate and punish unreasonable, uncivilized and unhealthy behavior.

2. Eco-product system with high added value. Relying on the ecological resource conditions in Poyang Lake Eco-economic Zone, such as water resource and land resource, reasonably plan the breeding and planting base, develop the ecological resource deep processing enterprise, develop high quality green industry and produce green agricultural products.

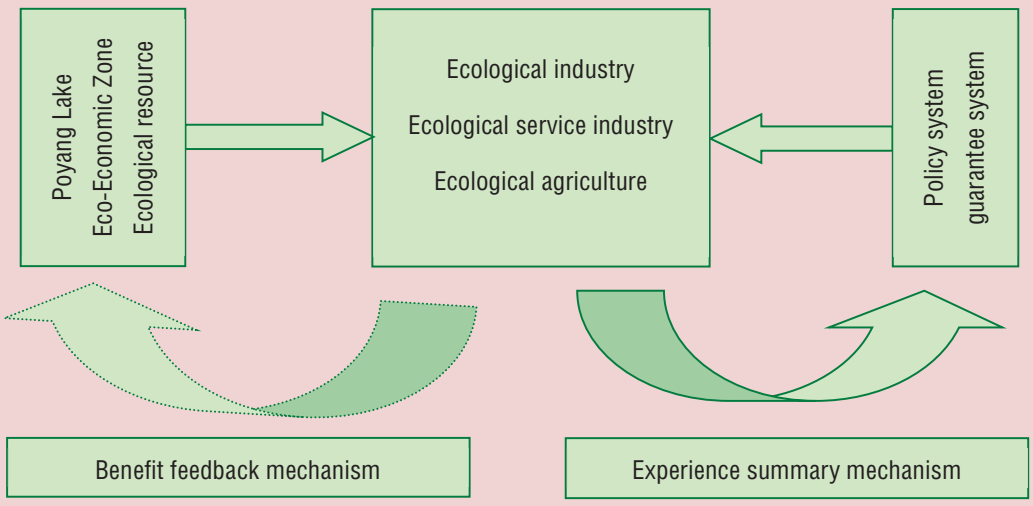
3. Ecological service system with high added value. Poyang Lake Eco-Economic Zone possesses natural ecological tourism conditions, reasonably plans the eco-tourism route and organically combines the promotion of ecological agricultural products with the development of eco-tourism.

4. High-efficient supporting system. The ecological capital operation needs the support from the government and society, such as policy support, fund support, public ecological consciousness improvement. It's required to build the high efficient supporting system, especially complete finance, fiscal tax and subsidy policy to promote the smooth progress of ecological capital operation.

(III) Building the frame of ecological capital operation mode

The building of ecological capital operation mode of Poyang Lake Eco-Economic Zone shall consider the common features of the zone, including plentiful ecological resources and purpose of realizing preservation and appreciation of ecological resource and capital; and consider the characteristics of Poyang Lake Eco-Economic Zone, including economic development condition, fund investment force of Jiangxi Province and natural resource feature of Poyang Lake, etc. As per the basis and content of ecological capital operation mode of Poyang Lake Eco-Economic Zone, this paper builds the following ecological capital operation mode of Poyang Lake Eco-Economic Zone *(shown in the figure 2)*.

Figure 2. Ecological Capital Operation Mode of Poyang Lake Eco-Economic Zone



(IV) Promoting the implementation of ecological capital operation mode

1. Punish the behavior damaging the ecological environment

Everybody is responsible for protecting the ecological environment of Poyang Lake Eco-Economic Zone. Formulate strict punishment measures to effectively hinder the uncivilized behavior. Poyang Lake Eco-Economic Zone is an important constituent part of creating "Jiangxi Model" of Beautiful China. Therefore, be sure to enhance the ecological environment protection force, strictly punish the uncivilized behavior and eliminate the "willful" damage of Poyang Lake ecological environment.

2. Greatly develop green agriculture

In recent years, Poyang Lake Eco-Economic Zone has achieved certain results in the ecological agricultural product production, has diversified promotion and publicity modes, such as exhibition, "Internet +", intelligent agriculture "123+N" platforms to widely promote the products. However, under the influence of scale benefit, price of agricultural product and ecological environment, the production and operation mode and industrial structure of green agriculture should be adjusted. Poyang Lake Eco-Economic Zone shall actively promote the green agriculture demonstration park project, build the green agricultural product production base, enhance the technical support, introduce new categories and complete the agricultural service system.

3. Greatly develop green industry

Poyang Lake Eco-Economic Zone shall grasp the opportunity of strategic transformation, greatly develop high-tech and energy-saving and environmental protection industry and avoid the old path of development and then governance. On one hand, led by leading enterprises in the zone, with critical technology as the breakthrough, expand the advantageous industries like bio-medicine, photovoltaic, aviation and green products deep processing, etc.; on the other hand, accelerate the transformation and upgrade of traditional industries like iron & steel, petrochemical, textile, etc., renovate the overstock industry, close down outdated production facilities and promote the industrial optimization and upgrade.

4. Accelerating the development of ecological service industry

As per the development conditions and current situation of service industry in Poyang Lake Eco-Economic Zone, mainly accelerate the ecological service industry from four aspects: eco-tourism, finance industry, leisure, endowment and e-commerce. The eco-tourism is one of specialty industries, so it shall be reasonably arranged. Develop a batch of featured tourism products in Poyang Lake Eco-Economic Zone and set reasonable route to meet the mental requirement and purchasing requirement of tourists. The tourism development needs the support of the financial service industry. It's required to accelerate the building of financial service area and industrial park of Poyang Lake Eco-Economic Zone, complete the financing system of enterprise, lower the enterprise financing cost, and build the e-commerce platform to promote the communication between industry and various organizations.

5. Building the benefit feedback mechanism and experience summary mechanism

It's not only to build the ecological capital operation mode of Poyang Lake Eco-Economic Zone, but also to summarize and think the problem in the operation. The mode operation mainly reflects the adjustment and integration process of primary, secondary and tertiary structure, which involves policy execution, capital condition and implementation of relevant reward and punishment. Therefore, in the capital operation process, draw inferences

about other cases from one instance, feed back the benefits from three industries to new mode operation, and rectify the lessons of previous mode operation. In this way, form the positive cycle of "preservation of ecological environment-development of ecological economy-appreciation of ecological environment".

V. Path Selection of Ecological Capital Operation Mode and Path of Poyang Lake Eco-Economic Zone

(I) Development and operation path of ecological project

Reasonable projects suitable for local conditions can effectively promote the classification and integration of ecological resources of Poyang Lake Eco-Economic Zone. The path takes the project-driving as the guiding thought, adopts scientific and reasonable planning, innovatively promote the marketized operation of featured project and realize the preservation and appreciation of ecological resources in Poyang Lake Eco-Economic Zone. The essence of operation path is to use resource property to replace the capital operation and it generally adopts means like investment attraction, contracting operation, displacement of property right, etc. Much early planning and demonstration are required for this mode to effectively balance the overall transformation and upgrade of resources in the eco-economic zone and promote the building and development of industrial cluster in the whole eco-economic zone.

(II) Ecological product development operation path

The key of the operation path is to develop ecological products and its essence is to develop featured products in Poyang Lake Eco-Economic Zone to realize the resource transformation and capital operation. The path is relatively simple, direct, with short cycle, fast effect, targeted and better reflects the local features. However, large amount of fund and complete market environment are required in the early stage. In addition, the mode mainly takes the market rate of return as the judgment standard of resource preservation and appreciation, it's limited to current using price and it's hard to take the ecology as the judgment standard. If the government guidance and intervention are not in place, it may easily get lost in the mode of pursuing maximum benefits, which may cause waste of ecological resources in Poyang Lake Eco-Economic Zone. The mode is applicable to the region with relative complete market environment and obvious industry features.

(III) Local traditional customs development and operation path

Greatly developing ecological civilization construction is not to abandon the traditional customs culture, but organically combine the traditional customs culture and ecological civilization construction and develop the "ecological customs culture" in the innovative manner. The operation path takes the traditional custom culture in Poyang Lake Eco-Economic Zone as the core, publicizes the traditional custom culture, combines featured ecological industry of the zone and combines the culture and economy to realize transformation and upgrade of ecological resources. The advantage of the path is to properly integrate regional resources, systematically improve the resource return in the ecological zone, which can effectively publicize local traditional custom culture, and bring great social and economic benefits.

(IV) PPP development operation path

PPP operation mode is the common mode, i.e. government and social capital cooperation development. In 2015, the water environment comprehensive treatment Phase I project of Poyang Lake Basin was included in PPP project library of China. It's to realize development

and transformation of ecological resources of Poyang Lake by social funds. The path selection meets the local economic development requirement and it's widely applied to the development of many tourism projects. The advantage is to greatly improve the development efficiency, save the government fund and ensure the stability and planning of project. However, pay attention to issues as big capital pressure, mutual restraint, flexibility shortage, and market monopoly caused by franchise, etc. in the operation. Therefore, PPP development and operation mode is the "double-edged sword". The key to properly use the mode is to clarify the ecological capital stock in Poyang Lake Eco-Economic Zone, find proper cooperation path and promote the win-win situation of cooperation parties.

Conclusion

On the basis of the previous research results, this study studies the mode and path of ecological economic capital operation in Poyang Lake. In general, to keep coordinated development of eco-economy and green industry and supplement of ecological environment and sustainable development, Poyang Lake Eco-Economic Zone should fully develop the ecological resources in the region, select reasonable development and operation path by the marketized operation mode, transform the ecological resources of Poyang Lake Eco-Economic Zone into ecological capital, promote the economic development of the area and really realize "green hills and clear waters" as "mountains of gold and silver". This study further widens the research field of ecological capital operation, and deepens the research of ecological capital theory, which has certain theoretical significance. Furthermore, This study explores the specific mode and implementation path of ecological capital operation in Poyang Lake eco economic zone, and has a strong practical guiding significance for promoting the harmonious development of ecological environment and economy in Poyang Lake eco economic zone. Meanwhile, it also provides useful experience for other areas, especially in less developed areas, to solve the contradiction between economic development and environmental protection.

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Social Innovation: a New Innovation Paradigm for Social Development

An Interview with A. Schröder, M. Menapace and A. Shabunova

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"The most urgent and important innovations in the 21st century will take place in the social field. This opens up the necessity as well as possibilities for Social Sciences and Humanities to find new roles and relevance by generating knowledge applicable to new dynamics and structures of contemporary and future societies".

Vienna Declaration 2011: The most relevant topics in social innovation research.

In recent years social innovation has become the subject matter of a large number of research works in the European scientific community. This is due to the fact that the existing «technology-oriented paradigm – shaped by the industrial society does not cover the broad range of innovations indispensable in the transition from an industrial to a knowledge and service-based society...»[1]. In the modern world, reality is not nature, as it had been before, nor technology, as it has been recently, but «the social world experienced through the reciprocal consciousness of self and others»[2]. It is quite obvious that «such fundamental societal changes require the inclusion of social innovations in a paradigm shift of the innovation system»[3].

The role of social innovations in society has yet to be assessed. But today we realize that they have an increasing impact on people's lives, they influence how we all, including our society, live and work, how we handle the crises and how we use our opportunities. Scientists and researchers, politicians and businessmen begin to understand that only technological or business innovations will hardly help to overcome the social, economic and environmental problems that our modern society is facing. The number of initiatives in the field of social innovation is increasing all over the world, and it shows the need for an in-depth theoretical and empirical understanding of this concept.

The past decades witnessed a major breakthrough in the research on social processes. We think that this breakthrough was greatly facilitated by the wide-scale international research SI-DRIVE («Social Innovation: Driving Force of Social Change»). Launched in 2014, it is the largest project within the European Union's Seventh Framework Program for Research and Technological Development (FP7). A major objective of the research was to consider current social innovation projects from a theoretical perspective.

The main goal of the Project is to expand scientific knowledge in three directions:

- integration theories and research methodologies to advance understanding of social innovation leading to a comprehensive new paradigm of innovation.
- undertaking European and global mapping of SI, analyzing different social, economic, cultural, historical and religious aspects in eight major world regions.
- ensuring relevant data for policy makers and practitioners through in-depth analyses and case studies in seven policy fields (education and lifelong learning, employment, environment and climate change, health and social care, transport and mobility, poverty reduction and sustainable development, energy supply).

International universities, innovation centers and scientific organizations from 30 countries[4] participated in SI-DRIVE Project.

[1] Vienna Declaration 2011: The most relevant topics in social innovation research.

[2] Daniel Bell. The coming of post-industrial society.

[3] Vienna Declaration 2011: The most relevant topics in social innovation research.

[4] Germany, Austria, Bulgaria, UK, Canada, Egypt, Russia, Sweden, Turkey, Lithuania, Italy, Croatia, Colombia, India, the Netherlands, Australia, Chile, Spain, Romania, South Africa, China, Czech Republic, Thailand, New Zealand, France, Ireland, Denmark, USA, South Korea, Belgium.

Vologda Research Center of the Russian Academy of Sciences was the only Russian participant in SI-DRIVE. The Project enabled Russian scientists to make their own contribution to the formation of the theory of social innovation alongside European researchers. Studying the Russian experience on current social innovation projects, their driving forces and barriers to their development within the framework of an international project signifies that it is possible to integrate Russian social sciences and the humanities successfully into global scientific and technological development.

One of the results of SI-DRIVE Project became a monograph of the international research team «Atlas of Social Innovation – New Practices for a Better Future», which will be published in 2018. The Atlas consists of 4 parts: the theoretical foundations of social innovation being a global trend, the analysis of social innovation in world regions, social innovation in 7 policy fields and future challenges and infrastructures of social innovation as a way of solving global challenges. The Atlas will be presented in an interactive map www.socialinnovationatlas.net. It will be possible to submit a proposal for an article or a social innovation initiative on this web-platform and to see the existing examples of SI.

These and other results of the largest international SI-DRIVE Project were discussed by scientists and researchers at the final conference «Social Innovations – Research and Policy of the Future: Towards a Comprehensive Innovation Policy" held October 24-26, 2017 in Brussels. After the conference, we talked to Antonius Schröder (SI-DRIVE Project Coordinator, Professor at TU Dortmund University), Monica Menapace (Officer at the Directorate-General for Research and Innovation under the European Commission), and Aleksandra Shabunova (Interim Director of Vologda Research Center of the Russian Academy of Sciences, Doctor of Economics). We spoke about the essence of social innovation, the results of the SI-DRIVE Project, the contribution made by Russian scientists from the Vologda Research Center of RAS to the Project, and the future of social innovation.

What is «social innovation» and why is it so important to study this concept?

Antonius Schröder. We tried to disclose the definition of this concept in the framework of the Project. In short, social innovations are innovations that are social both in their ends and in their means. Here is an expanded definition: new combination of practices in areas of social action with the goal of better coping with needs and problems than is possible by using existing practice. An innovation is therefore social to the extent that it varies social action, and is socially accepted and diffused in society. Depending on the circumstances of social changes, interests of politics and power, social ideas and successfully implemented social innovations can be transformed and ultimately institutionalized as regular social practices. In the end of such a life cycle, when innovation becomes standard, new needs and subsequent social innovations may arise. We can give one more definition: social innovations are the activities of organizations with the aim to improve the quality of life of socially vulnerable groups by providing them with opportunities to participate in economic and social, cultural and political life. I think that today when we are all facing global changes that pose serious ecological, economic and social challenges, companies cannot achieve sustainable growth and be competitive without this social component.

Aleksandra Shabunova. At present, we realize that it hardly possible to introduce new innovation models if social change is not taken

into consideration. However, before we start designing and implementing social innovation, the processes of its emergence and development should be studied thoroughly. The extensive theoretical and practical material that forms the basis of the strategy makes it reliable and appealing to society from the practical aspect.

The topic of social innovation is not new for European researchers, isn't it?

An.Schr. Yes, it's not a new topic, but it was raised since last 5-6 years, 10 years ago it was only a topic for the few projects. Today we see that social innovation is on the agenda of European politicians and civil society actors, young entrepreneurs and businessmen, universities and scientific communities, stakeholders — all parties who want to find answers to the main challenges that are facing all the inhabitants of our planet. Yes, there were some other projects on SI, but they have a very specific view on social innovation. So let's say the CRESSI project is looking at the third sector, SIMPACT is looking for the economic and opinion for value of the groups. In SI-DRIVE we try to encompass the whole world of social innovation and to give a broad worldwide picture to what is understood for social innovation.

Monika Menapace. Some years ago in 2012-13-14 we supported a lot of research projects dealing with social innovation from different perspectives, so we had different resource topics, addressing specifically in one aspect, e.g. we had something specifically on social entrepreneurship that can also be considered as part of social innovation. This project SI-DRIVE is being supported by the European Commission with the purpose of defining the theory of social innovation because the issue is so broad that it needs to be clarified from the theoretical point of view and mapping the different activities and the contribution to the different policy area. So in this regard this project is complementing other activities that we supported. All our social innovation projects are currently assessed by an expert, and there will be soon a policy review, taken out the most interesting results from the different projects, assessing how to go on in support in the process of social innovation.

What examples of successfully implemented social innovation can you give?

A. Schr. We selected 1007 cases from various countries, so the examples are numerous. For instance, *Crossics,* a Belgian start up, creates drawing-based books and mobile applications for immigrants to ease communication barriers between them and doctors. *Beyond Food Foundation,* a UK charitable organization, in cooperation with Brigade, a London-based restaurant, provide homeless and socially vulnerable people with catering apprenticeship and employment. In the Netherlands, there is a fashion brand *Granny's Finest,* which sells products knitted by people whose age is above 55.

A. Shab. Russia has several examples of very successful projects of its own. The project *Mama works* provides assistance and support to women on maternity leave. The project Improving *computer literacy of the elderly* implemented in the Vologda Oblast in the framework of «Zabota» (social innovation project «Care») helps the elderly to adapt to modern life, to learn the basics of computer technology, and to learn how to use governmental information resources through the Internet. *City of professions 360+* in the Tyumen Oblast helps students to choose their future profession by presenting real technological and laboratory objects, and business processes in virtual space. VolRC RAS *Research and Education Center* is a good example of social innovation in the Russian education system. It was established in order to train highly qualified personnel for science, economy, and governing bodies in the region,

beginning with schoolchildren of secondary schools and ending with postgraduate students of VolRC RAS, thus forming a continuous multi-level system of training.

What is the goal of the project? What is its mission?

A. Schr. In the first place, the SI-DRIVE Project aimed to deepen our knowledge of social innovation as a driving force of social change. Understanding social innovation leads to smarter and more target-oriented support measures taken by legislators; in addition, it will help make the introduction and dissemination of social innovation more efficient. The knowledge will help create a foundation for political decisions made by the EU, international organizations, and politicians.

What are the major achievements of the Project?

A. Schr. We are all aware that European society will be undergoing a profound transformation in the coming decades. The power and potential of social innovation shows that it is a major factor that will help us cope with social challenges. In the materials of the SI-DRIVE Project, we have summarized theoretical and empirical research findings, prepared an overview of different types of social innovation in the world regions and major policy fields. These materials will be reflected in the monograph «Atlas of Social Innovation — New Practices for a Better Future» and on a special web platform created in the framework of the project. This software will show the diversity and scope of social innovation, proving the effectiveness of the work of social innovators.

Are there any specific features in the development of social innovation in Russia?

A. Shab. In contrast to the situation in the developed European countries where civil society plays a major role, in Russia, special importance in the dissemination of social innovation initiatives is attached to the authorities who understand the significance of its development and, consequently, promote social activity in the areas that the government considers most important. Key barriers to the development of social innovation in this case include limited financial resources and a lack of civic engagement. As a result, social entrepreneurship combining both social and economic goals becomes one of the main facilitators of social innovation. However, the lack of clear "rules of the game" (institutions) impedes the development of social innovation in need of a strong legal base, and it often results in a situation when government agencies make their subjective choice in favor of those organizations that receive support (financial, educational, consulting, infrastructure, information, etc.).

However, the number of social innovation projects in Russia increases each year. Society needs change very much, and in a situation when governmental efforts in addressing critical social issues are not efficient enough, people themselves are encouraged to participate in community activities. A special part in this process belongs to the role of the individual. Many projects were created and now operate on an altruistic basis, and their development depends directly on the commitment of their leaders and cohesion of their teams. However, financial sustainability of such projects remains a crucial factor in the survival of social initiatives.

Did the results of SI-DRIVE meet expectations of creators of the Project and European Commission?

An.Schr. In some way, yes, but they were some surprising things. One main surprising thing was that universities have a very low part in social innovation if you compare it with

technological innovation where the universities are the driver, the pusher of innovation. In social innovation they are underestimated. Then, I was very much surprised by the high involvement of companies, and it was a very important aspect as well. In the beginning we had theoretical things in mind but now we've got a clearer picture with empirical evidence that is much appreciated.

M.M. Yes, absolutely, this is an excellent project. An added value of SI-DRIVE is that it managed to cooperate with the other projects we are supporting and to the building of the community of social innovation. And this is something quite unusual, we don't see this happening spontaneously very often in our projects. So I think this project is excellent in many aspects not only scientifically but it has in many regards an added value. It was a pleasure for me to follow it and see the ability to create a community on social innovation.

Will the results of the project be in demand in governance or are they only scientific results?

An.Schr. That's a good question, it's one of the jobs we have to do. We have first efforts to implement social innovation also on the national agenda in Germany and in Lithuania. So, I think we come from the European perspective, we come from science but it has to be road out in practice and has to be road out in the member states at the national level as well, and therefore everyone need it who has access to stakeholders in different countries, for instance, you in Russia. And it's good to have cooperation, international cooperation. So we are invited also in China to push social innovation, to say "this is international perspective movement you can ignore but it's your own fault then".

M.M. In our projects we try to support interdisciplinarity from one side and also the involvement of the stakeholders, so our project produced excellent scientific results, but not only. It is not sufficient to have the excellent science in, our projects should prove that they are able to engage with the stakeholders those that can change, and they are also able to disseminate and reach the actors that can implement the results at a different level.

Is it possible that Russian scientists will participate in similar programs in the future?

A. Shab. Russian cases in the SI-DRIVE Project have been studied by the research team of Vologda Research Center of RAS for several years. Although the research under the Project has come to an end, we have reached an agreement with our international partners that we will hold a seminar on social innovation in Russia at VolRC RAS next year and an international conference on social innovation in Vologda in 2019.

An.Schr. I want to say that cooperation with Russian partners is bringing in all perspective in it, because the system conditions are very different in your country. When I came to Russia, I was also impressed by the examples of social innovations in Vologda. I like this very much to engage the civil society to get flower parks city and to close digital gap of the population by using students and other people to help these skills development. That's a very good example for social innovation: taking up the social demand and trying to solve it by cooperating engagement of people, who are able to close this gap. You found the way to create new solutions for existing problems and to make them sustainable. We make good experiences in Germany in Dortmund from Dortmund municipality and public administration. They are only giving the ground, they arrange meetings, and they help the people to find other people to come together, they give them infrastructure, a room

to meet and to develop solutions, and then try to analyze it. From my point of view in Vologda you have a good potential to give a ground for new social innovations, for instance, like we do in Dortmund. In the future if I can integrate Russian partner in a project I will do it, because I recognized there is a different perspective on the subject, but it's helpful to deal with different perspective. That's what I like very much and I like to cooperate with Russian researchers and to see how we can learn from each other.

M.M. We strongly support the international cooperation. Russia and Russian researchers can take part in our programs, e.g. in Horizon-2020. Our financing programs are open to all countries with different roles, but we encourage cooperation with countries outside the member states and those associated. So it is always welcome, it is sometimes even strongly encouraged depending on the specific subject. So I invite the Russian scientists to follow closely our program Horizon-2020 and also contribute to the design of the next one.

One of the central outputs of the SI-DRIVE project became the SI-DRIVE Policy Declaration «Social Innovation on the Rise – Challenges for a Future Innovation Policy». It sets a framework for unfolding the potential of social innovations within a new innovation paradigm and a new innovation policy. The Policy Declaration represents a variety of approaches and successful initiatives, illustrating, according to Prof. Dr. Jürgen Howaldt, the strength and potential of social innovation. They will help to cope with the new challenges that face humanity, and open new ways that allow people to a richer and more fulfilled human life.

The interview was prepared by
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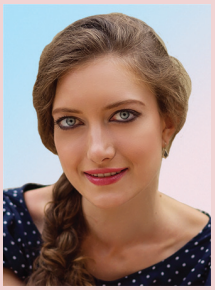
Enhancing the Sub-Federal Management Link as a Crucial Factor in the Formation of an Innovation Economy

A Review of the Book: Bukhval'd E.M. (Ed.). *Priorities of Modernization and the Increasing Role of the Sub-Federal Level of Management: Monograph*.

Moscow: IE RAN, 2015. 290 p.



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The time has come when objective impossibility of a positive alignment of levels of territories' socio-economic development, creation of new points of sustainable economic growth, optimization of migration flows and solution of other problems of regional development policy in a transactional type of economy has become quite obvious. The long-awaited structural changes will occur only under the influence of innovative modernization which opens an additional source of development for stagnating and regressing Russian regions. But passive course on innovative modernization will not ensure the desired progress. The emergence in Russia of an innovation-oriented model of the economy requires the authorities at different levels to take active steps to use the entire set of tools contributing to such a radical transition.

An important role in this case belongs to institutions and development tools which meet the specific features of the modernization conditions in the economy of heterogeneous Russian regions. This suggests that only the

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transition to a qualitatively new stage of the federal regional policy can be a reliable guarantor of the transition to an innovative model of economic development. It is no secret that the state regional policy should be variable, flexible and adaptable. However, in order for a particular region to take an active part in the modernization of the domestic economy it is necessary to have the appropriate powers. Therefore, the desire of the federal center to achieve the authority decentralization is a pleasing fact. At the same time, not all powers possess anti-centrifugal force. To a greater extent this applies to the financial replenishment of the delegation of certain functions. It turns out that the functionality of expenditures of regional authorities is growing and the economic potential which provides its coverage is not. From time to time, the expert community discusses the problems of territories' economic alignment, which still loses to the budget alignment.

The very title of the monograph sets the reader to find an answer to the question of how to strengthen the role of regions in the system of public administration. The authors devote a separate chapter to the study of the regional potential: financial, investment, social, land and property, and infrastructure. The structure of the section called "Improving the efficiency of using the resource potential of regional development" is clear and consistent. The reader is first offered to understand the current state of each type of potential and emerging problems, and then presented the author's idea about the hidden opportunities. This approach enhances the reader's attention to the text of the monograph, contributing to the implementation of the idea of the authors to transfer the research results to specialists studying various aspects of the state economy modernization. Within the framework of this book, the potential is seen as a system of internal, hidden opportunities, which determines the complexity of its formalization and evaluation. In this regard, we will give the following example which affects the financial potential of the region. The authors focus only on components which are traditionally measured exclusively in monetary terms. These include the amount of budget resources, deposits of legal entities and individuals in the banking system, and assets of the banking sector.

It is essential to study the types of potential in different regions of the country. Thus, measures to reduce tensions in the labor market are considered on the example of the Moscow Oblast, the effectiveness of the youth policy – on the North Caucasian Federal district. It should be noted that almost every chapter devoted to a particular type of resource potential marks high regional polarization. The authors of the chapter on the social potential agree that regional differentiation in terms of social development has not changed since 2012. It is stated that just over 20% of the Russian population live in socially prosperous regions (including 8% in Moscow), about 10% – in regions with very low social potential, and more than 2/3 – in lagging regions and regions with an average level of social development.

As a gesture of solidarity with the authors' conclusions, we would like to share some of our calculations concerning regional differentiation in order to enhance their importance. Thus, the difference between the regions with minimum and maximum values of GRP per capita in 2000 was 26.5 times, in 2016 – 27.8 times. Due to uneven distribution of

economic activity more than half of territories' tax and non-tax revenues were mobilized in 11 richest Russian regions while the 2/3 of the country's population live in regions with much more modest budget opportunities. Therefore, if we compare minimum and maximum values of per capita own revenues of consolidated budgets of constituent entities of the Russian Federation, in 2000 the values comprise 64.8 times, in 2016 – 47.1 times[1]. At the same time, despite massive fiscal injections, no noticeable decrease in the degree of regional economic differentiation is observed. It is no coincidence that the monograph studying the priorities of modernization pays special attention to the economic differentiation of regions. In this regard, one of the priorities of modernization is to ensure the optimization of interregional differentiation by finding the optimal proportions and tools for leveling the socio-economic development of regions. On the one hand, the large-scale redistribution policy creates a strong dependency. On the other hand, the advanced development of the most prosperous regions contributes to the efficiency of the entire economy, but increases territorial imbalances, and significant alignment through resource redistribution from strong to weak regions slows down the growth in general and reduces economic efficiency.

The authors also consider the development of methodological foundations of strategic regional planning as particularly important priorities. Although the law on strategic planning was adopted in 2014[2], many issues remain unresolved. Highlighting this modernization priority as a particularly important one in today's environment of great challenges and threats, the authors devote their closing argument to it. At the same time, they note five key prerequisites for determining the priorities of the regional development policy, the formation of which requires serious scientific study:

1. Development of the country's spatial development strategy.
2. Entering a qualitatively new level of preparation of strategic planning documents instead of presentation materials and manifests.
3. Overcoming uncertainty about the economic framework of strategic planning of regional development.
4. Coordination and target regulation of the spatial breakdown of the existing state programs.
5. Systematization of development institutions.

The transition of the Russian economy to an innovation-based path is impossible without the development of regional economies. Studies of many researchers demonstrate that the success of the innovation economy depends not only on the amount of financial resources but also requires the interest of business, availability of skilled labor resources and the increased role of science both in the national economy and in public administration.

[1] The presented figures are calculated according to data from financial reports of the Federal Treasury of the Russian federation and the Federal State Statistics Service.

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The section "Public Opinion Monitoring of the State of the Russian Society" presents the results of regular sociological polls conducted by VolRC RAS on the territory of the Vologda Oblast. Previously, the information was published in our journal since March 2009 (Issue 1(5)) as part of the editorial article.

From October 2017 onward (beginning with Issue 5(53)) "Public Opinion Monitoring" is published as an Appendix to the issue and is placed at the end of the Journal, after all the scientific papers. Thus, the results of the monitoring present on a regular basis the reference information about major trends in social well-being of the region's residents.

Public Opinion Monitoring of the State of the Russian Society

As in the previous issues, we publish the results of the monitoring of public opinion concerning the state of the Russian society conducted by VolRC RAS in the Vologda Oblast [1].

The following tables show the dynamics of several parameters indicating the social feeling and socio-political sentiment of the Vologda Oblast population in December 2017 – February 2018, and also on average for the latest six polls (April 2017 – February 2018). These data are compared with the data for 2007 (the last year of Vladimir Putin's second presidential term, when the assessment of the President's work was the highest) and for 2011 (the last year of Dmitry Medvedev's presidency). The yearly dynamics of the data are presented beginning from 2013.

In December 2017 – February 2018, the level of approval of the work of the President of the Russian Federation did not change significantly (68–69%). It corresponds to an average annual indicator for 2015–2016.The share of negative evaluations of the President's work for the past two months did not change and is 19–21%

The level of support of the work of the Chairman of the Government of the Russian Federation in December 2017 – February 2018 was 48–50, which is a bit lower than in 2014–2016 (52–58%). The proportion of negative assessments has remained stable since June 2017 (30–32%).

[1] The polls are held six times a year in Vologda, Cherepovets, and in eight districts of the oblast (Babayevsky District, Velikoustyugsky District, Vozhegodsky District, Gryazovetsky District, Kirillovsky District, Nikolsky District, Tarnogsky District and Sheksninsky District). The method of the survey is a questionnaire poll by place of residence of respondents. The volume of a sample population is 1,500 people 18 years of age and older. The sample is purposeful and quoted. The representativeness of the sample is ensured by the observance of the proportions between the urban and rural population, the proportions between the inhabitants of settlements of various types (rural communities, small and medium-sized cities), age and sex structure of the Oblast's adult population. Sampling error does not exceed 3%.

More information on the results of VolRC RAS polls is available at http://www.vscc.ac.ru/

For reference: according to VTsIOM, the share of positive assessments of the President's work nationwide did not change in December 2017 – January 2018 and amounted to 83–84% (the share of negative judgments was 10–11%).

The level of support for the Prime Minister from December to January decreased by 3 p.p. (from 54 to 51%), while the proportion of negative assessments remains stable: 32–33%.

How do you assess the current performance of..? (percentage of respondents)

Answer	2007	2011	2014	2015	2016	2017	Apr. 2017	June 2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to…		
														2016	2011	2007
RF President																
I approve	75.3	58.7	64.1	69.1	67.8	67.3	63.6	67.5	69.7	68.3	68.9	68.7	67.8	0	+9	-8
I don't approve	11.5	25.6	22.3	17.5	18.8	20.0	23.6	19.3	17.3	19.4	19.3	20.8	20.0	+1	-6	+8
Chairman of the RF Government*																
I approve	59.3	48.9	54.2	58.1	52.3	50.4	47.5	47.9	49.7	51.5	49.9	49.5	-3	-10	-	-
I don't approve	-	24.7	32.8	27.6	21.7	27.6	29.8	32.8	32.1	30.9	29.9	31.3	31.1	+4	+6	-
Governor																
I approve	55.8	45.7	44.4	40.1	39.3	37.7	38.9	36.7	40.6	42.3	40.8	39.4	39.8	+2	-6	-16
I don't approve	22.2	30.5	33.2	38.9	36.2	39.3	37.8	41.1	38.9	38.7	39.2	40.1	39.3	0	+9	+17

* Included in the survey since 2008.

There were no substantial changes in the assessment of success of the President's work on addressing the key problems of the country over the past two months:

– the share of those who think that the President successfully copes with the task of strengthening international positions of Russia is 55–57%;

– the share of those who think that the President successfully copes with the task of restoring order in the country is 51–52%;

– the share of those who believe that the President is successful in protecting democracy and strengthening citizens' freedoms is 43%;

– the share of those who believe that the President successfully copes with the task of economic recovery and promotes the increase in the welfare of citizens is 31%.

It should be noted that in February 2018, the proportion of people who consider the President's work to address the material problems of the population to be unsuccessful decreased slightly (by 3 p.p., from 56 to 53%; however, this area of the President's work still finds the least support among the people.

In your opinion, how successful is the RF President in coping with challenging issues?*
(percentage of respondents)

Answer	2007	2011	2014	2015	2016	2017	Apr. 2017	June 2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to…		
														2016	2011	2007
Strengthening Russia's international standing																
Successful	58.4	46.2	50.4	51.7	51.2	55.7	52.4	55.3	58.1	57.6	56.5	55.2	55.9	+5	+10	-3
Unsuccessful	24.9	33.7	32.4	31.3	29.9	26.8	27.7	25.8	26.1	26.3	28.3	26.9	26.9	-3	-7	+2
Success index	*133.5*	*112.5*	*118.0*	*120.4*	*121.3*	*129.0*	*124.7*	*129.5*	*132.0*	*131.3*	*128.3*	*128.3*	129.0	+8	+17	-4
Imposing order in the country																
Successful	53.2	36.6	48.0	50.2	49.2	50.6	47.3	49.9	52.0	52.7	52.0	50.9	50.8	+2	+14	-2
Unsuccessful	34.0	50.0	39.1	37.9	36.7	36.1	38.8	35.8	35.6	35.1	34.6	32.7	35.4	-1	-15	+1
Success index	*119.2*	*86.6*	*108.9*	*112.3*	*112.6*	*114.5*	*108.5*	*114.1*	*116.4*	*117.6*	*117.4*	*118.2*	115.4	+3	+29	-4
Protecting democracy and strengthening citizens' freedoms																
Successful	44.4	32.4	37.5	40.4	36.6	40.3	36.8	39.1	41.7	42.5	43.3	42.8	41.0	+4	+9	-3
Unsuccessful	37.0	48.3	45.4	41.5	44.3	40.2	43.5	39.7	38.8	38.3	39.3	38.7	39.7	-5	-9	+3
Success index	*107.4*	*84.1*	*92.1*	*99.0*	*92.3*	*100.2*	*93.3*	*99.4*	*102.9*	*104.2*	*103.9*	*104.1*	101.3	+9	+17	-6
Economic recovery and increase in citizens' welfare																
Successful	47.2	30.7	34.8	34.2	27.2	29.3	25.8	28.5	31.3	32.3	31.6	31.0	30.1	+3	-1	-17
Unsuccessful	39.1	56.1	53.4	52.3	59.4	56.9	57.3	57.2	55.9	55.3	56.3	53.7	56.0	-3	0	+17
Success index	*108.1*	*74.6*	*81.4*	*81.8*	*67.8*	*72.4*	*68.5*	*71.3*	*75.4*	*77.0*	*75.3*	*77.3*	74.1	+6	0	-34

* Ranked according to the average value of the index of success for 2016.

The structure of Russians' preferences concerning political parties in December 2017 – February 2018 remains stable: the United Russia party is supported by 38%, which is a bit higher than in 2016–2017 (35%), LDPR is supported by 10–12%, KPRF – by 7–8%, the Just Russia party – by 4%.

Forty percent of Vologda Oblast residents believe that none of the main political parties expresses their interests or find it difficult to choose their political preferences (in December 2017, their share was 37%).

Which party expresses your interests? (as a percentage of the number of respondents)

Party	2007	Election to the RF State Duma 2007, fact	2011	Election to the RF State Duma 2011, fact	2014	2015	2016	Election to the RF State Duma 2016, fact	2017	Apr. 2017	June 2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to…		
																	2016	2011	2007
United Russia	30.2	60.5	31.1	33.4	32.8	38.8	35.4	38.0	34.7	31.8	33.8	35.2	35.6	37.9	38.4	35.5	0	+4	+5
LDPR	7.5	11.0	7.8	15.4	7.6	6.2	10.4	21.9	11.0	10.7	11.1	10.9	11.5	11.6	10.1	11.0	+1	+3	+3
KPRF	7.0	9.3	10.3	16.8	9.7	7.1	8.3	14.2	7.6	6.2	8.5	8.0	7.3	8.1	7.1	7.5	-1	-3	+1
Just Russia	7.8	8.8	5.6	27.2	3.5	3.6	4.2	10.8	4.8	4.8	5.1	5.8	4.5	4.3	3.5	4.7	0	-1	-3
Other	1.8	–	1.9	–	0.3	0.2	0.3	–	0.5	0.5	0.3	0.4	0.8	1.1	0.9	0.7	0	-1	-1
No party	17.8	–	29.4	–	34.4	31.8	29.4	–	29.2	34.8	29.1	26.1	26.2	28.5	28.8	28.9	0	0	+11
I'm not sure	21.2	–	13.2	–	11.7	12.2	12.0	–	12.2	11.2	12.1	13.7	14.1	8.6	11.1	11.8	0	-1	-9

Since October 2017, the share of people who characterize their daily mood as "normal, fine, and good" has remained stable (69–71%), as well as the proportion of those who believe that "everything is not so bad; it's difficult to live, but it's possible to stand it" (74–77%).

The structure of social self-identification over the past two months did not change: 41% of people consider themselves to have an "average income", and 46% think they belong to the category of "poor and extremely poor".

In February 2018, compared with December 2017, there was a slight increase in the consumer sentiment index, which indicates an increase in the optimistic expectations of the population regarding the development of the economic situation in the country and their personal financial situation (an increase by 2 points, from 87 to 89 p.). This is higher than in 2015–2017 (77–85 p.), however, it is still below the mark of 100 points, which indicates a predominance of negative public forecasts for the future.

Estimation of social condition (as a percentage of the number of respondents)

Answer	2007	2011	2014	2015	2016	2017	Apr. 2017	June 2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to…		
														2016	2011	2007
Mood																
Usual condition, good mood	63.6	63.1	69.4	68.7	68.0	70.4	68.6	71.0	73.8	71.0	70.5	68.6	70.6	+3	+7	+7
I feel stress, anger, fear, depression	27.8	28.9	24.9	25.9	26.2	24.2	25.5	23.2	21.2	22.8	24.0	23.4	23.4	-3	-6	-4
Stock of patience																
Everything is not so bad; it's difficult to live, but it's possible to stand it	74.1	74.8	80.8	78.4	78.0	77.7	77.3	78.7	80.5	74.4	77.1	76.2	77.4	-1	+3	+3
It's impossible to bear such plight	13.6	15.3	12.6	14.5	15.6	15.8	16.4	14.8	13.5	17.5	16.2	16.3	15.8	0	0	+2
Social self-identification*																
The share of people who consider themselves to have average income	48.2	43.1	43.2	38.7	42.1	43.1	42.8	43.5	45.2	43.0	41.7	41.2	42.9	+1	0	-5
The share of people who consider themselves to be poor and extremely poor	42.4	44.3	49.1	50.7	49.0	46.6	47.3	43.2	45.8	48.8	47.1	46.2	46.4	-3	+2	+4
Consumer sentiment index																
Index value, points	105.9	89.6	87.6	77.1	77.7	84.6	80.8	84.3	86.2	86.7	87.3	89.2	85.8	+8	-4	-20

* Question: "Which category do you belong to, in your opinion?"

In December 2017 – February 2018, the improvement in social mood is observed in only one socio-demographic group: among persons over 55 years of age (by 5 p.p., from 61 to 66%).

In 7 out of 4 socio-demographic groups, the number of people who experience mainly positive emotions decreased, and in some groups – very significantly. For example, over the past two months, among persons under 30 years of age, the percentage of positive ratings of social mood declined by 8 p.p. (from 82 to 74%); among people with secondary vocational education – by 6 p.p. (from 75 to 69%); among people 30 to 55 years old and among those whose self-reported income places them with the top 20% – by 4 p.p. (from 73 to 69% and from 86 to 82%, respectively).

Social mood in different social groups
(answer: “Good mood, normal condition”, percentage of respondents)

Population group	2007	2011	2014	2015	2016	2017	Apr. 2017	June 2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to…		
														2016	2011	2007
Sex																
Men	65.9	64.5	68.9	69.5	68.8	70.6	67.6	72.5	74.6	71.3	70.8	71.0	71.3	+3	+7	+5
Women	61.7	62.0	69.8	68.0	67.4	70.2	69.4	69.9	73.1	70.8	70.3	66.6	70.0	+3	+8	+8
Age																
Under 30	1.3	70.0	75.1	77.1	76.4	78.1	80.5	75.4	80.1	79.4	82.2	74.2	78.6	+2	+9	+7
30-55	64.8	62.5	69.5	67.2	67.4	71.5	70.1	72.0	75.9	71.4	73.1	68.8	71.9	+4	+9	+7
Over 55	54.8	58.3	65.4	65.5	64.0	64.9	60.4	67.4	67.8	66.4	61.4	65.6	64.8	+1	+7	+10
Education																
Secondary and incomplete secondary	58.4	57.4	62.5	63.6	62.1	63.6	64.9	65.8	65.2	63.3	61.2	60.5	63.5	+1	+6	+5
Secondary vocational	64.6	63.6	70.4	70.1	68.4	72.0	69.3	70.2	76.7	73.3	75.0	68.9	72.2	+4	+9	+8
Higher and incomplete higher	68.6	68.3	76.2	72.7	74.3	75.8	71.7	78.0	79.1	77.1	75.6	77.9	76.6	+2	+8	+8
Income groups																
Bottom 20%	51.6	45.3	50.8	51.8	52.5	52.9	49.1	57.1	58.1	57.9	50.7	47.7	53.4	+1	+8	+2
Middle 60%	62.9	65.3	72.3	71.0	69.4	72.0	70.6	72.9	73.7	71.7	72.0	70.3	71.9	+2	+7	+9
Top 20%	74.9	75.3	84.8	82.0	80.9	83.7	79.9	81.3	86.4	82.1	86.2	82.2	83.0	+2	+8	+8
Territories																
Vologda	63.1	67.1	76.4	73.9	69.9	72.6	70.6	74.0	77.0	74.0	72.2	71.0	73.1	+3	+6	+10
Cherepovets	68.1	71.2	76.3	70.6	71.7	75.7	74.1	76.1	77.9	76.9	75.2	71.5	75.3	+4	+4	+7
Districts	61.6	57.1	61.8	64.6	64.8	66.1	64.3	66.6	69.7	66.1	66.9	65.6	66.5	+2	+9	+5
Oblast	63.6	63.1	69.4	68.7	68.0	70.4	68.6	71.1	73.8	71.1	70.5	68.6	70.6	+3	+8	+7

CONCLUSION

According to the results of our opinion polls, there were no significant positive changes in people’s assessment of the work of the authorities and political parties in the last two months (as well as in the longer term). In December 2017 – February 2018, the indicator of social mood significantly worsened in many socio-demographic groups (first of all, it should be noted that the proportion of people with predominantly positive emotions among people under the age of 30 decreased by eight percentage points, from 82 to 74%).

The structure of social self-identification also remains stable, and it cannot be characterized positively: 46–47% of Vologda Oblast residents subjectively consider themselves to be “poor and

extremely poor", while the share of those who classify themselves as "having an average income" remains at the level of 41–42%.

According to some of their points, the data of the public opinion monitoring carried out by VolRC RAS correlate with the conclusions of Russian experts who speak about "the revival of consumer behavior"[2]. For instance, over the last 5 months (from October 2017 to February 2018), the proportion of the "poor and extremely poor" residents of the Oblast slightly decreased (by 3 p.p., from 49 to 46%), which affected the growth of optimistic expectations of the population regarding the development of the economic situation in the country and their personal financial situation (during this period, the consumer sentiment index increased by 2 points – from 87 to 89).

Nevertheless, according to the majority of the key parameters of the monitoring, the dynamics of the data does not yet allow us to say that "the situation has been improved in general – people feel quite comfortable and believe that everything is developing in the country as it should be"[3]. We should sooner speak about a tense expectation of change. The absence of significant changes in the dynamics of the standard of living and quality of life in the Russian society creates a need for tangible development of the socio-economic situation in the country and makes appropriate requests to the future President, who is to be elected in less than two months. According to the data as of February 2018, 38% of Vologda Oblast residents believe that "the country needs changes, they are more important than stability", and in cities this figure is even higher: 44–46%.

"The long-term trend of stability, the preservation of the system of institutions in another socio-economic reality has begun to shift toward the formation of a request for change"[4] – this trend becomes the leading idea of the presidential election and, quite likely, the next months of political life. And since the majority of experts are confident about Vladimir Putin's victory, the main question is whether the President will be able to realize the expectations of people to improve the standard of living and quality of life in 2018. This will determine the social stability in the country and further dynamics of public sentiment.

Materials were prepared by M.V. Morev, I.V. Paranicheva, T.V. Urvanova.

[2] *Consumer plans – 2018: VTsIOM Press Release*. 2018. No. 3583. February 16. Available at: https://wciom.ru/index.php?id=236&uid=116700

[3] *Social mood of Russians: the results of 2017: VTsIOM Press Release.* 2018. No. 3550. January 9. Available at: https://wciom.ru/index.php?id=236&uid=116623

[4] Beluza A. Request of the time. *Rossiyskaya Gazeta,* 2017, no. 7434 (268), November 25. Available at: https://rg.ru/2017/11/25/sociologi-rasskazali-o-peremenah-v-umonastroeniiah-rossiian.html (the quote from M. K. Gorshkov's speech at the annual conference of the Russian Political Science Association "The time of big changes: politics and politicians", Moscow, November 24–25, 2017).

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[1] Information about the modified Harvard standard is given in the book: Kirillova O.V. *Redaktsionnaya podgotovka nauchnykh zhurnalov po mezhdunarodnym standartam: rekomendatsii eksperta BD Scopus* [Editorial Preparation of Scientific Journals according to International Standards: Recommendations of a Scopus Expert]. Moscow, 2013. Part 1. 90 p.

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