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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.

Founder: Vologda Research Center of the Russian Academy of Sciences

Federal State Budgetary Institution of Science Vologda Research Center of the Russian Academy of Sciences (VolRC RAS) is the only unit of the Academy on the territory of the Vologda Oblast. The history of the Center started in 1990 from a Department of the Institute for Economic Studies of the Kola Science Centre of RAS on studying the problems of socio-economic development of the Vologda Oblast. Since then the Center has undergone manifold transformations. In 1993 it became an independent subdivision – the Vologda Scientific Coordinating Center of RAS. In 2009 it transformed into the Institute of Socio-Economic Development of Territories of RAS (ISEDT RAS).

In 2017 the socio-economic research was supplemented by agricultural issues. ISEDT RAS was joined by the Northwestern Dairy and Grassland Farming Research Institute, and was reorganized into the Vologda Research Center of the Russian Academy of Sciences.

In 2019 the Center continued expanding having launched the Laboratory of Bioeconomics and Sustainable Development within the framework of the national project "Science". The Laboratory is engaged in scientific research aimed at introducing biotechnologies into the practice of agriculture.

The VolRC RAS Director is Aleksandra A. Shabunova (Doctor of Economics). The Academic Leader of the Center is Vladimir A. Ilyin (RAS Corresponding Member, Doctor of Economics, Professor, Honored Worker of Science of the Russian Federation).

MAIN RESEARCH DIRECTIONS

In accordance with the Charter, the Vologda Research Center carries out fundamental, exploratory and applied research 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;
- development of scientifically based systems of dairy cattle breeding in the conditions of the North-Western region of Russia;
- development of new breeding methods, methods and programs for improving breeding work with cattle;
- development of scientifically based feed production systems, norms, rations and feeding systems for cattle in the conditions of the North-Western region of Russia;

- development of zonal technologies for the cultivation of agricultural crops;
- development of technologies for the creation, improvement and rational use of hayfields and pastures in the conditions of the North-Western region of Russia;
- development of technologies and technical means for agricultural production in the North-Western region of Russia;
- assessment of biodiversity in the North-Western region of Russia;
- development and implementation of biotechnologies in agricultural production;
- improvement of breeding methods and creation of new varieties of forage crops.

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2007 – Cooperation agreement is signed with the 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 – Memorandum of agreement 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 the Institute of Economics of the National Academy of Sciences of Belarus (Minsk, Belarus, 2010).

2011 – Cooperation agreements are signed with National Institute of Oriental Languages and Civilizations (Paris, France, 2011), Institute of Business Economy at Eszterhazy Karoly College (Hungary, 2011), Republican research and production unitary enterprise "Energy Institute of NAS" (Belarus, 2011). Memoranda of understanding 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 – Memorandum of understanding 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 Center for System Analysis and Strategic Research of the National Academy of Sciences of Belarus (Belarus, 2014). Memoranda of understanding are signed with Jiangxi Academy of Social Sciences (Mao Zhiyong, China, 2014), National Institute for Oriental Studies INALCO (Julien Vercueil, France, 2014).

2015 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2015). Cooperation agreement is signed with the Institute of Sociology of the National Academy of Sciences of Belarus (Belarus, 2015).

2016 – Cooperation agreements are signed with the Center for the Study of Industrialization Modes of the School of Advanced Studies in the Social Sciences (EHESS) (Paris, France, 2016); Institute of Philosophy, Sociology and Law of NAS RA (Yerevan, Armenia, 2016); Yerevan Northern University (Armenia, 2016), Yerevan State University (Armenia, 2016). Memoranda of understanding are signed with Jiangxi Academy of Social Sciences (China, 2016).

2018 – Cooperation agreements are signed with the Department of Agrarian Sciences of the National Academy of Sciences of Belarus (Belarus, 2018); the Republican Unitary Enterprise "Scientific and Practical Center of the National Academy of Sciences of Belarus for Agricultural Mechanization" (Belarus, 2018). Memorandum of understanding is signed with the European School of Social Innovation (ESSI) (Germany, 2018).

2019 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2019).

2020 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2020).

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National Security Strategy – 2021: Positive Experiences and Conflicting Expectations

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Abstract. In May 2016, analyzing the interim results of the third presidential term of V.V. Putin, as well as the National Security Strategy, signed by the head of state on December 31, 2015, we have concluded that "the contradictions existing today in the public administration system are a natural result of the President's activities" related to the unresolved task of "bringing the interests of the elites in line with the national security interests" (Source: Ilyin V.A. President Vladimir Putin's third four-year term: contradictory outcomes – an expected result. Economic and social changes: facts, trends, forecast, 2016, no. 2 (44). pp. 9–21). Five years later, in the middle of 2021, a number of internal and external political events (including the new National Security Strategy signed by the President of the Russian Federation on July 2, 2021) again actualizes the question of the need to analyze the key changes that have occurred in the country during this period. How have the Russian society and the public administration system changed? What conceptual problems are still unresolved? And the most important: what role can the current trends

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in the development of the state and society play in the context of ensuring Russia's national security, taking into account the current situation in the domestic and foreign political arena by the middle of 2021? The following material reflects the authors' point of view on these issues. Based on expert assessments, data of official statistics, and Russian and regional sociological studies, the article analyzes the essence and prospects for the implementation of specific provisions of the National Security Strategy 2021. The authors come to the conclusion that the Strategy objectively reflects the current position of Russia in the domestic and foreign political arena by the middle of 2021, while its key points are aimed at a long-term perspective and are focused primarily on strengthening moral component of the Russian elites and Russian society. This causes positive feelings, but at the same time, based on the analysis of the previous experience in achieving strategic goals and objectives set out in the "May decrees" and national projects, it leaves conflicting expectations about the realism of their practical implementation.

Key words: National Security Strategy, national interests, spiritual and moral development, nationalization of the elites.

In recent months (June–July 2021), political life in the Russian Federation witnessed several major events, which, perhaps, can be viewed as RF President's purposeful steps aimed to strengthen Russia's geopolitical standing and its domestic socio-political situation. The events are as follows (in chronological order):

✓ **Adoption of a decree that bans extremist organizations from participating in the election (June 4)[1];** as a result, the functioning of all headquarters of Alexei Navalny* was suspended; and as of April 30, 2021, they are on the list of organizations with regard to which there is information about their involvement in extremist activities or terrorism,

✓ **the first meeting of the leaders of Russia and the United States (June 16),** which significantly deescalated international tension that was noted at the beginning of the year, and, according to experts, led to "the end of a short era during which American democrats perceived Russia ... as a regional power"[2];

✓ **the beginning of the State Duma election campaign (June 17),** it started with a significant renewal of the composition of the United Russia party; this corresponded to the public's request to supplement the party of power with new personalities (VTsIOM polls pointed it out back in 2019[3]). At the suggestion of the President[4], people who have authority in society, are not involved in corruption scandals, and represent a fusion of experience and "young" political energy have become top figures in United Russia. The head of state noted that these are "people who have been

[1] See: Federal Law 157-FZ of June 4, 2021 "On Amendments to Article 4 of the Federal Law "On basic guarantees of electoral rights and the right to participate in a referendum of citizens of the Russian Federation" and Article 4 of the Federal Law "On elections of deputies of the State Duma of the Federal Assembly of the Russian Federation".

[2] Remchukov K. Biden and Putin started the game. Quite possibly – a big game. *Nezavisimaya Gazeta*, 2021, June 17. Available at: https://www.ng.ru/editorial/2021-06-17/2_8176_editorial.html

[3] General Director of VTsIOM V. Fedorov noted that there is a request for updating the party of power. Its main content is "to make the party closer to the people, to rejuvenate its composition" (source: VTsIOM: Russians want to see new faces in the party of power. *TASS*, 2019, November 22. Available at: https://news.myseldon.com/ru/news/index/219424411)..

[4] On June 19, 2021, Vladimir Putin personally attended the 20th Congress of the United Russia party, where he introduced five of its new leaders. The federal part of the list in the party of power included Head of the Defense Ministry S. Shoigu, Foreign Minister S. Lavrov, Head Doctor of Kommunarka hospital D. Protsenko, Co-Chairman of the All-Russian Popular Front E. Shmeleva and Children's Ombudsman A. Kuznetsova.

* The activity of A Navalny's headquarters is recognized as extremist and is prohibited on the territory of the Russian Federation.

in politics for a long time – we usually call them political heavyweights – these people are relatively new in this sphere, but still, in one way or another, they represent the most important areas of our development, of our life"[5];

✓ **a direct live TV phone-in (June 30);** once again, it has shown that the head of state is concerned not only with the development of the military-industrial complex and international relations, but also with urgent issues of "ordinary" Russians (quality of medical and educational services, housing, vaccination, and many others) and that he understands them very well;

✓ **Publication of Vladimir Putin's article "On the Historical Unity of Russians and Ukrainians" (July 12),** which was addressed not so much to the current Ukrainian authorities and the Ukrainian and Russian people, as to the entire "collective West", to everyone "who wants to turn their own country into an anti-Russia project"[6]. As experts note, it was "in fact not just an article, but Russia's ultimatum, clothed in the form of an artistic word, to the collective West and the government of Ukraine"[7];

✓ **Russia's first ever interstate complaint with the European Court of Human Rights (ECHR)** filed on July 22, 2021; it contained nine charges supported by concrete facts and figures[8] against the ruling elite of Ukraine. Some experts describe this step as an "ideological attack"[9], pointing out that Russia has become more active in terms of responding to various (economic, informational, political) measures aimed at curbing its development, which have long been used by the "collective West" in order to maintain a stable background of anti-Russan sentiment.

The quintessence of the above events was V. Putin's signing of the new **National Security Strategy (July 2, 2021)** – "a comprehensive document that requires continuous updating and characterizes the dynamics of life and the vectors that are currently developing, first of all, in the sphere of national interests and priorities"[10].

> "The National Security Strategy is a fundamental document on strategic planning... it not only contains basic guidelines for making crucial management decisions, but is also a perfect reflection of ideological changes taking place in the Russian elite"[11].

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[5] Vladimir Putin's speech at the 20th Congress of the All-Russian political party "United Russia" on June 19, 2021. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/65886

[6] Umerenkov E. Putin's article is not only about Ukraine. It contains a message to all the neighbors of Russia. *Komsomolskaya Pravda*, 2021, July 13. Available at: https://www.kp.ru/daily/28303/4443767/

[7] Kobrinskii A.L. Putin's article is an ultimatum, but not to Ukraine. *Nezavisimaya Gazeta*, 2021, July 15. Available at: https://www.ng.ru/vision/2021-07-15/5_8200_vision.html

[8] Accusations of (source: *RIA-novosti*. Available at: https://ria.ru/20210722/zhaloba-1742329455.html):

- ✓ death of civilians, illegal imprisonment and ill-treatment of people, including on the Maidan, in Odessa and the Donbass;
- ✓ loss of life, infliction of bodily harm and destruction of property during the shelling of the adjacent Russian territory;
- ✓ suppression of freedom of speech and persecution of dissidents, including politicians and journalists;
- ✓ discrimination against the Russian-speaking population and the displacement of the Russian language;
- ✓ discrimination against Russian companies and entrepreneurs;
- ✓ depriving residents of the south-east of Ukraine of the opportunity to participate in elections;
- ✓ water embargo of Crimea;
- ✓ attacks on Russian diplomatic, consular and other missions;
- ✓ MH17 crash due to the fact that Ukraine did not close its airspace over the combat zone.

[9] The opinion of State Duma deputy A. Zhuravlev (source: The program "60 minutes", aired on July 22, 2021).

[10] Andrey Koshkin, Head of the Department of Political Science and Sociology at Plekhanov Russian University of Economics, expert of the Association of Military Political Scientists. *RBK*. Available at: https://www.rbc.ru/politics/03/07/2021/60e0a1c79a7947a36edadc3d

[11] Skorobogatyi P. Strategy based on one's own strength. *Ekspert*, 2021, no. 29, p. 51.

The national security strategies of 2015 and 2021 are "strikingly different from one another"[12].

✓ The new version of the Strategy no longer mentions the danger of a costly confrontation with the West. But it contains some **new vocabulary**. Or rather, the old one, very similar to the one that existed in Soviet times. **The term "hostile action" is now used to denote not only an attempt to overthrow the government, but also "the imposition of alien ideals and values"**[13].

✓ "This document speaks much clearer about linking the knowledge field, which is usually considered globally oriented by definition, to national interests... **The strategy should be perceived in the sense of the sovereignization of domestic science, education and, more broadly, the entire sphere of semantic construction and culture"**[14].

✓ **For the first time, the system of national, ethical, moral and spiritual values is marked prominently". "Ideological leadership, which is necessary in the world",** is highlighted as a separate priority. "This is the same resource that the Soviet Union once had and which we then voluntarily lost in the Russian Federation"[15].

Based on expert opinions, we see an obvious trend to continue and strengthen the political course aimed at the sovereign and independent development of Russia. We can prove it by citing Vladimir Putin's article of 1999, where it is stated that "every country, including Russia, is obliged to look for **its own path of renewal**... It seems to me that the new Russian idea will be born as an alloy, as an organic combination of universal human values and the **original Russian values** that have stood up against the test of time"[16].

At the same time, it is important to note that the Strategy-2021 is primarily not about economic or technological security (although these areas have their own innovations, too), but about the ideological, spiritual and moral state of the country itself and its corresponding positioning in the global world.

The Strategy notes that "the implementation by the Russian Federation of the state policy in the field of ensuring national security contributes to increasing internal stability, increasing the economic, political, military and **spiritual potential of Russia necessary to strengthen its role as one of the influential centers in the modern world"** (Item II.10). "Strengthening traditional Russian spiritual and moral values, preserving the cultural and historical heritage of the people of Russia" is proclaimed one of the national interests (Item III.25).

There were no such provisions in the previous editions of the National Security Strategy (2009 and 2015), and this, in our opinion, is a fundamental point that largely reflects the relevance of the problem of lack of spirituality, which we discussed in previous articles[17].

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[12] Petrov G. The Russians and the Chinese again decided to become brothers forever. *Nezavisimaya Gazeta*, 2021, July 4. Available at: https://www.ng.ru/world/2021-07-04/1_8189_brothers.html

[13] *Ibidem*.

[14] Krestovskii V. An unexpected Putin. *Zavtra*, 2021, July 5. Available at: https://zavtra.ru/blogs/neozhidannij_putin

[15] An opinion of A. Podberezkin, Director of the Center for Military-Political Studies of MGIMO (source: Experts assessed the changes in the national security strategy signed by Putin. *RBK*, 2021, July 3. Available at: https://www.rbc.ru/politics/03/07/2021/60e0a1c79a7947a36edadc3d

[16] Putin V.V. Russia at the turn of the millennium. *Nezavisimaya Gazeta*, 1999, December 30. Available at: https://www.ng.ru/politics/1999-12-30/4_millenium.html

[17] Ilyin V.A., Morev M.V. Where does the soullessness of the ruling elites lead? *Economic and Social Changes: Facts, Trends, Forecast,* 2021, vol. 14, no. 2, pp. 9–28; Ilyin V.A., Morev M.V. Focus on finances as a factor of Russia's national vulnerability in the 21st century. *Economic and Social Changes: Facts, Trends, Forecast*, 2021, vol. 14, no. 3, pp. 9–33.

However, according to experts, "Putin would not be Putin if he did not balance these [patriotic] absolutely clear and unambiguous orientations with something directly opposite... sovereignty, independence, traditional values, the national idea – all this is immediately refuted by liberal spells... The positive core of the national security doctrine is beautiful and evokes full support and solidarity. But we cannot but see the contradictions already inherent in it from the very beginning. The sovereign patriotic realist document is rigged with liberal inclusions"[18].

This peculiarity shows the presence of inconsistencies not only in the National Security Strategy itself, but also in V. Putin's entire political course: patriotic slogans coexist with liberal reforms; the priority of Russia's independence in the international arena is declared, and at the same time its economy, education, and science depend on liberal-capitalist dogmas; breakthrough development of the military-industrial complex goes hand in hand with long-term stagnation of living standards and quality of life; striving for the ideals of a social state coexists with "crony capitalism" – this fact, among other things, contributes to Russia's top positions in the world in terms of income inequality; there is a continuous search for the national idea as the foundation of national identity and, at the same time, the Constitution imposes an official ban on ideology; poverty is recognized as one of Russia's top priority issues, but there is no national project (that is, a plan, mechanism, tools) to address this issue...

The list of contradictions could be continued. The fact is that their roots are **in the very system of public administration built on the personal role of V. Putin in regulating the balance of interests between groups (families, clans) that adhere to opposing values and collectively constitute the ruling elite of the country.**

The Strategy-2021 notes "the strengthening of civic consciousness" of Russians, "growth of social engagement", "involvement in solving the most urgent problems of local and state significance" (Item II.11); the Strategy-2015 did not contain these items. In other words, the trend of increasing self-sufficiency (which was previously noted in sociological studies, in particular, those conducted by experts from the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences[19]) is so important and obvious that it was recorded in the National Security Strategy as one of the objective characteristics of modern Russian society.

However, the growth of society's self-sufficiency also implies an increase in its demands on the authorities, as well as the aggravation of relations between society and the authorities, if these requirements are not fulfilled or will not be fulfilled according to what society expects. And here we are no longer talking about promises, plans, or "Russia's standing in the international arena", etc. We are talking about specific indicators of the standard of living and quality of life, or rather about how the broad segments of the population subjectively perceive positive changes in the dynamics of their financial situation.

[18] Dugin A. New peaks and inertia of bipolar disorder. *Zavtra*, 2021, July 22. Available at: https://zavtra.ru/blogs/novie_vershini_i_inertciya_bipolyarnogo_rasstrojstva

[19] See, for example: *Russian society in the spring of 2016: Worries and hopes: Information and analytical summary based on the results of an All-Russian study.* Moscow, 2016. P. 30.

A. Podberezkin (director of the Center for Military-Political Studies of MGIMO): **"Just like the previous strategy, [the 2021 version] lacks implementation mechanisms.** It is emphasized that the national security strategy is the basic document for other strategies and concepts. At the same time, there are no implementation mechanisms, except for the annual report of the Secretary of the Security Council on the state of security in the Russian Federation"[20].

V. Katasonov: "... the new version of the National Security Strategy of the Russian Federation is **an amputated version of 2015:** its Section VI was cut off. "The main indicators of the state of national security"... **It does not specify the validity period of the document. So there are neither deadlines, nor indicators.** And the lack of deadlines makes it possible to replace the current version with a more advanced one at any time"[21].

Yu. Vorotnikov (chairman of the Political Technologies Committee for the Russian Association of Public Relations): "In the document, which should define the general direction, goals and ways of ensuring national security, I want to see the main idea – the center of crystallization, around which the entire system will be built... The lack of a unifying concept indicates that a single idea about the future of Russia has not yet been developed"[22].

In this regard, the National Security Strategy of 2021 has inherited the shortcomings of the two previous strategies (2009 and 2015). Experts say that there are no specific deadlines and mechanisms for its implementation, and this becomes extremely important amid growing social activity of Russians and the aggravating socio-economic problems related to the dynamics of the standard of living and quality of life, which are priority issues on the agenda of key requests of society.

Moreover, the complex implications of the coronavirus pandemic are not the cause, but only a trigger of these problems. For example, according to the state of inequality, Russia currently occupies a leading position in the world. A study conducted by Ipsos[23] has shown that in our country, people most often express concern about such forms of inequality as income inequality (83%; *Fig. 1*) and inequality between rich and poor regions (64%; *Fig. 2*). For comparison, these indicators worldwide are 60 and 42%, respectively[24].

According to the Ipsos international survey, 83% of Russians believe that income inequality is one of the most serious types of inequality. The concern of the Russian population is significantly higher than in the United States (57%), China (57%), Germany (59%) and a number of other countries.

The severity of the problem of inequality between more and less deprived regions in Russia is noted by 64% of its population; for comparison: in the U.S. – 38%, China – 40%, Germany – 22%.

[20] Experts assessed the changes in the national security strategy signed by Putin. *RBK*, 2021, July 3. Available at: https://www.rbc.ru/politics/03/07/2021/60e0a1c79a7947a36edadc3d

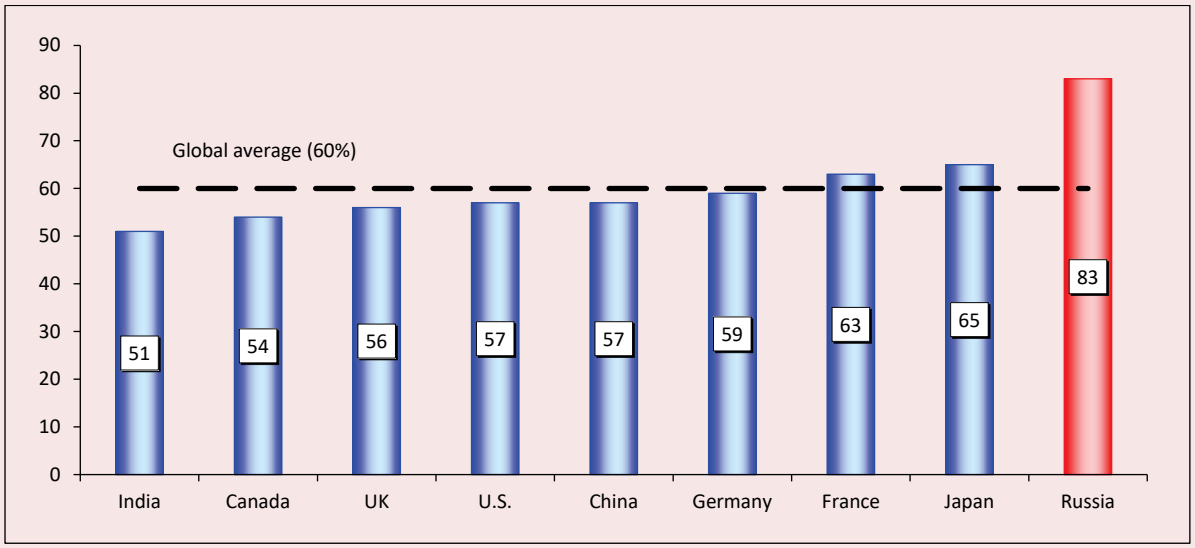
[21] Katasonov V. Putin's strategy. *Information resource Discred.ru*. Available at: https://www.discred.ru/2021/07/12/valentin-katasonov-strategiya-putina/

[22] Skorobogatyi P. Strategy based on one's own strength. *Ekspert*, 2021, no. 29, p. 54.

[23] The survey was conducted by Ipsos in 28 countries on the Global Advisor online platform in the period from December 23, 2020 to January 8, 2021; the survey covered 23,004 adults, including those aged 18–74 in the United States, Canada, Malaysia, South Africa and Turkey, aged 21–74 in Singapore and aged 16–74 in other markets (source: Ipsos official website. Available at: https://www.ipsos.com/ru-ru/kakie-vidy-neravenstv-vidyatsya-naibolee-seryoznymi).

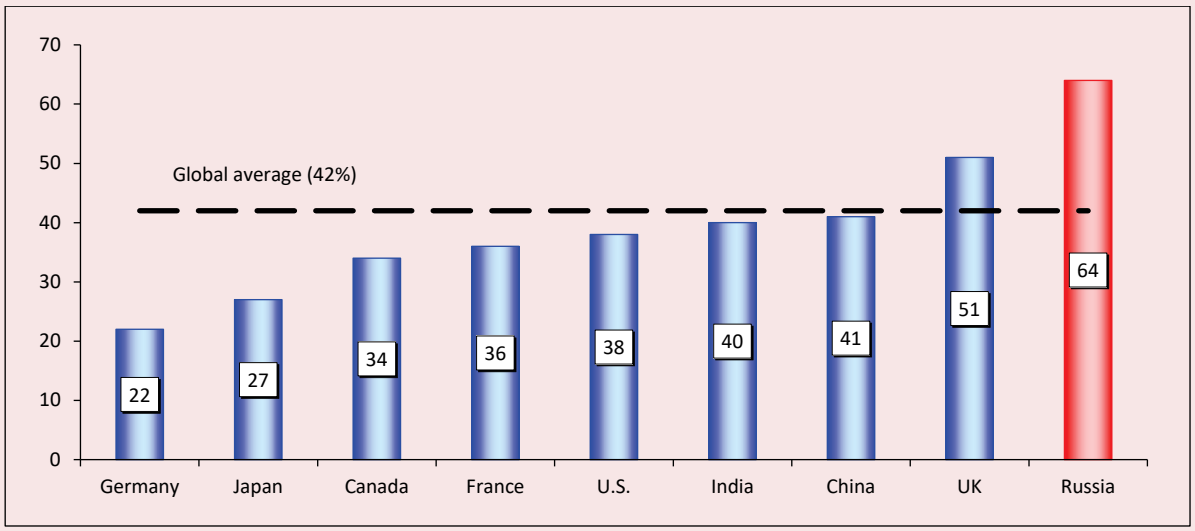
[24] The figures show the key countries. The full list is presented in the Ipsos report (source: Official website of Ipsos. Available at: https://www.ipsos.com/ru-ru/kakie-vidy-neravenstv-vidyatsya-naibolee-seryoznymi).

Figure 1. Proportion of those who see income inequality as one of the three most serious types of inequality in their country, % of respondents



Source: Ipsos report, March 19, 2021. Available at: https://www.ipsos.com/sites/default/files/ct/news/documents/2021-03/inequalities_around_the_globe_0_0.pdf

Figure 2. Proportion of those who believe that the inequality between more and less deprived regions is one of the three most serious types of inequality in their country, % of respondents



Source: Ipsos report, March 19, 2021. Available at: https://www.ipsos.com/sites/default/files/ct/news/documents/2021-03/inequalities_around_the_globe_0_0.pdf

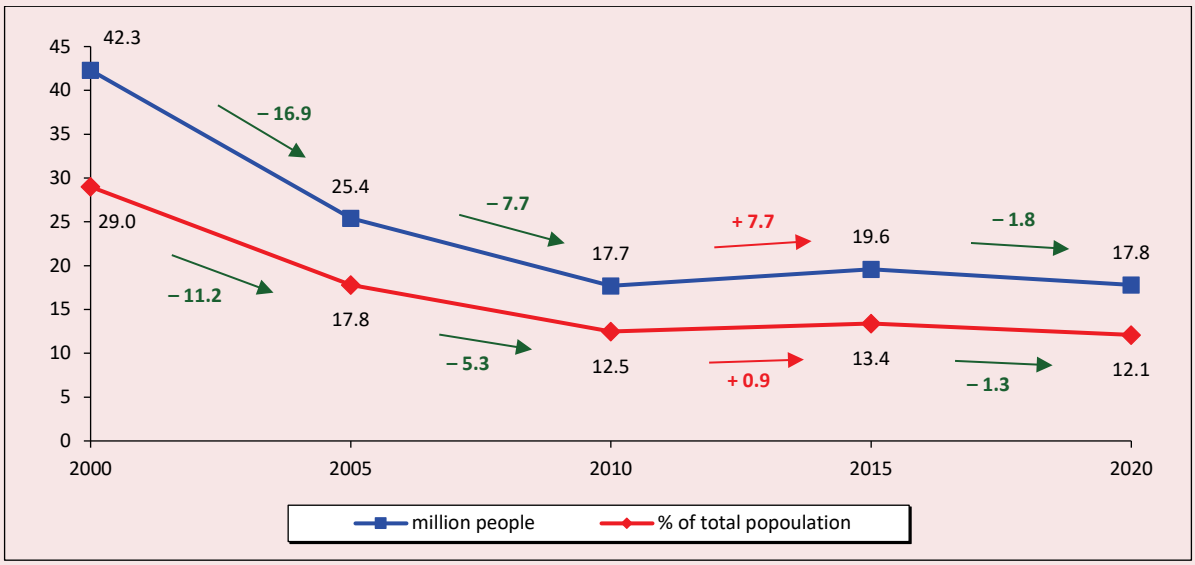
There are also quite a few reasons for skepticism with regard to another key problem for Russian society – the dynamics of the poverty level.

T. Golikova noted that "in 2020, despite the negative impact of the pandemic, it was possible not only to avoid an increase in the poverty level, but also to reduce it to 12.1%"[26]. However, we should also point out that there has been a clear stagnation in the general trend of the poverty level over the past 20 years. If during the first 10 years of V. Putin's presidential terms (2000–2010), the share of the population with incomes below the subsistence level decreased from 42 to 18 million people (from 29 to 13%), then over the subsequent ten-year period (2010–2020), this indicator did not actually change (18 million people, or 12% of the total population; *Fig. 3*).

> "Various nationwide measurements demonstrate that in the Russian Federation, the intolerance of citizens toward economic inequality is higher than the global average. And if, in general, fears related to coronavirus are growing globally, then in Russia, citizens are primarily concerned about unemploy-ment, low wages and poverty... One of the country's national development goals is to reduce the poverty level by half by 2030. But how do the authorities hope to overcome poverty in a country where the economy is already stagnating regardless of the crisis, and no prerequisites are being created for improving the well-being of its citizens?"[25]

It is also difficult to talk about the effectiveness of the implementation of the "breakthrough" announced by the President during his Address to the Federal Assembly in 2018. According to Rosstat, from 2018 to 2020, the share of people with monetary incomes below the subsistence level decreased by 600

Figure 3. Amount of people with monetary incomes below the subsistence level



Source: Rosstat.

[25] The growth of social inequality in the country is the number one topic in Russia (editorial article). *Nezavisimaya Gazeta*, 2021, July 6. Available at: https://www.ng.ru/editorial/2021-07-06/2_8191_editorial.html

[26] Meeting of the Council for Strategic Development and National Projects on July 19, 2021. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/66217

thousand (from 18.4 to 17.8 million people), or by 0.5% of the total population (from 12.6 to 12.1%).

Since 2021 Russia has shifted to a new method of calculating poverty (taking into account the exact minimum, which is set once a year and linked to the median income, and not the consumer basket), but this, most likely, will not have any significant effect on the overall situation. Thus, according to the estimates of the Accounts Chamber, even taking into account the new calculation formula, the level of poverty "has remained virtually the same in 2013–2019... It was in the range from 14.6 to 14.2%, not responding in any way to either economic growth or economic downturn". According to the results of 2019, poverty level in the country was 12.3%, in the first half of 2020 –13.2%[27].

"At first, the May 2018 decree prescribed that it was necessary to reduce the level of poverty in the country by half by 2024. This was one of the national development goals, which, however, had to be adjusted in the context of the pandemic. The new presidential decree (dated July 2020) prescribes a reduction in the poverty level by two times by 2030 compared to the indicator of 2017.

But after changing the methodology for calculating the subsistence level, all new data on poverty cease to be comparable with the old ones. They can no longer be compared in order to track how the President's goal is being achieved"[28].

But it is already obvious that the introduction of a new methodology for calculating poverty poses a threat of turning the real implementation of the May Decrees of the President of the Russian Federation into manipulations with statistics in order to obtain formal reporting.

In fact, there are two poverty levels in Russia, and the comparability of their indicators has yet to be achieved; according to some experts, "at the tactical level, it is necessary to calculate poverty using two methods at once, at least until the current decree expires"[29].

In these circumstances, it is for a reason that experts show their concern about the fact that "now it will again be necessary to make clarifications to the presidential decrees on national development goals... What levels and indicators will we focus on after the introduction of a new formula for calculating the subsistence level? What kind of poverty will we fight against?... Which indicator should we reduce, and which one should we report? Or will it soon be unimportant, because over the next 10 years, the national development goals themselves will also change?"[30]

In one of the previous articles, we said that the lack of positive dynamics in addressing people's most pressing problems, the "stalling" of national projects and, in general, the vulnerability of Russia from the point of view of internal socio-economic development – all these issues have their roots in the soullessness of the ruling elites as *"a personal feature of individual members of the ruling elites who have lost their sense of moral responsibility to society,*

[27] Bashkatova A. Poverty will adapt to national goals. *Nezavisimaya Gazeta*, 2020, October 18. Available at: https://www.ng.ru/economics/2020-10-18/1_7992_poverty.html

[28] Bashkatova A. The share of the new poor in Russia increased by 20%. *Nezavisimaya Gazeta*, 2021, July 25. Available at: https://www.ng.ru/economics/2021-07-25/1_8207_economics1.html

[29] New poor people have appeared in Russia. *Argumenty Nedeli*, 2021, July 26 (an opinion of D. Zhuravlev, scientific director of the Institute for Regional Problems).

[30] Bashkatova A. Poverty will adapt to national goals. *Nezavisimaya Gazeta*, 2020, October 18. Available at:: https://www.ng.ru/economics/2020-10-18/1_7992_poverty.html

to the vocation to protect and defend the national interests of the country in connection with the priority of personal, selfish interests"[31]. Moreover, this soullessness was largely the result of the purposeful policy of the global elites, who actively inculcate the liberal-capitalist ideals of the "consumer society".

With regard to countering this key and systemic trend, the National Security Strategy of 2021 has some understatement and inconsistency. The Strategy contains a key idea concerning the fundamental independence of Russia's geopolitical status in the conditions when "moral leadership and the establishment of an attractive ideological basis for the future world order are coming to the fore" (Item II.19)" and when Russia is surrounded by "unfriendly countries" that "seek to isolate the Russian Federation" (Item II.18), "try to use the socio-economic problems existing in the Russian Federation to destroy its internal unity" (Item II. 20). However, this key idea **is not accompanied by specific mechanisms for how the entire Russian society, and (first of all) the ruling elite of the country, will resist the global policy of imposing the ideology of "consumer society".**

In part, this question is answered by emphasizing the importance of Russia's spiritual potential – a step that is certainly necessary and that is aimed, among other things, at solving the problem of nationalization of the elites. But the Strategy also does not provide for specific mechanisms related to it.

Experts note that "the answer to the challenges facing global capitalism is possible to find only through cooperation between the leading developed and developing countries, which implies **the ability of their elites to limit their claims**"[32]. But the Strategy does not specify how this can be achieved.

At the same time, practice shows that so far there are no prerequisites for the Russian elites to begin to limit their claims. So, at the latest Saint Petersburg International Economic Forum (SPIEF-2021), First Deputy Prime Minister A. Belousov once again revealed the excess profits of the owners of the largest metallurgical corporations, which they swindled out of the state[33].

We recall that in 2018, in an open letter to the President of the Russian Federation, A. Belousov already proposed to withdraw 513.7 billion rubles from 14 metallurgical, mining and chemical companies in order to implement the May decrees. According to Press Secretary for the President of Russia Dmitry Peskov, Vladimir Putin agreed with the need to work out the proposal of his assistant and made the corresponding instruction. However, the data announced by A. Belousov at the SPIEF-2021 have shown that the question of directing the excess profits of large businesses to solve problems related to national interests remains unresolved.

It is fundamentally important that A. Belousov's letter emphasized that "there are no conditions for additional withdrawals of excess income because of the current tax system"[34]. **That is, we are not talking about any particular cases or criminal situations, namely, about the long-term, system-wide nature of this problem that exists within the framework of Russian legislation; we are talking about quite**

[31] Ilyin V.A., Morev M.V. Where does the soullessness of the ruling elites lead? *Economic and Social Changes: Facts, Trends, Forecast*, 2021, vol. 14, no. 2, pp. 9–28.

[32] Yakovlev A.A. Where is global capitalism headed? *Mir Rossii*, 2021, vol. 30, no. 3, p. 29.

[33] Belousov claimed that metallurgists have swindled 100 billion rubles out of the state. *RBK*, 2021, May 31. Available at: https://www.rbc.ru/business/31/05/2021/60b3dc129a7947f1cbf45323

[34] Ivanov A. To withdraw excess income. Zavtra, 2018, August 10. Available at: https://zavtra.ru/events/iz_yat_sverhdohodi

official conditions that allow representatives of large businesses to evade directing excess profits to the implementation of national interests.

Such conditions include Federal Law no. 76 "On Amendments to Articles 224, 275 and 284 of Part 2 of the Tax Code of the Russian Federation"[35], which was signed by Russian President Vladimir Putin on May 16, 2007 and actually became a mechanism for implementing the 2005 budget address to the Federal Assembly, where the head of state proposed to consider the issue of "improving the taxation of dividends received by Russian legal entities from investments in subsidiaries, which should encourage the establishment of holding companies in the Russian Federation"[36].

The law provided for the introduction of a zero income tax rate from January 1, 2008, calculated on dividends from the strategic participation[37] of Russian organizations in other companies. Using the example of the two largest metallurgical corporations, we can clearly trace the consequences of this step: for the period from 2008 to 2019, 318 billion rubles were withdrawn from PAO Severstal and 308 billion rubles from PAO NLMK *(Tab. 1)*.

Table 1. Income of metallurgical plants from participation in other organizations and non-accrued income tax from 2000 to 2019, million rubles

Period	PAO Severstal			PAO NLMK		
	Income from participation	Amount of tax revenues that the Vologda Oblast budget did not receive*		Income from participation	Amount of tax revenues that the Lipetsk Oblast budget did not receive*	
		Amount, mln rub.	% of tax revenues		Amount, mln rub.	% of tax revenues
2008	229	46	0.1	29559	5912	17.7
2009	62	12	0.04	28780	5756	22.1
2010	4	1	0.002	14640	2928	9.6
2011	2838	568	1.4	4084	817	2.4
Average for 2008–2011	783	157	0.4	19266	3853	12.9
2012	14908	2982	6.8	16677	3335	9.3
2013	9016	1803	4.2	20965	4193	11.1
2014	54351	10870	23.5	22882	4576	10.5
2015	44320	8864	18.7	23545	4709	9.6
Average for 2012–2015	30649	6130	13.3	21017	4203	10.1
2016	11063	2213	4.0	14861	2972	5.8
2017	60924	12185	19.5	37962	7592	14.0
2018	63825	12765	16.4	21967	4393	7.0
2019	56513	11303	13.5	72099	14420	23.9
Average for 2016–2019	48081	9617	13.4	36722	7344	12.7
Average for 2008–2019	26504	5301	9.0	25668	5134	11.9
2016–2019 to 2008–2012, times	61.4		34.3	1.9		1.0
Amount for 2008–2019	318053	63612		308021	61603	

* Consolidated budgets of constituent entities of the Russian Federation.
Source: own calculations using financial reports of metallurgical corporations and the Federal Treasury.

[35] The draft law was introduced by State Duma deputies (V.A. Pekhtin, A.V. Bezdolnyi, A.B. Kogan, L.V. Pepelyaeva, V.S. Timchenko, E.A. Fedorov, S.V. Chizhov) on August 3, 2006 (source: System for legislative activity support. Available at: https://sozd.duma.gov.ru/bill/329216-4).

[36] Budget Address of the President of the Russian Federation to the Federal Assembly of the Russian Federation on budget policy in 2006. Available at: https://rulaws.ru/president/Byudzhetnoe-poslanie-Prezidenta-RF-Federalnomu-Sobraniyu-ot-24.05.2005/

[37] Participation is recognized as strategic if it meets the requirements established by the Tax Code of the Russian Federation, namely: the shares are owned for more than 365 calendar days, and the share in the authorized capital exceeds 50%.

Thus, the non-accrued income tax from these enterprises for 12 years amounted to 63.6 billion rubles from PAO Severstal and 61.6 billion rubles from PAO NLMK.

Another example is Federal Law no. 321 "On amendments to Parts One and Two of the Tax Code of the Russian Federation in connection with the creation of a consolidated group of taxpayers (CGT)". The draft law itself was introduced by the Government of the Russian Federation on June 18, 2010[38] and its final version signed by the RF President Dmitry Medvedev on November 16, 2011.

This mechanism authorized holdings to transfer unprofitable companies to the total financial result, thereby reducing income tax receipts to the budget. The merger into the CGT allowed metallurgical corporations to reduce the tax burden.

For example, the financial resources of the parent company PAO Severstal allowed accumulating impressive amounts of equity and profit on the accounts of the consolidated group of taxpayers OOO Holding Mining Company. For 2010–2019, the total amount of profit before tax received by the company amounted to 233.6 billion rubles *(Tab. 2)*. However, despite the profitability of the company, profit tax was paid only in 2010–2011 and 2018–2019.

As a result, in general, for the period from 2010 to 2019, the actual profit tax amounted only to 451 million rubles out of 46.7 billion rubles of the estimated one. Thus, the regional budget did not receive more than 40.5 billion rubles.

A. Bryzgalin (lawyer, tax advisor): "Initially it was clear that the CGT is an institution that is profitable not just for groups of companies, but for SUPER-LARGE holdings, because the conditions for creating your own CGT are quite strict under the law and few people can meet them"[39].

Table 2. Financial performance of OOO Holding Mining Company* from 2010 to 2019, million rubles

Year	Own capital**	Profit before tax	Actual profit tax	Estimated profit tax	out of it in:		Net profit
					federal budget	regional budget	
2010	80748	124	89	25	3	22	-193
2011	91850	11287	185	2257	226	2031	11102
2012	101454	21782	0	4356	436	3920	21670
2013	101179	4687	0	937	94	843	5132
2014	72771	12153	0	2431	243	2188	12110
2015	77337	28565	0	5713	571	5142	28566
2016	84162	6367	0	1273	127	1146	6825
2017	123974	90509	0	18102	2715	15386	89811
2018	93364	24612	135	4922	738	4184	25190
2019	86205	33480	42	6696	1004	5692	33441
Amount for 2010–2019	913044	233566	451	46712	6157	40554	233654

* OOO Holding Mining Company was established by PAO Severstal on October 7, 2003 for the purpose of managing holding companies. The number of employees, according to various estimates available online, was 1–10 people. A.A. Mordashov became General Director of the company.
** It includes the authorized capital, reserve capital and retained earnings.
Source: OOO Holding Mining Company. Available at: https://www.list-org.com/company/204221

[38] System for legislative activity support. Available at: https://sozd.duma.gov.ru/bill/392729-5

[39] Bryzgalin A. Interesting figures on consolidated groups of taxpayers (KGTs). *Ekho Moskvy*, 2014, March 20. Available at: https://echo.msk.ru/blog/brizgalin_av/1283062-echo/

Table 3. Countries with the largest number of billionaires

Rank	Country	Population, million people*		Number of billionaires, people**		Number of billionaires per 1 million population		Dynamics of the number of billionaires per 1 million population 2021 to 2020
		2020	2021	2020	2021	2020	2021	abs. (+ / –)
1	U.S.	332.6	335.0	615	724	1.85	2.16	+0.31
2	China	1424.5	1428.5	387	626	0.27	0.44	+0.17
3	India	1383.2	1397.4	102	140	0.07	0.10	+0.03
4	Germany	83.4	83.4	106	136	1.27	1.63	+0.36
5	**Russia**	**143.9**	**143.8**	**98**	**117**	**0.68**	**0.81**	**+0.13**
6	Brazil	211.8	213.3	45	65	0.21	0.30	+0.09
7	Canada	37.6	38.0	44	64	1.17	1.68	+0.52
8	UK	67.3	67.6	46	56	0.68	0.83	+0.14
9	Italy	60.6	60.6	36	51	0.59	0.84	+0.25
10	Japan	125.3	124.8	26	49	0.21	0.39	+0.19

* Source: Organization for Economic Cooperation and Development (OECD) database. Available at: https://stats.oecd.org/
** Source: Forbes rating – 2021. Available at: https://www.forbes.ru/milliardery-photogallery/425573-20-stran-s-naibolshim-kolichestvom-milliarderov-2021-reyting-forbes (excluding Hong Kong as a territorial administrative unit of China).

A practical step corresponding to the implementation of national interests could be an increase in individual income tax rate for people with super incomes. According to the number of dollar billionaires, the Russian Federation is among the top five countries *(Tab. 3)*, therefore, an additional tax on super income could significantly contribute to the implementation of national projects. However, this decision has not yet been adopted.

Thus, we see that the very system of public administration functions in such a way that the stated goals and guidelines of its activities largely differ from the actual steps taken. Against the background of the proclaimed priorities of raising living standards and improving the quality of life, reducing poverty and, in general, developing human potential, in practice, representatives of big business manage to lobby for laws that reflect their personal interests only; this exacerbates the problem of social inequality, and with it the need of the general population for social justice.

As we can see, a consistently high level of poverty and social inequality in Russia coexists with equally stable signs of "crony capitalism", when only certain representatives of elite groups receive high profits facilitated largely by the norms of legislation. In other words, the contradictory nature of the National Security Strategy of 2021, as noted by many experts, **fully reflects the real state of the entire system of public administration that has developed over the years during which the current political course was being pursued.**

This raises quite reasonable concerns about the future of national projects, even though at the last meeting on national projects, the President emphasized: "We are not going to reschedule the implementation of the tasks that have been set." He told the Government that "we should not look for excuses to delay the fulfillment of our promises to the people "until later," or "at some point"[40].

At the same time, we should note that drawing the attention of Government members to the timely and accurate implementation of

[40] Meeting of the Council for Strategic Development and National Projects on July 19, 2021. Official website of the President of the Russian Federation. Available at: http://www.kremlin.ru/events/president/news/66217

national projects has actually become an annual practice for the head of state.

Many experts start paying more attention to a number of historical parallels that can be drawn between the internal state of the ruling elites of modern Russia and the governing bodies of the "stagnation era" of the USSR. "The gap between propaganda and reality is beginning to resemble the late Soviet times"[41]. On the one hand, the elite is made up of people who "are not imbued with ideology, but know it only at the level of learned formulas"[42], they use utilitarian approaches to the results of science, culture and education, but, at the same time, actively participate in the "development" of these spheres by imposing their own will there. On the other hand, in general, there is a total de-ideologization of the regime in Russian society, thanks to which not only the administration system, but also the ordinary person loses the "energy of a big goal"[43]; and discontent and protest are

2018:

From Vladimir Putin's speech at a meeting with members of the Government on May 26, 2018: **"There can be no excuses that some kind of circumstances prevented you from doing this work with high quality, at the due level and on schedule"**[44].

From Vladimir Putin's speech at a meeting with members of the Government on October 2, 2018: "I have already talked about this and I want to bring you back so that we don't fall asleep on the move... **We must implement what has been planned.** I want everyone to understand this well and be ready for difficult and strenuous work... **I would like to emphasize once again: it is necessary to reach all the goals indicated in the Decree"**[45].

2019:

From Vladimir Putin's speech at the meeting of the Council for Strategic Development and National Projects on May 8, 2019: "One delay triggers a series of others and the work stalls. Please stick to the established deadlines. Changing deadlines should be a rarely used and properly substantiated exception to the rule. Better yet, get rid of this habit altogether... When I emphasized in the Address that "there is simply no time to lose," this was not a figure of speech but a clear-cut, strict and individual requirement – to the Government, federal agencies, and to regional and municipal teams. I would like to ask you to be guided by this at all times, not just by some reporting dates or deadlines for fulfilling instructions"[46].

2020:

From Vladimir Putin's speech at the expanded meeting of the State Council Presidium on September 28, 2020: "Already in 2021, there should be a high-quality, tangible result for each of the national goals... **To keep the work going, I repeat once more: do not put off what we have to do today. And these tasks should not be delayed until 2024"**[47].

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[41] Dugin A. New peaks and inertia of bipolar disorder. *Zavtra*, 2021, July 22. Available at: https://zavtra.ru/blogs/novie_vershini_i_inertciya_bipolyarnogo_rasstrojstva

[42] Mekhanik A. Stagnation and ideological emptiness of power. *Ekspert*, 2021, no. 22, p. 63.

[43] What Russians dream about (reflections of sociologists): Analytical report. Prepared in cooperation with the Representative Office of the Friedrich-Ebert-Stiftung in the Russian Federation. FNISTs RAN. Moscow, 2012. P. 171. Available at: https://www.isras.ru/files/File/Doklad/Analit_doc_Mechti/O_chem_mechtayut_rossiyane_Zaklyuchenie.pdf

[44] Meeting with members of the Government on May 26, 2018. Available at: http://www.kremlin.ru/events/president/news/57563

[45] Meeting with members of the Government on October 2, 2018. Available at: http://www.kremlin.ru/events/president/news/58684

[46] Meeting of the Council for Strategic Development and National Projects on May 8, 2019. Available at: http://www.kremlin.ru/events/president/news/60485

[47] Expanded meeting of the State Council Presidium on September 28, 2020. Available at: http://www.kremlin.ru/events/president/news/64105

gradually maturing among the intelligentsia. According to experts, in the era of stagnation, "de-ideologization has destroyed political and economic administration systems together... the elite was unable to change due to the fact that they did not know and did not understand the country... **and these factors still largely dominate our elite"**[48].

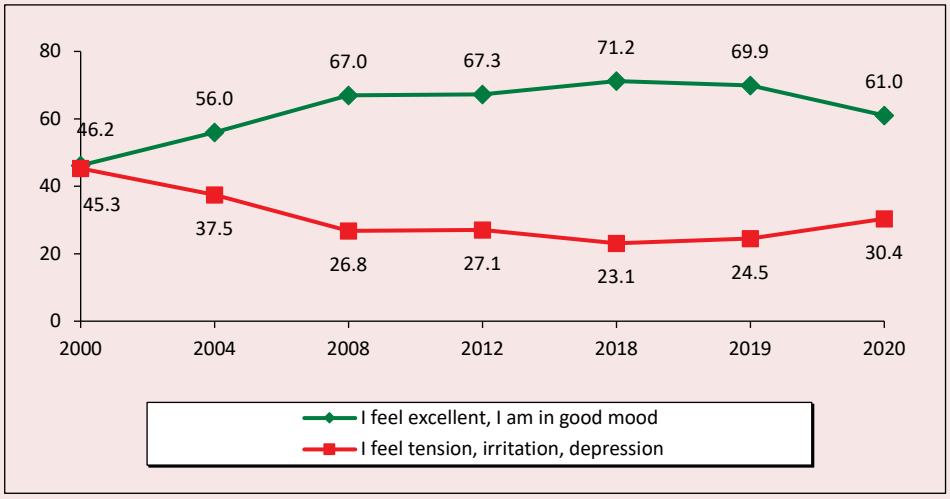
The contradictory nature of the National Security Strategy of 2021 also reflects the contradictory nature of the dynamics of public sentiment. On the one hand, by the middle of 2021 (apparently, due to such steps as amendments to the Constitution of the Russian Federation, comprehensive support for various socio-demographic groups during the pandemic, etc.), it was possible to interrupt the negative trend of deterioration in people's psychological well-being, which was outlined after the announcement of the pension reform in 2018.

According to the results of monitoring studies conducted by Vologda Research Center of RAS (VolRC RAS) in the Vologda Oblast, until 2018, the share of positive assessments of the social mood of residents of the region has been growing steadily (for the period from 2000 to 2018 – by 25 p.p., from 46 to 71%; *Fig. 4, Insert 1*). However, after the announcement of the pension reform, the proportion of people who positively assess their own daily emotional state began to decline, from 2018 to 2020 it decreased by 10 p.p. (from 71 to 61%).

Granted, this process was largely influenced by the COVID-19 pandemic, but we note that none of the 14 major socio-demographic groups showed any positive changes in the dynamics of social mood back in 2019, that is, before the world learned about the existence of coronavirus.

And, nevertheless, over the past 12 months (from August 2020 to August 2021), we have managed to achieve positive changes in social mood in all segments of the population. In the Vologda Oblast as a whole, the share of those who experience mainly positive emotions increased by 11 p.p. (from 57 to 68%); in some groups, this indicator reaches 15–18 p.p. (for

Figure 4. Average annual dynamics of social mood assessments, % of respondents



Source: VolRC RAS public opinion monitoring.

[48] Mekhanik A. Stagnation and ideological emptiness of power. *Ekspert*, 2021, no. 22, p. 68.

example, among the least affluent segments of the population, and among residents of Cherepovets *(Tab. 4; Insert 1)*.

Thus, it is obvious that the trend of deterioration in the general psychological background, which began long before the "Wuhan crisis", was reversed in 2021. On the other hand, the results of Russian studies show that today the nature of some key indicators of public opinion in Russia is much worse than, for example, in the U.S. and the UK. According to an international research conducted by the Institute for Socio-Political research under the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences[49], in Russia, the share of the following population groups is higher *(Insert 2)*:

Table 4. Current dynamics of positive assessments of social mood in 2021 in various socio-demographic groups, % of respondents

Population group	Aug. 2020	Aug. 2021	Dynamics (+ / –)
Sex			
Men	55.6	65.6	+10
Women	57.3	69.8	+13
Age			
Under 30	69.0	82.3	+13
30–55	56.2	71.4	+15
Over 55	51.9	58.1	+6
Education			
Secondary and incomplete secondary	51.7	63.2	+12
Secondary vocational	59.1	68.5	+9
Higher and incomplete higher	58.6	73.0	+14
Income groups			
Bottom 20%	40.4	55.0	+15
Middle 60%	56.6	68.9	+12
Top 20%	76.4	86.7	+10
Territories			
Vologda	57.0	59.7	+3
Cherepovets	54.4	72.3	+18
Districts	57.5	70.1	+13
Oblast	56.5	67.9	+11

✓ those who are not satisfied with life in the country as a whole (41% vs. 37–38%);

✓ those who consider the economic situation in the country to be "tense, crisis-ridden, critical, explosive" (86% – in Russia, the same amount – in the UK; 73% – in the U.S.);

✓ those who point out very insufficient protection from possible economic shocks and crises (44% vs. 19–21%);

✓ those who are unsure about the future (64% vs. 37–38%).

✓ In addition, Russia is "ahead" of the UK and the U.S. in terms of the degree of urgency of almost all the problems listed in the survey for the population (except "the inability to go on vacation, to have a rest"). In the Russian Federation, there is a greater share of citizens whose life is complicated by the following factors:

✓ low income (66%);

✓ lack of prospects in life (37%);

✓ lack of a decent job (42%);

✓ difficulties related to obtaining medical care, purchasing medicines (39%);

✓ inability to improve housing conditions (32%);

✓ inability to provide children with a good education (21%);

✓ lack of security on the streets, in public places (21%);

✓ difficulties with the payment of loans (19%);

✓ poor ecology (18%).

[49] International sociological research: New threats and practices of overcoming them in the context of the pandemic, August 2020. Research team: N.M. Velikaya (head) N.I. Belova, M.S. Tsapko, T.V. Velikaya, E.V. Fadeeva, E.V. Zverev. Conducted within the framework of the Russian Science Foundation project no. 17-78-30029 "Cognitive mechanisms and discursive strategies for overcoming socio-cultural threats in historical dynamics: A multidisciplinary study". The field study conducted by the method of semi-formalized interviews (online) in August–September 2020 covered 1,200 residents of four countries: UK, Italy, the Russian Federation and the United States. The sample population was built by the nested quota method, where the nest was represented by a country or region, observing the quota by gender and age (source: Torkunov A.V., Ryazantsev S.V., Levashov V.K. et al. *COVID-19 pandemic: Challenges, implications, counteraction: Monograph.* Moscow: Aspekt Press, 2021. P. 59.

Insert 1

Proportion of people who characterize their social mood as positive, in various social groups
(% of respondents; VolRC RAS data)

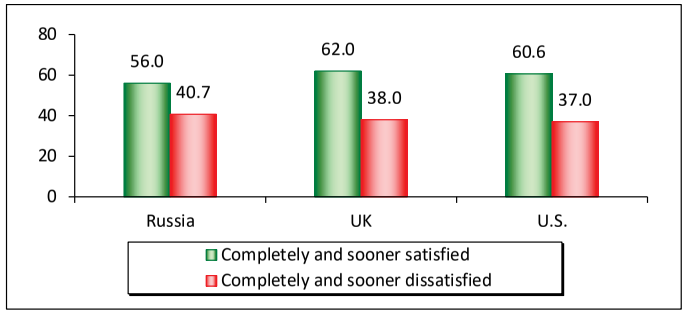
Population group	Dynamics of average annual data *							Current dynamics for the period from August 2020 to August 2021							Dynamics (+/-), Aug. 2021 to...	
	2000	2004	2008	2012	2018	2019	2020	Aug. 2020	Oct. 2020	Dec. 2020	Feb. 2021	Apr. 2021	June 2021	Aug. 2021	Aug. 2020	June 2021
Sex																
Men	50.1	58.7	69.5	69.1	72.8	70.1	60.8	55.6	60.7	60.0	60.8	61.3	65.1	65.6	+10	+1
Women	43.3	53.8	65.0	65.8	69.8	69.6	61.2	57.3	60.8	59.8	59.2	64.9	66.7	69.8	+13	+3
Age																
Under 30	59.1	64.3	74.6	72.3	80.0	81.1	67.6	69.0	64.6	65.2	60.9	67.4	73.0	82.3	+13	+9
30–55	44.2	54.8	68.5	67.9	72.6	71.2	61.8	56.2	62.5	60.9	64.4	65.5	70.0	71.4	+15	+1
Over 55	37.4	49.9	57.6	62.1	65.2	63.3	57.4	51.9	56.9	56.5	54.1	59.1	58.3	58.1	+6	0
Education																
Secondary and incomplete secondary	41.7	49.9	61.6	57.2	64.8	63.2	56.1	51.7	56.9	52.6	56.2	56.9	62.5	63.2	+12	+1
Secondary vocational	46.4	56.9	67.5	66.7	72.2	72.7	63.5	59.1	63.5	62.5	60.9	64.3	66.1	68.5	+9	+2
Higher ad incomplete higher	53.3	61.8	72.6	77.0	76.8	73.4	63.3	58.6	61.4	64.6	62.7	68.7	69.7	73.0	+14	+3
Income groups																
Bottom 20%	28.4	43.0	54.9	51.5	57.3	53.2	43.4	40.4	46.0	38.9	44.3	49.8	54.2	55.0	+15	+1
Middle 60%	45.5	55.8	67.1	68.7	71.9	71.4	62.6	56.6	61.9	63.3	60.1	65.8	67.0	68.9	+12	+2
Top 20%	64.6	69.9	77.3	81.1	82.9	81.8	75.6	76.4	70.6	76.3	76.0	70.8	76.5	86.7	+10	+10
Territories																
Vologda	49.2	57.1	69.7	73.6	71.0	68.6	60.9	57.0	61.0	58.7	55.8	57.0	59.4	59.7	+3	0
Cherepovets	50.8	57.3	68.3	76.2	75.8	71.2	60.4	54.4	59.3	60.7	64.4	68.1	70.8	72.3	+18	+2
Districts	42.2	54.8	65.0	59.8	68.7	69.8	61.4	57.5	61.4	60.0	59.7	64.0	67.1	70.1	+13	+3
Oblast	46.2	56.0	67.0	67.3	71.2	69.9	61.0	56.5	60.7	59.9	59.9	63.3	66.0	67.9	+11	+2

* The table contains average annual data for the first year of each new presidential term and the annual dynamics since 2018.

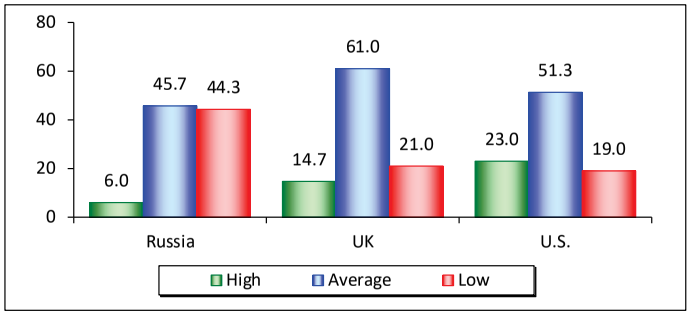
Insert 2

Key indicators of public opinion in Russia, the UK and the U.S. (2020), %

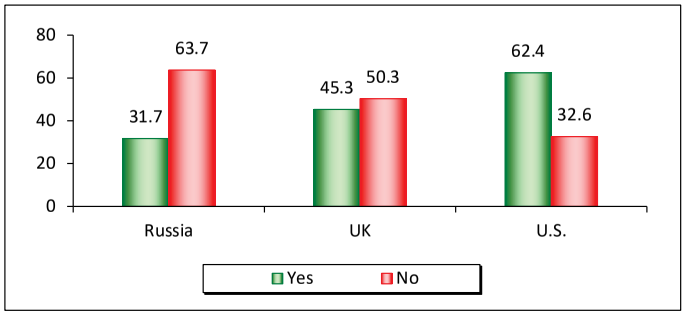
Satisfaction with life in the country



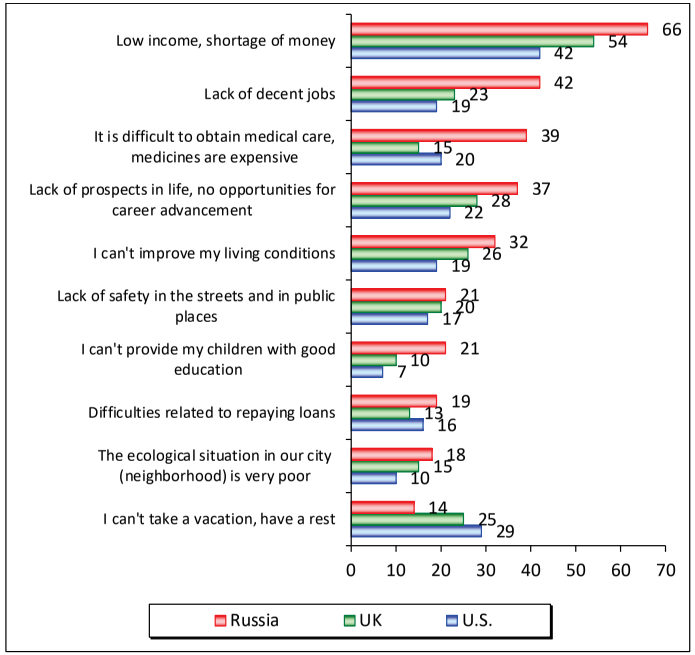
Assessment of the extent of safety from possible economic shocks and crises



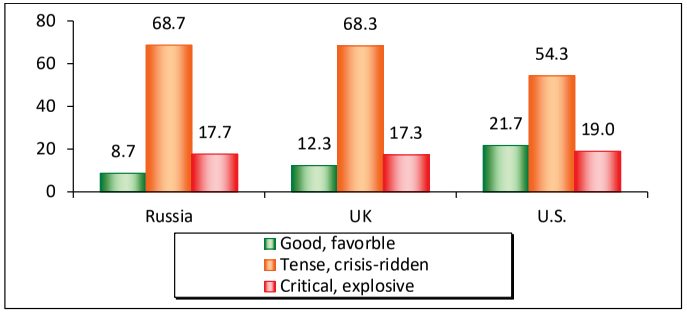
Confidence in the future



What makes your life or the life of your family especially difficult?
(ranked according to the data for the Russian Federation)



Assessment of the economic situation



Source: Torkunov A.V., Ryazantsev S.V., Levashov V.K. et al. *COVID-19 pandemic: Challenges, implications, counteraction: Monograph.* Moscow: Aspekt Press, 2021. 248 p.

Thus, the National Security Strategy of 2021 fully reflects the general nature of the entire political course implemented by the RF President. It records clear strengthening of Russia's sovereignty and its international standing.

"The Strategy-2021 defines **a new world order without illusions and hopes for a return to the previous order.** This is not only and not so much a recognition of the deep split in Russia's relations with the West. This is, in fact, a rejection of the possibility of addressing global issues on the basis of joint discussions and former global institutions like the UN and meetings of world leaders – something that Vladimir Putin regularly proposed even after 2014. For a long time, Russia remained the only country that hoped for a comprehensive search for anti-crisis solutions. And we are the last ones among those who freeze such tasks in the list of their national interests"[50].

In our opinion, it is extremely important that a new version of the National Security Strategy of Russia defines "strengthening traditional Russian spiritual and moral values, preserving the cultural and historical heritage of the people of Russia" as one of the national interests (Item III.25). Even despite the acute urgency and protracted nature of internal socio-economic issues, in the conditions of the continuing imposition of liberal-capitalist values by global elites and in the objective conditions of the need to "harness the wave" of technological changes, the problem of finding one's own independent, primarily spiritual and moral, path is particularly acute.

At the same time, the recent personnel changes taking place in the sphere of culture, science and education demonstrate the readiness of the head of state not only to declare the priority of spiritual and moral development, but also to support this guideline with real actions. In the framework of implementing the main provisions of the National Security Strategy, we can point out the following changes:

✓ ***Change of the rector of the Higher School of Economics***, an institution that is considered "the major conductor of Western ideology to our country, the engine of liberal ideas"[51]. On July 1, 2021, rector of the Higher School of Economics (HSE) Ya. Kuzminov, who had held this position since 1992 and, as some experts note, was "the ideologist of the liberal bloc in the Cabinet of Ministers of the Russian Federation and a recognized gravedigger of education", left his post[52]. His place was taken by N. Anisimov – former rector of the Far Eastern Federal University; according to some experts, he is "undoubtedly, a henchman of the Presidential administration"[53].

"Anisimov turned FEFU into one of the best universities in the country. The university is devoid of liberalism. It focuses on practice... It is also important to pay attention to the following point. Anisimov did not show any intention to promote cooperation with Western universities, research centers, NPOs, etc. FEFU has established excellent cooperation with China"[54].

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[50] Skorobogatyi P. Strategy based on one's own strength. *Ekspert*, 2021, no. 29, p. 52.

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[54] It finally happened. The HSE broke loose from the hands of the liberals. Available at: https://www.putin-today.ru/archives/128506

✓ ***Change of the President of the Russian Academy of Education (RAE).*** On June 30, 2021, this post was taken by O. Vasilyeva, who, according to a number of experts, "revives the best traditions of Russian education" and, probably, "will give a new impetus to the academia"[55].

A. Lubkov (Rector of Moscow Pedagogical State University): "As a minister, Olga Vasilyeva is doing a lot to revive the best traditions of Russian education. One of her first statements in office as head of the department that education is not a service, but a special mission of serving society and the state gave hope and inspired the improvement of the national higher and secondary schools and the possibility to overcome the crisis phenomena that have accumulated here over the past decades"[56].

It should also be noted that in the period of O. Vasilyeva's work as the Minister of Education and Science (2016–2018), *"the majority of Vasilyeva's opponents were liberals from the Ministry of Education,* who influenced the department since the days of former ministers A. Fursenko and D. Livanov". "The positioning of Vasilyeva as a counterweight to the liberal public" was noted by E. Minchenko, director of Minchenko Consulting. According to D. Zhuravlev, Director General of the Institute for Regional Problems, "Olga Vasilyeva *from the very beginning did not quite fit into the paradigm of the economic block of the government. She does not fully share the position that education is exclusively a service sector. She sees the main task of education as ideological education, not business"*[57].

For reference. O. Vasilyeva's opinion on some issues in the education system[58]**:**

1. About the lessons of the basics of religion in schools:

"...As for spiritual and moral values, I am convinced that any culture, especially ours, is based on Christianity. The heritage that Christian culture has given us is being collected bit by bit up to this day. Every person needs to know this heritage, their personality will not be complete without it".

2. About the possibility of introducing sex education lessons in school:

"I would advise parents to talk about this with their children. Without the help of one's family, nothing will work out. I can hardly imagine that I would ask a teacher at school to talk to my child about this. There are some things that, in my opinion, are very sensitive, very subtle".

3. About the politicization of schoolchildren:

"To be politicized, you need to know a lot. To date, the level of knowledge of history, literature, geography is quite low. If you bring some ideas to someone, they are often based on something. I admit that there is a place for teenage protest, which is always there. And sometimes adults use it. < ... > What kind of politicization can we talk about? Do they read philosophers en masse? Of course, they need to be educated and intellectually developed. Both at home and at school".

[55] An opinion of M. Strikhanov, RAE Academician, Rector of the MEPhI National Research Nuclear University (source: The only right decision. *Kommersant*, 2021, June 28. Available at: https://www.kommersant.ru/doc/4877626).

[56] Vasilyeva revives the best traditions of Russian education. *RIA-novosti*, 2020, January 13. Available at: https://ria.ru/20200113/1563347621.html.

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[58] *RBK*, December 24, 2019. Available at: https://www.rbc.ru/politics/24/12/2019/5e01c02e9a7947c99de3e918

4. On the de-bureaucratization of the work of teachers:

"There should be four documents: a working program on the subject, a calendar and thematic plan, an electronic assignment notebook, and an electronic journal. Everything else should not bother the teacher... The teacher should not be burdened. Who needs stupid reporting? Nobody does".

5. About the role of the textbook and the maintenance of a single educational space: "So how many textbooks do we need in order for the meanings forming a socio-cultural matrix to be minted in the minds of a child and a teenager, with the help of which our children will be able to realize and perceive their socio-cultural identity? I think that one or two cross-cutting subject lines would be enough; as children grow up, these lines can be supplemented with the study of numerous primary sources – written (literature, history), material (architecture, art), spiritual (faith, tradition)"[59].

✓ ***Establishment of the Interdepartmental Commission for Historical Education (July 30, 2021);*** its head is Assistant to the President of the Russian Federation V.R. Medinsky, whose goal is "to ensure a systematic and assertive approach to the issue of defending the national interests of the Russian Federation related to the preservation of historical memory and the development of educational activities in the field of history"[61].

The main tasks of the Commission are[60]:

a) to coordinate the work of state bodies and the scientific, educational and cultural community aimed at developing a unified approach to the implementation of historical education and awareness and preventing attempts to falsify historical facts;

b) to analyze the activities of foreign structures and persons that harm the national interests of the Russian Federation in the historical sphere, taking prompt measures to counteract such activities;

c) to prepare proposals for providing information support to counter-propaganda events and conducting historical and cultural educational actions related, among other things, to memorable dates of Russia and historic events.

Thus, we see that Vladimir Putin is implementing system-wide measures to withdraw the entire system of education and upbringing of the younger generations from the influence of liberal forces and puts it under the control and coordination of his own administration. It is obvious that this step (or rather, a whole set of specific personnel decisions) is aimed, first, at strengthening pro-state, patriotic, nationally oriented views, not only in individual institutions, but also in the entire Russian society (which is proclaimed as one of the key guidelines of the National Security Strategy-2021). Second, this is a "long-term game", designed not only for the current youth, but primarily for the next generations of Russians; for the formation (perhaps in a few decades) of a stable priority of traditional spiritual and moral values in Russian society.

[59] What will we use in teaching? (an interview with O. Vasilyeva). *Kommersant*, 2017, June 27. Available at: https://www.kommersant.ru/doc/3336330)

[60] On the Interdepartmental Commission for Historical Education: Decree of the President of the Russian Federation no. 442 of July 30, 2021. Available at: http://prezident.org/articles/ukaz-prezidenta-rf-442-ot-30-iyulja-2021-goda-30-07-2021.html

[61] *Ibidem.*

It is to this that we can link the measures undertaken by O. Vasilyeva aimed at reducing the diversity of textbooks (hence, the variability of interpretation of Russian history, traditional values, etc.); and the "assertive approach to the issue of defending the national interests of the Russian Federation", proclaimed as one of the tasks of the new Interdepartmental Commission for Historical Education; and the recent statement of the Minister of Defense S. Shoigu (whom, as we recall, the President proposed as one of the leaders of United Russia in the upcoming State Duma election) that the imperceptible "decomposition" of Russian society is "a more terrible part" than external threats[62]...

The contradictory nature of the National Security Strategy, which determines the priorities of national development for the next six years, causes equally contradictory expectations about the realism of a breakthrough development of the Russian economy, the standard of living and quality of life of the general population, and the possibility of overcoming social inequality and "crony capitalism". However, one way or another, the political course that V. Putin started 20 years ago must be logically completed; today it is obvious that Russia simply does not have another historical path.

To do this, the head of state has two potential presidential terms at best, that is, almost 15 years, taking into account the period remaining until the presidential election of 2024. At the same time, if we take into account the objective trend of increasing self-sufficiency of Russian society, it is obvious that the effectiveness of V. Putin's political course must be proved annually, not only in formal reporting, but, above all, in subjective assessments of the dynamics of the standard of living and quality of life of Russians.

The stagnation of contradictory realities and contradictory expectations of the population is likely to raise the discontent in society, exacerbate the level of social tension and skepticism about any, even the most optimistic, promises of the head of state.

And since the direct execution of the President's instructions is directly related to the quality of the ruling elites and ideological motives that guide them, we cannot but agree with the point of view that the future of Russia is extremely questionable if the primary task – **overcoming the cynicism and lack of spirituality as the dominant feature of the ideology of the modern elite** – is not solved.

> **"It's time to draw a conclusion. The modern Russian elite does not have any integral and formulated ideology at all... cynicism is the main feature of the ruling Russian elite.**
>
> If Putin has come to terms with the present elite, then state construction will not progress any further. This does not mean that everything is bad. **This means that it will hardly be better...** But if he is seriously thinking about the country, then we can talk about state construction seriously and responsibly. **And the first thing that is required for this is to replace the elite"**[63].

[62] From the speech of S. Shoigu at the panel discussion of the All-Russian Youth Educational Forum "Territory of meanings". In: Ivanov A. Shoigu named the worst threat to Russia. *Zavtr*a, 2021, August 11. Available at: https://zavtra.ru/events/shojgu_nazval_strashnejshuyu_ugrozu_dlya_rossii

[63] Dugin A. Either today's elite, or Russia. *Zavtra*, 2021, August 2. Available at: https://zavtra.ru/blogs/libo_segodnyashnyaya_elita_libo_rossiya

The personnel decisions made by the RF President are designed for a long-term strategic perspective – preservation of traditional values of patriotism, statehood, a high level of moral responsibility among those generations of Russians who have not even been enrolled in school today. In this regard, the National Security Strategy itself, and the steps taken by the President to implement it today, undoubtedly evoke positive feelings.

At the same time, there are also conflicting expectations, caused primarily by the fact that there is a threat that the national projects, the "May decrees", the Address to the Federal Assembly of the Russian Federation in 2018, the social guarantees provided for in the new Constitution of the Russian Federation and, in general, people's needs for a dynamic increase in the standard of living and quality of life, overcoming social inequality and achieving social justice will not be implemented, but shifted to the category of formal reporting, without producing any tangible positive changes in the dynamics of public opinion.

The National Security Strategy defines positive guidelines, but they are designed for the long term, and the implementation of the needs of society has been long overdue. Their implementation "here and now" is important to "ordinary" Russians. Therefore, questions and anxious expectations remain: will Vladimir Putin have enough time to finish what he started? What will have been achieved by 2024, when the next presidential election is to be held in Russia? Will the course he is pursuing continue after this milestone stage? And most importantly, will Russian society have enough patience to wait until the gradual transformation of the moral basis of the ruling elites is expressed in concrete, tangible steps aimed to improve the quality of life?

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Transitional Forms of Universal Basic Income as a Real Prospect for Russia*

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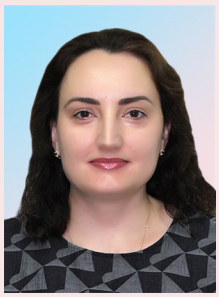

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Abstract. The article presents the research results aimed at developing the theoretical provisions of the universal basic income concept summarizing and systematizing the results of a survey of Russian experts conducted by the authors about its principles, the possibilities of introduction in Russia, priority population categories for testing it, assessing the reality of expanding the tools of universal basic income taking into account the development of transitional forms of its use during the COVID-19 pandemic. The work reveals the relevance of UBI concept development in the context of the need to overcome mass poverty in Russia. The result of the theoretical analysis shows that generally recognized UBI principles (universality, unconditionality, individual nature of monetary payments, their regularity) are justified by long-term trends in social policy evolution. The prospect of introducing universal basic income is presented as a qualitative transition (leap) in implementation of the latter. The social policy measures, closest to implementation of UBI principles, are characterized as its transitional forms including experiments on its introduction. To assess the practical feasibility of UBI transitional forms, the article uses the results of a survey of experts from different Russian regions conducted with the authors' participation and a pilot experiment and modeling of the results of UBI toolkit implementation. The paper proposes a possible scheme for implementing UBI tools in Russia, as well as pilot projects for low-income families with children, graduates of universities and secondary vocational educational institutions during the transition from study to the first place of work, the unstable employed (including the unemployed). The authors assess the paradox of activating the implementation of UBI principles in the context of the COVID-2019 pandemic under unfavorable financial conditions as confirming the reality of the prospects for its transitional forms for Russia. The results of the study can contribute to the development of discussions about the introduction of UBI tools in the Russian Federation, and to the promotion of its wide experimental testing for different population categories. It is advisable to continue research in the aspect of analyzing the experience of developing social support in the context of a pandemic and modeling the possible effects and costs of introducing UBI.

Key words: universal basic income, UBI principles, transitional forms of UBI, socio-economic inequality, effects of UBI implementation, pilot projects for UBI implementation.

Introduction

Abroad, thanks to numerous studies, the concept of universal basic income (UBI) has acquired an independent, detailed content – a fact that allows stating its existence as an element of modern scientific knowledge. The works that comprehensively characterize the main theoretical aspects of the problem [1; 2] are supplemented by research that has an applied focus (compliance of the UBI with the ILO standards [3] and its potential impact on labor supply [4], studying population's attitude to the introduction of the UBI schemes[1]). It is obvious that the system of social support of population, appeared in economically developed countries, has acted as an essential prerequisite for the emergence of such a theory.

In the study of the problem, the Russian specifics are quite understandable. During the transformational crisis (the 90s of the previous century), there was dismantled the former system of social guarantees which claimed to be universal.

[1] Fitzgerald R., Bottoni G., Swift S. *The future of welfare: basic income? European Social Survey. Part of the Economic and Social Research Council (ESRC). Festival of Social Science*. 2017. Available at: citizensincome.org/wp-content/uploads/2017/11/European-Social-Survey-survey-on-Basic-Income.pdf (accessed: January 13, 2021).

Despite the appearance of mass poverty, the UBI idea as a universal social transfer was not at the right time in post-perestroika Russia, as the logic of initial capital accumulation required the redistribution of financial and economic resources of society in favor of a relatively small layer of beneficiaries.

During the economic growth recovery (2000s – present), Russia has significant funds to activate social policy. At the same time, there was a situation when mass poverty was perceived as incompatible with socio-economic progress.

In such a historical context, it became natural for Russian researchers to address the problem of universal basic income. If at first it was mainly about mastering the theoretical achievements of foreign authors [5], by now the analysis of the UBI theory and experiments on its implementation has acquired an independent and detailed character in the Russian socio-economic literature [6; 7]. The article studies the attitude of Russian citizens to the UBI introduction [8] including in comparison with the attitude of foreign respondents to universal basic income [9]. The Russian scientific literature presents both supporters of the prospect of introducing the UBI [10] and authors who critically evaluate such a prospect [11].

Research projects, supported by scientific foundations, are being implemented on the UBI problem. It is not difficult to predict that their inclusion in the analysis of this problem will not remain without influence on the national social policy which is always, explicitly or implicitly, based on theoretical premises.

The purpose of the study is to develop the theoretical provisions of the UBI concept, generalize and systematize the results of a survey of Russian experts on its principles, the possibilities of introducing it in Russia and priority categories of population for testing it, assess the reality of expanding the UBI tools taking into account the development of transitional forms of its use during the COVID-19 pandemic.

The hypothesis of the study is that the formation of the UBI theory and the experience of practical implementation of its principles have reached a level where there is a real prospect of using the transitional UBI forms in Russia.

Main theoretical and methodological provisions of the research

The Russian socio-economic literature translates the English term "Universal Basic Income" (UBI) in two ways: as "безусловный базовый доход" [12] and as "безусловный основной доход" [13]. The term "basic" may implicitly mean the connection of this income with the satisfaction of basic or innate needs that form the initial level of the system of needs. The term "basic", allowing the use of the term "basic" as a synonym, in this context does not have such a rigid associative binding to the initial level of the pyramid of needs.

In the current Russian conditions, it is preferable, in our opinion, to use the term "basic income", as we are talking about its purpose for all Russian citizens and the establishment of a minimum amount that allows meeting the initial needs that provide basic conditions for the consumption of goods and services. The basic income is the basis above which a variety of income paid according to other criteria rises [6].

The basic UBI principles are: 1) *universality* – it is assumed to be paid to all citizens of the country; 2) *unconditional* – the payment is made regardless of whether a person works or not; 3) *the monetary form* of the transfer is due to the specifics of the market economy and provides "freedom of consumer choice"; 4) *individual nature* of the payment – the recipient of such income is every member of the family, and not only the one who performs the role of its head; 5) *regularity* of payments as a prerequisite for meeting reproducible basic needs.

All these principles seem obvious within the framework of the already established UBI

understanding. In fact, they are not the result of speculative construction, but reflect long-term trends in the evolution of social policy.

The support of society for its members is a regularity of social life. During the Middle Ages, regular assistance to the needy was provided by the church, peasant communities, private benefactors, that is, non-state institutions. Under such conditions, the scale of social support, as a rule, was extremely limited both in terms of the coverage of recipients and in terms of the level of payments. Social assistance to members of society from the state was of an episodic nature, carried out during extraordinary events (wars, crop failures, natural disasters, etc.).

Since the 18th century, the transition to a system of regular state transfers addressed to the poor began. In the 19th century, social assistance was supplemented by social insurance: in the first case, it was about the redistribution of funds from the better-off in favor of the less well-off, and in the second, there was assumed mutual support of workers [1].

Even if the support takes the form of payments from social insurance funds that provide for co-financing from potential recipients of money or related services, it assumes an active role of the state in determining the rates of insurance premiums, in covering the deficits of extra-budgetary funds, etc. The required resources are provided through the redistribution of part of GDP through the state budget. Although, for example, the receipt of a pension and its size depend on the length of service and the amount of earnings, this relationship is not direct: the recipients of the pension are non-working people, the total amount of the pension received does not necessarily coincide with the amount of insurance premiums, etc. Therefore, we can agree with the point of view that the modern social insurance system largely plays the role that private charity and social assistance performed in the past [14].

In economically developed countries, the scale of social support and their coverage of population differ. When comparing the current situation with the one that existed before the First World War, the general progress of the system of social transfers is obvious both in the coverage of population and in the amount of benefits. Thus, there is a tendency to universalize the provision of social transfers, to strengthen their unconditional nature, and to increase their role in meeting the needs of society members.

The tendency to expand the range of recipients of social transfers while maintaining the principle of conditionality leads to an increase in the costs of administering social assistance programs and creates prerequisites for corruption in their implementation [11]. Consequently, with the development of the system of gratuitous payments, their conditional nature begins to contradict the social orientation of the economy.

After the industrial revolution, the development of public education system was required for economic progress. Although educational services are not considered to be pure public goods, the predominant principle of their provision to students has become free of charge. There is a tendency to increase educational level, the coverage of which within certain age cohorts of population is universal.

In modern economically developed countries, the medical sector is financed on a larger or smaller scale by the state. The volume of these services for a particular patient does not depend on the labor contribution or solvency, which gives reason to speak about the unconditional aspect of such medical programs. Taking into account the increase in the average duration of training in all countries of the world, the tendency to increase the share of public spending on medical services in GDP, it is necessary to state a long-term trend of increasing the role of unconditional (free of charge) services provided directly aimed at preserving and developing human abilities.

At one time, the principle of functioning of free (for consumers) education and health systems was characterized as distribution "in proportion to needs" [15]. It is assumed that all people who have relevant needs can satisfy them for free. At the same time, the distribution "in proportion to needs" was not identified with the guarantee of full satisfaction of needs (for example, until now only universal secondary education is guaranteed, but not higher education). In our opinion, the operation of this principle is also legitimate in modern research.

It is obvious that for socially significant services, the implementation of the distribution principle in proportion to needs has acquired a universal and unconditional character or is approaching it. It is essential that these services are provided free of charge to those who would be able to pay for them in a volume guaranteed by the state. Therefore, free of charge is not caused by insolvency; it is a manifestation of a universal social guarantee.

When ensuring the needs for material goods (consumer goods, housing, etc.), the situation is different. The recipients of social transfers are those who lack the funds to purchase the necessary life benefits.

In our opinion, there is a contradiction inherent in modern society between the tendency to the predominance of the distribution principle in proportion to the needs in areas that directly ensure human development, and the binding of the consumption volume of material goods mainly to the amount of monetary income the distribution of which is characterized by significant inequality.

This contradiction gives rise to two opposite tendencies: to the development of the distribution principle in proportion to needs including in relation to certain consumer goods (personal hygiene products, medicines, textbooks, etc.), and to the curtailment of this principle which leads to a deepening of inequality in consumption.

In our opinion, the current situation in the movement of this contradiction is a milestone. Material goods are distributed in proportion to the needs of significant categories of population today. The universal distribution nature is a natural prospect in the implementation of such a principle. Consequently, a kind of "leap" has matured, characterized by a transition from transfers, each of which is addressed to a certain category of population, to the appearance of payments for everyone. It is this historical context, in our opinion, that generates an increased interest in the UBI problem and motivates realization of pilot projects to implement certain of its principles.

As universal basic income does not claim to fully meet the needs, it should exist along with other transfers focused on the special needs of socio-demographic groups. This allows preventing possible criticism of the UBI regarding the fact that its use as a transfer of the same value for everyone would ignore the specifics of the needs. Obviously, the approach involves limiting the size of the database compared to the option of reducing the social support system to a single transfer.

Distribution in proportion to needs does not exclude the receipt of benefits through the use of money. Gratuitousness is realized here by providing free funds.

The creation of the Association of Basic Income Supporters in 1986 was the beginning of a broad promotion of the UBI concept. The latter has become particularly relevant in connection with the global economic crisis in 2007–2008. Interest in UBI idea continues growing, taking into account the threat of mass technological unemployment as a result of the processes of production robotization, and the use of artificial intelligence and other digital technologies [16].

It is worth noting that the need for a transition period in the UBI use is not always taken into account. This is, in fact, the project of establishing universal basic income at a level above the poverty line [17]. Such a level cannot be achieved without an "instant" breakdown of the system of social

transfers and relevant institutions which is not feasible and would lead to harmful consequences. The position on UBI introduction initially at a level compatible with the preservation of the existing social support system seems to be more verified [18].

The implementation of universal basic income depends on the development degree of the social support system, as the development of the latter implies an expansion of the circle of recipients of social benefits, an increase in the level of cash payments, that is, it reflects the UBI principles, although in a form that is not quite adequate to it.

From this point of view, we can note the spread of money transfer programs, described in detail in the scientific literature with a wide coverage of recipients: child support, guaranteed minimum income, negative income tax, etc. [1]. All of them, to a greater extent than traditional social transfers, reflect certain UBI principles. For instance, a negative income tax under certain conditions has the same distributional consequences as UBI, although it does not have the same universality [11].

We share the position that in the UBI absence, the use of such programs can significantly change the status quo in favor of a full-scale UBI implementation [14]. It seems that all this allows characterizing these programs as transitional forms of universal basic income.

A specific transitional UBI form is "experiments" on its implementation [19]. An experiment in this context means the payment of a transfer to each member of the group covered by the pilot program and previously not eligible for this payment. In relation to the specified group, the transfer has an unconditional character. This practice is called an experiment, as it is supposed to compare changes in the level and quality of life of a group of transfer recipients and a control group, when positive changes are used to further promote the concept and practice of the UBI.

The limited role of experiments is rightly noted: the main attention is paid to the analysis of transfers' effects directly at the recipient level, whereas when implementing the universality principle, derivative effects at the macro level are fully manifested including those remote in time from the moment of the transfer; any experiment is not able to fully implement the universal basic income [20]. At the same time, the form of the experiment reduces the degree of possible opposition to the use of the transfer, as it leaves open the question of the stability of its payment. The evolution of "experiments" leads to the implementation of the UBI principles in transfers to such social communities (residents of a city, region) that go beyond small social groups [21].

The introduction of universal basic income as a large-scale social innovation will undoubtedly have a number of socio-economic consequences. The systematization of the potential UBI effects was carried out, for example, by K. Widerquist [20] and R. Kapelyushnikov [11]. Although the list of the UBI consequences, both positive and negative, is largely identical in these works, their authors come to a directly opposite assessment of the prospects for UBI implementation: K. Weiderkvist considers UBI feasible, and R. Kapelyushnikov says that it is utopia (in practical terms).

It seems that the uncertainty about the future of universal basic income will be overcome including through the use of the transitional UBI forms.

Data and methods

In the *theoretical part* of the study, we proceed from generalization of the historical practice of developing the social support system of population, guided by the unity of inductive and deductive methods of analyzing the development of social phenomena, the interrelationships of their historical and logical forms, dialectical principles of unity and struggle of opposites, the transition of quantitative changes into qualitative ones, the negation of negation and other general philosophical laws of the society development.

In terms of *empirical research*, the authors rely on the following data and methods:

1. Data obtained during a survey [22] of Russian experts, conducted with the participation of the authors in August – October 2020 in order to assess the feasibility of the UBI concept in Russia. The survey was conducted by correspondence questionnaire. It was attended by 52 experts including 27 regional experts (from the Republic of Crimea, the Republic of Sakha (Yakutia), the Chuvash Republic, the Vologda, Voronezh, Nizhny Novgorod and Sverdlovsk Oblasts) and 25 experts from Moscow. The experts represented the research community (13 people), leading universities (13 people: heads of scientific departments, researchers, heads of departments, teaching staff), the business community and trade unions (12 people: experts from among senior executives, the executive committee, advisers to the head), as well as state and municipal authorities (14 people: heads of higher and middle level, specialists of regional executive authorities, city departments). Among the experts, 28 people have an academic degree: twelve are Doctor of Sciences (Economic and Technology), 16 are Candidates of Sciences (Economics, Sociology, Politics, History, Technology, and Physics and Mathematics) [22].

2. The results of a pilot experiment to establish an additional monthly social payment to the target group up to a guaranteed minimum income. A pilot experiment was conducted with the authors' participation in the Vologda Oblast in 2018. The target group consisted of low-income families with children who are recipients of social support measures. The pilot experiment is presented in more detail in [23].

3. The data, obtained based on the results of modeling the results of the implementation of a hypothetical program for the payment of conditional basic income to registered unemployed with the authors' participation. It was carried out on the basis of an expert simulation model of the GDP reproduction of the Russian economy P1-4 [24].

Research results

The theoretical study made it possible to identify trends in the development of forms of social support for population, to justify the maturation of conditions for the transition from its targeting to the expansion of the universality and unconditionality of social payments.

The results of an *empirical studying* in terms of identifying expert assessments of Russian specialists about the UBI feasibility in Russia indicate the following. Among experts, as the results of the 2020 survey showed, there is a relative predominance (54.9%[2]) of the position on Russia's readiness to introduce universal basic income: 49% believe it is advisable to introduce the transitional UBI forms, and 5.9% are confident that the Russian Federation is ready to introduce universal basic income in full compliance with the entire set of criteria inherent in it. Accordingly, 45.1% of experts are convinced that Russia is not ready in principle for the UBI introduction – neither for its transitional forms, nor for its implementation on the basis of the entire set of criteria identifying it. Thus, the majority of Russian experts assess the prospect of introducing a database rather as a real one: if not in full form, then in partial, transitional forms [22].

Based on the expert assessments, which were generalized and systematized [22], the authors have determined the following ***possible scheme for the UBI toolkit implementation in Russia*** which defines the main "contours" of the UBI implementation in the country as proposals for further discussions and research *(Tab.)*.

The UBI toolkit is appropriate for solving (mitigating) the problems of poverty and socio-economic inequality in Russia, ensuring a minimum living standards for vulnerable categories of population. According to the results of the 2020 survey, there were identified quite consistent positions among Russian experts regarding these

[2] Hereinafter – as a percentage of the number of experts who responded.

Potential scheme for the implementation of the UBI toolkit in Russia (based on expert assessments, 2020)

UBI scheme component	Description (comments)
1. Purpose of introduction (problems that can be solved/mitigated)	Mitigating (overcoming) the poverty problem, socio-economic inequality, ensuring a minimum living standards for vulnerable categories of population
2. Key criteria that should be met when introducing	Individuality, monetary form, regularity
3. Implementation forms	Guaranteed minimum income, support for the most vulnerable groups of population
4. Implementation method	Supplement (replacement) of existing social support measures/mechanisms
5. Pilot (experimental) testing	Appropriate
5.1. Целевые категории Target categories	1) Low-income families with children; 2) graduates of universities and secondary vocational educational institutions during the transition from study to the first work place; 3) precariously employed (workers who have to put up with the loss of part of the labor and social guarantees of standard employment that are significant for them)
5.2. Method of forming target groups	To form target groups from among representatives of target categories for several representative entities of the Russian Federation
5.3. Duration	At least 2–3 years
Source: author's calculations based on [22].	

goals: they were supported by more than 60 to more than 90% of the experts who answered the corresponding question (there was an opportunity to choose several answer options).

According to the experts (more than 80%), it is advisable to implement pilot projects that allow testing its transitional forms in order to approbate and test possible risks and potential positive effects when implementing the UBI toolkit in Russia. At the same time, first of all, it is necessary to focus on such identifying criteria as individuality, monetary form, and regularity of payments. Our survey has showed that more than 60–80% of experts consider these criteria to be the key ones. The principles of universality and unconditionality, which are fundamental in the UBI theory, are of secondary importance at the stage of the transition period, as experts believe.

The UBI implementation forms in Russia can be, first of all, a guaranteed minimum income and support for the most vulnerable population groups. The 2020 survey has revealed support for these UBI forms among more than 70 and 50% of the experts who responded (possibility of a multiple answer).

The UBI toolkit can be implemented as a supplement or replacement of existing measures/mechanisms of social support. Experts' opinions are divided on the question of the appropriate method of implementing the universal basic income in Russia (at the same time, it is possible to choose several answer options). Slightly more than half (53.1%) of the experts who answered believe that it is necessary to supplement the existing social support measures, while the rest (46.9%) believe that the UBI can replace them. The solution to this problem can be found in the proposal formulated by one of the experts: *"At the first stage, it could be a tool that complements existing support measures, and after the transition period, it could be a tool that will replace existing support measures (or most of them)"*[3].

The following target categories of population are proposed for the pilot implementation of the UBI toolkit of pilot projects.

1. *Low-income families with children*. During the 2020 survey, this category received the greatest support among Russian experts (80%). It is families with children under 18 years of age that traditionally represent the most massively low-income households in Russia (2013–2018 – more than 70–80%)[4]. In 2020, additional social support measures, taken by the Government of the Russian Federation to combat the consequences of the COVID-19, were

[3] The expert preferred that his questionnaire be processed anonymously.

[4] Distribution of low-income households by main categories. Rosstat. Available at: https://rosstat.gov.ru/folder/13397 (accessed: January 25, 2021).

most focused on families with children including those with low incomes. Some measures were provided on the basis of principles that bring them closer to the UBI tools, for example, a one-time payment of 10,000 rubles for each child aged 3 to 16 years, regardless of the per capita income of the family[5].

2. *Graduates of universities and secondary vocational educational institutions during the transition from study to the first work place*. This category of population was supported by experts during a survey on the possibility of implementing UBI in Russia (52%) for pilot testing of the toolkit. Young people entering labor market for the first time are one of the most vulnerable categories of economically active population [6]. The unemployment rate among young people aged 15–19 (24.7%, 2019) and 20–24 years (14.4%) is noticeably higher than in the age groups of 30 years and older (4.4% or less) and on average in the population (4.6%)[6]. For young people, the transition to stable, satisfactory employment takes an average of 2–4 years [6], it is often associated with negative work experience in conditions of unstable employment [25; 26; 27, etc.]. The unstable situation of young people in the field of employment leads to an unfavorable, unstable financial situation: the share of young people aged 18–29 among the low-income population was about 12–16% in 2013–2018[7].

3. *Precariously employed*, which means the workers who have to put up with the loss of part of the labor and social guarantees of standard employment. 48% of experts recommend it as a target for the experimental introduction of a database in our country. Unstable employment not only leads to a decrease in the quality of employment of employees, but also has a negative impact on the level and quality of life of households [28; 29, etc.].

The extreme form of unstable employment (temporary absence of employment, exclusion from the sphere of sustainable employment) is unemployment. The unemployed have higher risks of poverty relative to population in general[8]. Among the experts in the survey on the possibility of implementing the UBI in Russia, 40% recommended registered unemployed as a target category for the experimental UBI introduction.

The selected categories of the population are low-income families with children, graduates of universities and secondary vocational educational institutions during the transition from study to the first work place, the precariously employed including the unemployed. They are characterized by the most vulnerable position and have poverty risks, low level and quality of life which corresponds to the goals of introducing the UBI tools in Russia, put forward by experts during the 2020 survey.

To conduct a pilot (experimental) implementation of the UBI toolkit in Russia, we propose to form groups from among representatives of target categories in several representative Russian regions. This method of forming target groups for pilot projects was supported by 54.2% of experts during the 2020 survey; according to experts, specific options for its implementation may be the following: 1) one region from each federal district; 2) entities with different living standards from each federal district (for example, two regions from each federal district); 3) divide all regions of the

[5] A one-time payment in the amount of 10,000 rubles to citizens of the Russian Federation residing in the territory of the Russian Federation for each child aged 3 to 16 years who has Russian citizenship. Social support. Measures of the Russian Government to combat coronavirus infection and support the economy. Available at: http://government.ru/support_measures/category/social/ (accessed: January 12, 2021).

[6] Results of the sample survey of the labor force. Rosstat. Available at: https://rosstat.gov.ru/folder/11110/document/13265 (accessed: May 25, 2021).

[7] Distribution of low-income population by the main socio-economic groups. Rosstat. Available at: https://rosstat.gov.ru/folder/13397 (accessed: May 25, 2021).

[8] Social status and living standards of the Russian population in 2019. Rosstat. Available at: https://gks.ru/bgd/regl/b19_44/Main.htm (accessed: May 25, 2021).

Russian Federation into four quartiles according to the population income level and take one region from each quartile for conducting the experiment; 4) 2–3 least financially secured entities of the Russian Federation, as well as 2–3 most secured financial subjects (except Moscow, the Moscow Oblast and St. Petersburg), etc. [22]. The duration of such pilot projects should be at least 2–3 years. This also corresponds to the prevailing position among Russian specialists who took part in the expert survey of 2020 [22].

More specific authors' proposals regarding the schemes for the projects' implementation for the pilot (experimental) implementation of the UBI tools in Russia for the selected target categories of population are as follows.

A potential scheme for implementing the UBI toolkit in Russia for low-income families with children. For this population category, the authors propose the UBI toolkit implementation in the form of a guaranteed minimum income (GMI). It should be established as a differentiated monetary additional social payment, i.e. it does not cancel, but complements the existing system of targeted support. This payment will bring the per capita income in low-income families with children to the value of the regional minimum wage (MWreg), respectively, its monthly amount will be set taking into account the existing income deficit in families relative to the MWreg. It should be addressed to low-income families with children, in which the per capita monetary income after providing them with existing federal and regional regular targeted support measures[9] does not reach the value of the MWreg, and should be assigned to one of the adult members of such families. In order to increase the targeting of payments, we propose to use a differentiated regional living wage which will allow taking into account differences in the composition and size of families with children, as well as equivalence scales, which make it possible to take into account savings on consumption. The scale previously developed by the authors can be used as an equivalence scale (see [23, pp. 12–14]).

Thus, the UBI in the transitional implementation scheme of its tools will be a differentiated targeted family benefit and is intended to solve the problem of absolute monetary poverty in the most vulnerable category of population with high poverty risks (low-income families with children) and increase the effectiveness of the current system of their targeted support.

The possibility and effectiveness of this tool for low-income families with children was confirmed during a pilot project previously implemented with the authors' participation in the Vologda Oblast. Within the framework of the project, the target group of low-income families with children receiving social support measures was paid guaranteed minimum income (GMI). As a result, the families of the target group of the GMI project helped to raise per capita incomes and overcome extreme poverty, solve problems with providing the necessary basic needs (improving nutrition, solving the problem with debts, etc.) [23, etc.].

According to the authors, the implementation of the proposed scheme for the use of the UBI toolkit in relation to low-income families with children, within the framework of a pilot project in the regions, should also be accompanied by a solution to the problem of increasing the labor potential in families. The basic grounds for the pilot project can be: 1) the establishment of a long-term (regular) payment for families with limited labor potential and a high dependent burden (for example, for families in which adult family members are forced to take care of young children, elderly relatives, etc., for families with disabled people, disabled children, etc.); 2) the establishment of a payment for a limited period for families with

[9] When determining the per capita income in terms of support measures, it is proposed to take into account regular federal and regional state support, except one-time cash payments and social assistance for housing and utilities.

underutilized labor potential with an obligation to increase it (for example, a social contract) with the assistance of labor and employment authorities.

A potential scheme for the UBI toolkit implementation in Russia for graduates of universities and secondary vocational educational institutions during the transition from study to the first workplace. In order to reduce the risks of increasing the transition period from study to the first workplace, obtaining stable and satisfying employment, and risks of unstable employment [6] for this category of economically active population, the authors propose the following scheme for the pilot implementation of the UBI toolkit. Organization of temporary employment/professional internship for graduates (for a period of one year) at target enterprises according to the profile of the obtained profession, with the assignment of mentors to them at the place of temporary employment for adaptation, professional development, acquisition and development of skills necessary for work and taking into account the specifics of the first workplace. For the period of temporary employment/professional internship, graduates and their mentors are invited to make a monthly payment: graduates – a monthly payment in the amount established by the regional labor and employment authority, in addition to their income from employment in the organization, mentors – in addition to the available income from employment, a monthly payment in the amount not lower than the minimum wage from the organization at the place of employment. After the period of temporary employment, payments to mentors are terminated. For graduates who do not wish to continue working at the enterprise (to conclude an indefinite employment contract), the UBI payments in the form of unemployment benefits will continue, but not more than 6 months, with the obligation to take active actions to find a job.

A potential scheme for the UBI toolkit implementation in Russia for the precariously employed. *For employed in the legal sector of the formal and informal economy*, who have to put up with the loss of part of the labor and social guarantees of standard employment and who are characterized by a high concentration of manifestations of unstable employment (by the type of contract agreements and employment conditions), we offer to organize and conduct free events for additional professional orientation and professional retraining/advanced training at the expense of the employment service to facilitate the transition to sustainable employment for hire or not for hire. This implies expanding the functions of the employment service to employees with a high concentration of signs of unstable employment. The transitivity of this support form for the precariously employed, unlike others, consists in the fact that instead of regular additional cash payments, they receive unconditional (for this category) professional training services directly aimed at preserving and developing human abilities. Support in the form of an additional regular cash payment (for a certain period) can be continued to those of them who, after training, organize their own business in the form of self-employment and individual entrepreneurship [6].

For unemployed persons registered with the employment service who have an infant child (children), we offer to make a payment within the framework of the pilot project (in case of loss of work by two parents, the payment is assigned to one of them) in the amount of monthly wages for the period of job search, but not more than 6 months, with the obligation to take active actions to find work. Also, when assigning a payment, we propose to take into account the following conditions: loss of work for no more than 12 months before applying to the employment center; employment at the last place of work must be official (at least a year of work); dismissal must be made at the initiative

of the employer; do not include dismissals for misconduct that violates labor legislation. This will reduce the risks of stimulating low-paid workers to dismiss with an increased amount of unemployment benefits, provide assistance to those who have lost legal employment (through no fault of their own, on their own initiative) and "return" them to employment, providing a minimum living standards for the unemployed and their families with a child (children) for the period of searching for a new stable employment.

The feasibility of this transitional UBI toolkit is confirmed by the results of a numerical experiment previously conducted with the authors' participation. It showed that even with the payment of benefits in the amount of monthly wages to all registered unemployed, it is estimated that the annual total state costs will amount to 3.35% of the amount of potential financial opportunities of Russia, and the initial costs will be fully compensated by additional revenues of the consolidated budget [24].

For employed in the shadow economy, we propose to stimulate their legalization as self-employed and individual entrepreneurs, while simultaneously drawing up social contracts that provide for the UBI payment for the period of adaptation to legal employment forms and preferential taxation with inclusion in mandatory social insurance schemes.

Discussion of the research results

Despite the short history of analyzing the UBI concept in Russia, most experts perceive the idea of introducing universal basic income in its transitional forms as partially or fully implemented.

The formation of this position was undoubtedly influenced by the situation associated with the COVID-19 pandemic (recall that the survey was conducted at the pandemic height) including the increase in unemployment and poverty caused by it. Experiments on the UBI introduction were aimed at overcoming them earlier [30]. The coronavirus pandemic required a significant and rapid strengthening of the existing support system for socially vulnerable groups of population, whose number has grown significantly.

In this situation, in Russian and international practice, the principles of social assistance based on the UBI concept have been more fully implemented than before. In Russia in 2020, this was reflected in the introduction of universal payments: a) in the maximum amount (12,130 rubles) the amount of unemployment benefits for April – June to citizens dismissed after March 1, 2020 (regardless of the length of service and the level of earnings at the previous workplace), and in case of children, there was an additional 3,000 rubles for each child under the age of 18[10]; for 2021, the maximum amount of unemployment benefits is 12,130 rubles for the first three months of the unemployment period; 5,000 rubles is for the next three months of the unemployment period[11]; b) wages, in fact, social benefits, to employees of budget organizations who were officially transferred to the self-isolation mode and did not perform their work duties during this period; c) for children aged 3 to 16 years who have Russian citizenship (in the amount of 10,000 rubles); etc. These programs, which go beyond those used before the pandemic, can be legitimately characterized as transitional forms of universal basic income.

The experience of social assistance to the population in the context of the COVID-19 pandemic contributed to solving complex issues related to the UBI concept. The implementation of additional social support measures has shown that: 1) the advantages of the universal principle of

[10] Social support. Measures of the Russian Government to combat coronavirus infection and support the economy. Available at: http://government.ru/support_measures/category/social/ (accessed: June 07, 2021).

[11] On the minimum and maximum amounts of unemployment benefits for 2021: Resolution of the Government of the Russian Federation, dated December 31, 2020, no. 2393. Available at: http://static.government.ru/media/files/HLZaVt6wSQ0yXJiQIJ6dfwKfwlMJA8Y1.pdf (accessed: June 07, 2021).

social support outweigh the advantages of targeted support; 2) universal payments do not lead to an inevitable increase in inflation; 3) universal transfers in crisis situations can be introduced without testing.

The article has dispelled the existing concerns about the significant demotivating effect of social transfers in relation to the individual labor supply. The growing unemployment was forced, so the expansion of the social support scale turned out to be quite justified.

Not only in Russia, but also in many other countries, the spread of COVID-19 encourages the decisive implementation of those progressive socio-economic measures, the adoption of which can be postponed under more favorable financial and economic conditions, allows the use of transitional UBI forms on a wider scale within the framework of state social policy. At the same time, the goal of stimulating aggregate demand is additionally pursued as a Keynesian recipe for combating the economic crisis. Such a secondary effect is another confirmation of the positive potential of transitional forms of the UBI.

Conclusion

The hypothesis of the study, which was in the fact that the formation of the UBI theory and the experience of practical implementation of its principles, have reached a level where a real prospect of active use of transitional forms of the UBI opens up, has been confirmed.

The idea of the universal basic income, which has received wide recognition abroad and arouses considerable interest in Russia, has developed into a theoretical system. The latter includes a description of its principles, which is briefly reflected in the UBI definition. In the development of the UBI theory, the authors consider its introduction as a natural qualitative "leap" (transition) in the historical context of the transformation of the social support system. In the conditions of the impossibility of a one-time transition to universal basic income in its developed form (with all the criteria inherent in it), we consider the UBI introduction in transitional forms, including "experimental" ones implemented through the pilot projects, to be a logical and expedient stage of its realization.

The pandemic situation has contributed to an unprecedented scale of social support for population which is increasingly beginning to comply with the principles of universality and unconditionality inherent in the UBI. This gives reason to consider the use of transitional forms of universal basic income as a real prospect.

In the applied aspect, the authors have generalized and systematized the results of a survey of Russian experts and proposed options for implementing transitional forms of the universal basic income in Russia for the most vulnerable categories of population. Further progress in the study of the UBI problem in Russia is associated with a detailed analysis of the experience of developing social support in the pandemic, with an increase in the number and scale of pilot projects to test the UBI principles, with modeling the possible effects and costs of its introduction.

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Models for the Dynamics of Demographic Indicators in the Conditions of Population Adaptation to Changes in the Socio-Economic Environment*

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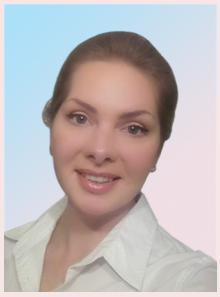

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Abstract. Socio-economic development of any territory is inherently connected with population reproduction, which is predetermined by demographic behavior. Recently, the models for the dynamics of Russia's demographic indicators have been changing, which is characterized by a decrease in the birth and death rates, as well as a relative stabilization of the migration situation. The transformation of demographic dynamics models is a natural result of society's adaptation to the new socio-economic reality. The changes in the behavior of the population are particularly noticeable under the conditions of abrupt transformations of the external environment, observed in the transitional periods of socio-economic systems functioning. In this regard, the purpose of the study was to determine the main models of the dynamics of demographic indicators of the Russian Federation at the present stage of development, which is characterized by a rapid change in the conditions of life activity. Based on the use of the concept of adaptation in the "human-environment" coordinates, we showed the two-dimensional adaptation of the population to changes in the external environment and constructed a decision-tree for the acts of demographic behavior. In empirical part of the study, using methods of logical and statistical analysis, we studied the dynamics of indicators of reproductive, self-preservation and migration behavior of the population in the period from 2000 to 2019, using, respectively, a set of indicators of birth rate, mortality, life expectancy and migration growth. Based on highlighting the specific characteristics of Russia's socio-economic development in 2000–2006, 2007–2015, and 2016–2019, we identified three stages of demographic indicators dynamics, in accordance with which we proposed three models of demographic indicators dynamics, in order to expand our understanding of this phenomenon. The results obtained allowed us to form a methodological basis for future interdisciplinary research in the field of demographic behavior. They can also be used as a methodological basis for the development of demographic policy measures.

Key words: demographic behavior, model, population adaptation, changes, environment.

Introduction

Research on people's adaptive capabilities in the context of modern socio-economic changes is relevant due to several reasons: first, effective management and decision-making on the part of public authorities largely relies on consistency, under which the search for patterns of adaptation mechanisms can serve as a basis for developing a strategy. Second, in a new socio-economic reality, the ways and intensity of interaction between the environment and society are changing, and it leads to the emergence of new forms of interconnection. On the one hand, this opens up broad prospects for improving the level of well-being and quality of life; on the other hand, it triggers new risks and threats. Third, any social or economic transformations will not bring positive results if they are based on a system of behavioral patterns and values that do not meet the needs of society. Thus, studying the issues related to the adaptation of demographic behavior is extremely relevant both in the scientific sense and in the sense of using the knowledge about its means and forms in addressing practical problems that arise in the course of national demographic and socio-economic development. That is why the goal of our study is to determine major models of demographic behavior in Russia at the present stage of its development, which is characterized by a rapid change in living conditions.

Theoretical overview

In the scientific literature, adaptation is considered as "a two-way process of practical interaction of a social subject with the social environment, during which not only the subject, but also the environment is changing[1]", which ensures

[1] Kapto A.S. Social adaptation. In: Osipov G.V., Moskvichev L.N. (Eds.). *Dictionary of Sociology*. Moscow: Norma, 2008. 608 p.

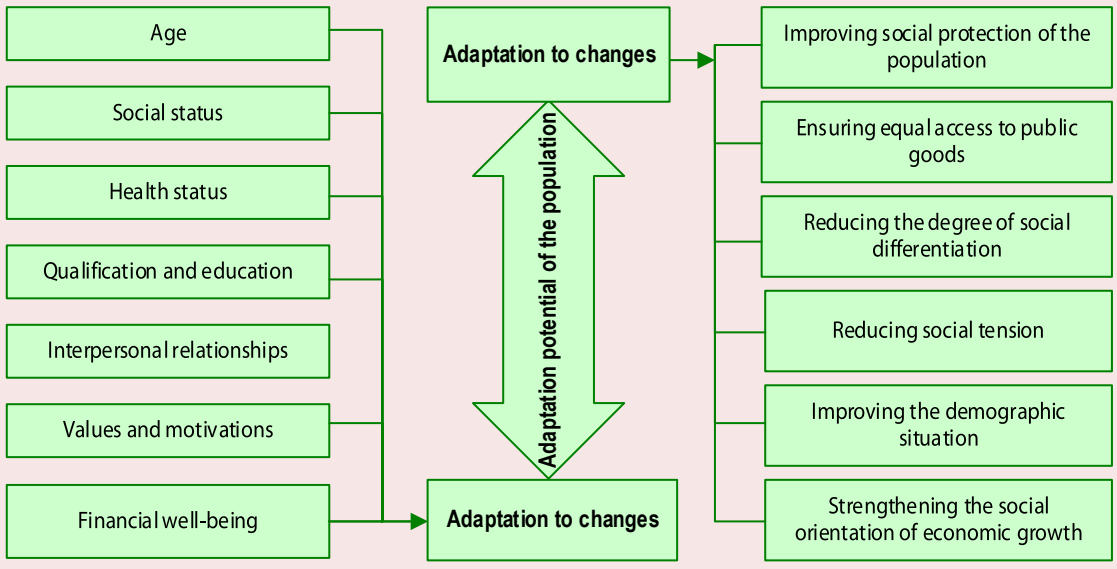
self-preservation of subjects in their life and development. Thus, the process of population adaptation to changes should be considered in two contexts of the "individual – environment" relationship *(Fig. 1);* and two aspects of the "individual – environment" relationship can be distinguished in the adaptation process. In the first case, a person acts as an object that is affected by the environment; adaptation is passive and is called "accommodation" [1]. In the second case, the person themselves influences the environment, they show activity and take on the role of the subject of influence, changing the conditions of life to meet their own needs; it is called "adjustment" [2; 3].

A feature of the adaptation process is the presence of a time lag between the beginning of adaptation and its final result, i.e. its effect is delayed in time. It is obvious that the duration of the time lag depends on the adaptive capabilities of the population due to unequal initial conditions of adaptation.

At the same time, the effectiveness of population adaptation largely depends on the pace of changes in the socio-economic environment, and therefore the study of people's behavioral patterns in the conditions of revolutionary development of society is of considerable research interest [4], since this process is associated with their transformation from one qualitative state to another (transition economy). Changes in the transition period affect the deep, civilizational aspects in the development of society, and they lead to a radical change in models and regulators of socio-economic activity, including demographic behavior [5].

The instability and variability of socio-economic development in the transition period are due to the following major factors: contradictions in the functioning of socio-economic and socio-political institutions; emergence of new institutions and destruction of traditional ones; absence of a value system recognized by the majority of the population as the moral basis of life and at the same time

Figure 1. Two aspects of people's adaptation to changes in the external environment



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acting as a regulator of social action; diffuseness of the social structure amid growing contradictions between people's professional qualification and educational level, their place in the system of social reproduction, on the one hand, the size of property and income and social prestige, on the other hand [1; 6]. All these moments trigger acute social stress. Academician of the Russian Academy of Sciences B.T. Velichkovskii points out that this social stress is changing "the fundamental biological regularity – the difference in the stability of the main age groups of the population, since the negative changes in the mortality rate and life expectancy that arise under its influence occur mainly in people of working age rather than in the elderly and children – the most vulnerable age groups" [6].

As for the adaptation strategies of the Russian population, in the conditions of a rapid change of the external environment, according to N.A. Korovnikova, it is rather a process of re-adaptation (or "a change in the changes") caused by the unpredictability of the future, since traditional adaptation strategies (striving for security, homeostasis, stability) do not catch up with the pace of socio-economic processes and determine the nature and direction of transformations that were associated with profound changes in the system of axiological orientations of the population, including "changes in priorities in relation to their individual needs, the interests of society and the state" [7].

Thus, periods of intense changes always become a testing stage not only for an individual, but also for the whole society, because they force people to mobilize their adaptive capabilities in a changing environment. New survival strategies are emerging and being implemented: from passive forms of retreat, escape from reality to aggressive survival and value simplification [8]. At the same time, social stress is growing, and it weakens the effectiveness of adaptation strategies and increases the impact of negative factors.

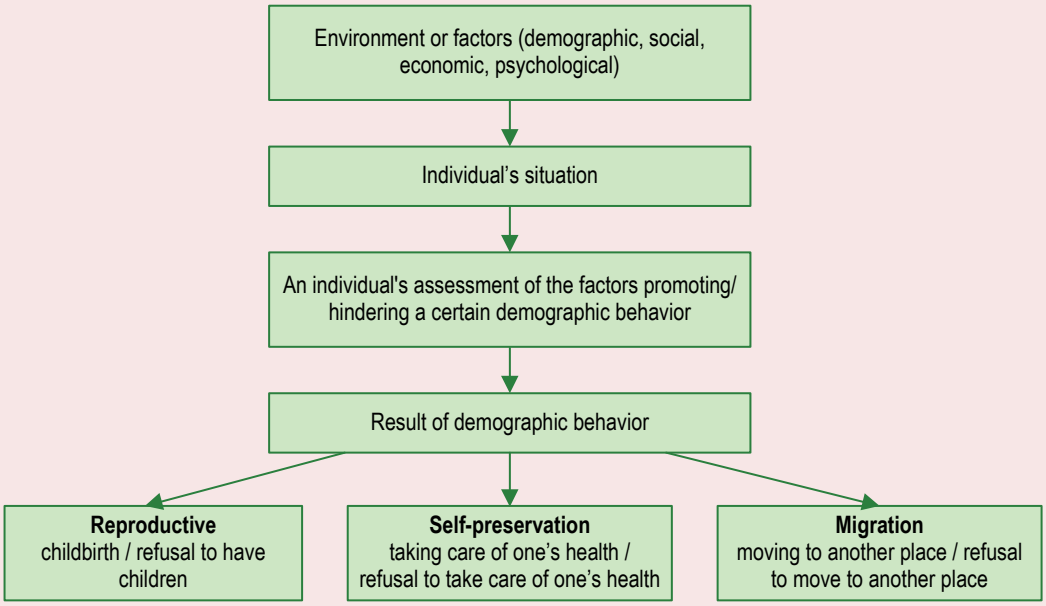
When we consider adaptation mechanisms in the "person – environment" system, we see that demographic adaptation represents socially determined forms and ways to implement the needs of an individual or a family that affect population reproduction. It is expressed in changes in reproductive, self-preservation and migration behavior.

Demographic behavior is closely related not so much to socio-economic conditions in which people live, but rather to the perception and subsequent assessment of these conditions. This assessment mainly contributes to the formation of behavioral stereotypes of various socio-economic groups. Thus, all the provisions we have mentioned above are factors that determine the dynamics of demographic indicators. Indicators of fertility, mortality and migration are formed through reproductive, self-preservation and migration behavior and are implemented through the prism of perception of each of the factors according to their degree of significance. Moreover, this perception can be direct and indirect.

A significant amount of studies both in Russia and beyond are devoted to fertility and reproductive behavior of the population. Western demographers, for example P. McDonald and K.W. Wachter, paid great attention to the problems of fertility and its determination [9; 10]. A significant contribution to the development of ideas about fertility and reproductive behavior was made by Russian demographers, economists, sociologists, such as V.N. Arkhangelskii, O.N. Kalachikova, M.A. Gruzdeva, E. Mitrofanova[2] and O.V. Semenova [11; 12; 13]. Trends and driving forces of mortality and self-preservation behavior are considered in the works of E. Karger and D. Westen [14]; M. Seklecka et al. [15], M.A. Miller [16], L.A. Leshchenko [17],

[2] Mitrofanova E. Marriages, partnerships, birth rate of generations of Russians. *Demoscope Weekly*, 2011, no. 477–478. Available at: http://www.demoscope.ru/weekly/2011/0477/tema05.php (accessed: November 9, 2020).

Figure 2. The layout of making a decision on the act of demographic behavior



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E.A. Trushkova [18], etc. The specifics of migration processes and migration behavior is analysed in the works of S.V. Ryazantsev [19; 20].

In our opinion, the dynamics of demographic indicators is determined by the behavioral mechanism in the implementation of reproductive, self-preservation, and migration plans and has a pronounced adaptive character *(Fig. 2)*.

In the case of reproductive behavior, the direction of actions related to having/not having a child and the desired number of children is based on the principle of ordering the events perceived by the individual, which are associated with the prospect of striving for the best results for this individual (family). In self-preservation behavior, the individual's self-preservation attitudes are correlated with his/her current life situation. On the basis of this ratio, an assessment of priorities is made, which results in the adjustment of the lifestyle toward improvement (preservation of health) or rejection, and sometimes aggravation of the negative components of the lifestyle. In this way, a decision is made in the case of migration behavior (to change the place of residence or not). The dynamics of demographic indicators become the observed result of the adaptation of demographic behavior. Assessing this dynamics is the goal of our study.

Data and methods

The methodological basis for our study was the provision that demographic behavior includes three components (reproductive, self-preservation, migration), and specific features of demographic dynamics models are associated with the adaptation of the population to the changing conditions of socio-economic environment for each of these components.

We substantiate and interpret demographic dynamics models by analyzing the dynamic series of the corresponding indicators:

– fertility indicators include crude birth rate, total fertility rate, age-specific fertility rates for women of fertile age;

– mortality rates are estimated by the crude death rate, infant mortality rate, life expectancy;

– the dynamics of migration indicators are represented by the coefficient of migration gain.

The study uses data from the Federal State Statistics Service of Russia for 2000–2019[3].

Results and discussion

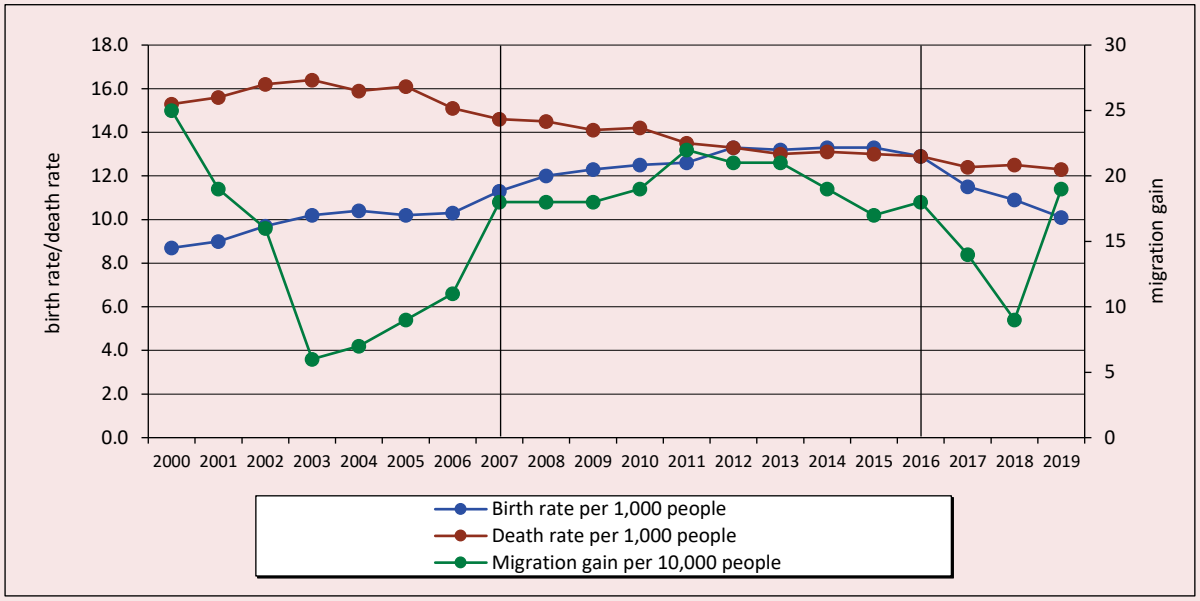
The adaptation of demographic behavior is analyzed on the example of Russia's demographic dynamics indicators for 2000–2019. *Figure 3* shows that the dynamics of indicators of natural and mechanical movement of the population during this period were contradictory – there were periods of improvement as well as deterioration.

We have identified the following periods depending on the state of the socio-economic environment surrounding individuals, and the actions of those factors under the influence of which the adaptation of demographic dynamics takes place:

1) the period of 2000–2006, associated with a stable economic situation, an increase in people's welfare and the purchasing power of income, as well as a favorable psychological climate in society, which was reflected in a decrease in mortality rates, an increase in the birth rate; in addition, since 2003, migration gain dynamics have been positive;

2) the period of 2007–2015, associated, on the one hand, with the deterioration of economic development indicators as a result of a series of crises, starting with the global financial crisis of 2008, which was reflected in the stabilization of the rate of migration gain and even its decline by the end of the period; at the same time, the birth and death rates, being quite inert, maintained positive dynamics; moreover, at the end of the period under consideration, there was a slight natural population gain;

Figure 3. Indicators of Russia's demographic dynamics in 2000–2019



Source: *Regions of Russia. Socio-Economic Indicators*. Available at: https://rosstat.gov.ru/folder/210/document/13204 (accessed: March 25, 2021).

[3] *Regions of Russia. Socio-Economic Indicators*. Available at: https://rosstat.gov.ru/folder/210/document/13204 (accessed: March 25, 2021).

3) the period of 2016–2019, associated with a further complication of the economic situation due to the sanctions policy against the Russian Federation, dramatic decline in real incomes and deterioration of the psychological climate in society; all this had a negative impact on the birth rate and migration gain while mortality stabilized.

A more profound analysis of trends and drivers of demographic dynamics based on a wide set of statistical data[4] and conducted with the use of logical and mathematical analysis allowed us to identify the main characteristics of demographic dynamics models in the context of the main components[5]. According to the *Table*, for the period from 2000 to 2019, there have been significant changes in the demographic dynamics, which are closely related to the adaptation of the population to new socio-economic challenges and which are an integral element of the modern socio-economic, historical and cultural stage in the development of the Russian Federation.

Patterns of the dynamics of demographic indicators in the conditions of adaptation to the changes in the environment

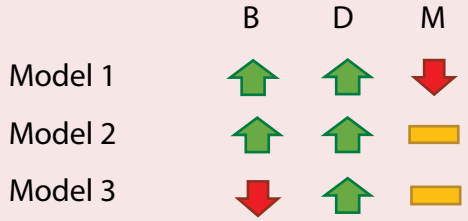
Stage	Fertility indicators	Mortality indicators	Migration indicators
2000–2006	Increase in TFR* from 1.19 to 1.29 births; high birth rate in the group of women aged 15–19 (27.4‰); peak birth rate in the group aged 20–24; sharp decrease in the birth rate in older age groups: 35–39, 40–44, 45–49 years of age	Mortality rate remained at 15.3–16.4‰; infant mortality rate decreased from 13.3 to 10.2‰; life expectancy increased from 65.3 to 66.6 years; key factors: accessibility of healthcare services and life safety	Coefficient of migration gain has significantly decreased: from 25 to 11 people per 10,000 people; key factors: not only high rates of population entry, but also significant indicators of population outflow from the current place of residence
2007–2015	Significant increase in TFR from 1.29 to 1.7 births; decrease in intensity of births in the group aged 15–19 to 24‰; concentration of births in the groups of 20–24 and 25–29 years of age; sharp increase in the birth rate in older age groups: 35–39, 40–44, 45–49 years of age; key factor is the introduction of maternity capital	Mortality rate decreased from 14.6 to 13.0‰; infant mortality rate decreased from 9.4 to 6.5‰; life expectancy increased from 67.5 to 71.4 years; key factors: accessibility of healthcare services, high quality of life and decent working conditions	Coefficient of migration gain has stabilized at the level of 17–18 people per 10,000 people; peak value was in 2011 and amounted to 22 people per 10,000 people; key factors: on the one hand, decline in Russia's economic attractiveness for those who enter into Russia; on the other hand, lack of sufficient income to arrange departure of the population
2016–2019	Decrease in TFR to 1.58 births; decrease in birth rate in the group aged 15–19 from 24 to 16.1‰; concentration of births falls on three age groups: 20–24, 25–29 and 30–34 years old; high birth rate in older reproductive ages; key factor is the change of reproductive attitudes, postponement of births	Mortality rate has stabilized at 12.3–12.9‰; infant mortality rate decreased from 6.0 to 4.9‰; life expectancy increased from 71.9 to 73.3 years; key factors: decent working conditions and, to a lesser extent, availability of healthcare	Coefficient of migration gain has stabilized at the level of 18–19 people per 10,000 people; at the same time, in 2018, it dropped dramatically to 9 people per 10,000 people; key factors: on the one hand, decline in Russia's economic attractiveness for those who enter into Russia; on the other hand, lack of sufficient income to arrange departure of the population

* TFR – total fertility rate.
Sources: *Regions of Russia. Socio-Economic Indicators.* Available at: https://rosstat.gov.ru/folder/210/document/13204 (accessed: March 25, 2021); [21; 22].

[4] *Regions of Russia. Socio-Economic Indicators*. Available at: https://rosstat.gov.ru/folder/210/document/13204 (accessed: March 25, 2021).

[5] These models showing the dynamics of demographic indicators are based on our research published at the previous stages of the work [21; 22].

Figure 4. Models reflecting the dynamics of demographic indicators in the conditions of adaptation of the population to the changes in the socio-economic environment



(B – birth rate; D – death rate; M – migration)
Source: own compilation.

In particular, the evolution of the birth rate was expressed in a decrease in such indicators as crude birth rate and total fertility rate, which reflects the orientation toward a small family as a response to a high level of instability, since individuals make their choice based on the rational possibility of creating optimal conditions for supporting and upbringing their child.

In addition, an increase in the average age of motherhood and age-related fertility rates in favor of women of older fertile groups is associated with a change in value attitudes and women's orientation toward education and career. Also, the increase in age-specific birth rates in older ages is due to the desire to acquire financial independence and economic viability, and the development of reproductive medical technologies.

Changes in the dynamics of population mortality rates are associated, first, with the development of medical technologies for providing emergency and high-tech care, focus on the prevention of morbidity, and increase in the detection of diseases. Second, improving the standard of living and promoting a healthy lifestyle, among other things, through the media, stimulate a change in people's value attitudes and promote health preservation and life-prolonging strategies. In addition, the structural readjustment of the economy and the development of service industries have led to a reduction in the number of people employed in harmful and dangerous working conditions; it reduces the risks of injuries and occupational diseases and has a positive effect on the mortality rates.

The nature of the dynamics of population migration indicators in 2000–2019 has also undergone changes. The stabilization of the volume of migration flows is associated with the state migration policy implemented over the past years, a decrease in economic incentives for migration, as well as the exhaustion of migration potential.

Thus, we can say there exist three models for the dynamics of demographic indicators that have developed as a result of people's adaptation to the changes in the socio-economic environment *(Fig. 4)*.

The first model, which has developed in the conditions of a stable macroeconomic situation and an increase in people's welfare, includes an improvement in the indicators of the natural movement of the population (birth rate and mortality) with a decrease in the intensity of mechanical movement.

The second model is characterized by a further improvement in the indicators of the natural movement of the population with the stabilization of the volume of migration flows, which is primarily due to the deterioration of the macroeconomic situation.

The third model is determined by the preservation of the positive trend of reducing mortality and stabilizing migration flows, while there is a decrease in the birth rate against the background of a decline in living standards and a lack of people's confidence in the future.

Thus, the hypothesis about the adaptive nature of the dynamics of demographic indicators in connection with the change in the conditions of the socio-economic environment was confirmed.

Conclusion

The current stage of Russia's development is characterized by intensive changes in the socio-economic condition of society; these changes are associated with the instability of the macroeconomic situation and the transformation of the technological and social foundations of social development. The uncertainty of the future path of development, the lack of confidence in the future, and a high level of stress are reflected in demographic indicators – the birth rate is decreasing and the death rate is increasing, despite all the efforts of the authorities to implement an active demographic policy.

Based on the results of the study, we have identified three models reflecting the dynamics of demographic indicators of Russia. They are linked to the specifics of the socio-economic development of the country in different periods and they differ in the nature of reproductive, self-preservation and migration behavior; this is what determines the scientific novelty of our present work.

The practical significance of the research lies in the possibility of using the acquired knowledge in the practice of state and regional management and strategic planning when substantiating effective measures of demographic policy.

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Health-Saving Attitudes as a Factor Promoting Self-Preservation Behavior: Approaches to the Study and Experience in Typology*

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Abstract. Under the conditions of conceptual transition of public health policy from considering citizens as passive consumers of medical services to their awareness of their own active position in health preservation, it becomes fundamentally important to understand the types of health care attitudes of the population. The aim of the study was to make a typology of the population according to the nature of health-saving attitudes and to study its influence on the dissemination of healthy lifestyle practices. We have analyzed and summarized approaches to the interpretation of health-saving motivation and classification of health care motives. We reviewed the experience of applying cluster analysis in studies of health behavior. We found that most of them use self-preservation practices as indicators for typology, while the equally important value-motivational component is most often left out of sight. Our study is designed to fill this gap. The results of the sociological monitoring of the physical health of the Vologda Oblast population in 2020 served as the information base. The motives of health care were considered in inseparable interrelation with the degree of health care and responsibility for it. We used the cluster analysis method (hierarchical and k-means method) to make a typology of the population. In the course of clustering we identified three groups of population according to the nature of health saving attitudes: 1) responsible, but unmotivated, caring little or no concern for health, 2) sharing responsibility, motivated

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and caring for health, 3) responsible, motivated and caring for health. We defined a socio-demographic portrait of representatives of each cluster. Representatives of the third cluster lead the healthiest way of life, while more than half of the respondents of the first cluster do not take any measures in relation to health. The results of the study have an explicit practical value in terms of managing self-preservation behavior.

Key words: health-saving attitudes, health care, motivation, responsibility for health, healthy lifestyle practices, typology, sociological survey, cluster analysis.

Introduction

In recent decades, Russia has seen a conceptual transition of health policy from considering citizens as passive consumers of medical services to realizing their own active position in maintaining health [1]. In Western countries, this transition occurred much earlier – back in the 70s of the 20th century within the framework of the health promotion policy [2, p. 168]. This fact actualizes a more detailed study of the population's attitude to their own health including individual health-saving attitudes. As noted by Doctor of Sciences (Sociology) I.V. Zhuravleva, the attitude to health is one of the central concepts of health sociology, the subjective side of which is characterized *by the motives of activity in the field of health* [3, p. 37, 40]. Most often, they mean a set of external and internal stimuli that encourage an individual to work to preserve health and implement health-saving behavior [4, p. 23]. The motives of health care are associated with the awareness of the importance of meeting the need for self-preservation, due to the level of development of self-preservation norms, culture, health sector, and public consciousness. They initiate an individual's behavior to meet the need to preserve health, contribute to the choice of a strategy for self-preserving behavior, and regulate behavior based on a built-up motivational model [5, p. 17]. Motivation in the field of health largely determines the formation of appropriate attitudes toward health, interest in it, as well as the choice of forms and tools for maintaining a healthy (or unhealthy) lifestyle [6, p. 20].

In addition to motivation, an *individual's concern for his or her health* is largely determined by the *responsibility degree for the condition* which is formed under the influence of the established social norm [3, p. 72]. That is why in a number of foreign and domestic studies, when studying attitudes toward health, *personal responsibility for health* is considered inseparably with motivation. The works of V. Cocker and T. Abel [7], Y. Ivanevich and M. Matteson [8], I.V. Zhuravleva, L.S. Shilova [3; 9], N.L. Rusinova and J.V. Brown [10], etc. raise the problem of individual responsibility for health as an integral element of the attitude to health.

A number of domestic studies have proved the predominance of the instrumental nature of the health value among Russians [3; 11–13]; it means that health for population is most often not an end in itself (a fundamental value), but only a tool for achieving significant goals in life. The structure of motivation in the field of health develops during a person's life and reflects the socialization peculiarities. For example, if health is seen mainly as an instrumental value for young people, then, on the contrary, its fundamental importance increases as the body grows older and worsens [3, p. 59]. Most often, health becomes the main priority of life in old age, when a person already has chronic diseases and ailments. This fact actualizes the

need to increase the fundamental value of health, stimulate motivation to take care of it from an early age. Motivation for healthy behavior should become a stable process – one of the lines of human development throughout life, and not a state in a specific period of time [14, p.116].

In addition, the gap, revealed in Russian studies between the high value of health, claimed by people and its low practical implementation [15, p. 223], determines the relevance of studying the individual characteristics of health-saving attitudes, in particular their various types among population.

Health-saving attitudes, including motivation to take care of health act as a "trigger" mechanism of self-preserving behavior, are the most "flexible" element of it, and are more subject to regulation and correction, therefore, their study can serve as a basis for the development of management tools in the direction of forming the desired behaviors in the field of health promotion.

The purpose of our work is to typify the population by the nature of health-saving attitudes and to study its impact on the spread of healthy lifestyle practices. To achieve the goal, we have implemented the following tasks: have generalized theoretical and methodological approaches to the study of attitudes to health care, in particular, health-saving motivation; have carried out the typology of the population by the nature of health-saving attitudes on the data of a sociological survey of the Vologda Oblast population; and have studied the socio-demographic parameters of the identified types, as well as the prevalence of healthy lifestyle practices among them.

Theoretical aspects of the research

As the motivation for health care is a fundamental component of health care and acts as an internal subjective mechanism for regulating self-preserving behavior, the review of scientific approaches to the study of health-saving attitudes will focus on it.

Motivation to take care of health for the first time appeared as a research object in the framework of *social psychology*. One of the most common concepts abroad has become the *concept of persuasion in health benefits* (*I. Rosenstock, M. Becker*) [16] according to which motives (or so-called incentives) are the driving force of health actions *(Tab. 1)*. It is the motives that determine the change in an individual's behavior in relation to his or her own health, based on whether it will bring a person a "benefit" or not.

In accordance with the theory of justified actions of I. Ajsen and M. Fishbein, behavior in relation to health is primarily determined by the attitude and subjective norm [17]. If the attitude is an individual's opinion about the possible consequences of his or her behavior and the results, then the subjective norm is nothing more than an assessment of possible reaction of other people to such behavior, expressed, among other things, in the personal motivation of compliance with social expectations. Thus, health-saving motivation in this case is an important regulator of social norms of behavior in relation to health.

Motivation to take care of health in the framework of social psychology is considered in close relationship with the category *"need for health"*. According to *A. Maslow's dynamic concept of needs,* motives are determined by needs that have several levels: the first and lowest level is physiological (the need for food, water, homeostasis); the second is the need for freedom, security; the third is the need for love and belonging; the fourth is the need for respect; the fifth and the highest level is the need for self-realization [18]. Each new need arises only when the underlying one is satisfied. Based on this hierarchy, the need for health is a component of the highest level. The need for health is realized in health care activities, the choice of which a person makes under the influence of formed motives. Needs and motives influence each other. However, if the needs can be reflected

Table 1. Research approaches to interpretation of health-saving motivation

Scientific field/school		Authors	Interpretation of motivation
Health psychology	Concept of need	A. Maslow	Health-saving motives = the need for self-realization (in health realization), self-preservation at all levels: biological, psychological, social.
	Concept of persuasion in the health benefits	I. Rosenstock M. Becker	Health actions are considered from the point of view of the "cost – benefit" system, while the driving force of actions is motives (incentives). Behavior change occurs as a result of following motives that bring "benefits" in situations when a person is faced with a choice of conflicting motives.
	Theory of justified actions	I. Ajzen, M. Fishbein	Health behavior is determined by an attitude and a subjective norm. An attitude is an individual's opinion about the possible consequences of his behavior and an assessment (positive or negative) of its results. The subjective norm is the opinion about the possible reaction of other people to such behavior and *personal motivation* for meeting such expectations. It means motivation is an important regulator of the norms of behavior in relation to health.
	Concept of "relationship psychology"	V.N. Myasishchev, R.A. Berezovskaya	Health-saving motivation is an integral part of the attitude to health. The value-motivational component plays the role of a link between the cognitive and behavioral components of the attitude to health. Motivation is associated with the internal acceptance of the health value and the determination of the activity degree in preservation and development of one's own health.
	Activity-based approach	N.V. Yakovleva and etc.	Motivation to take care of health is one of the components of health-saving behavior along with health self-assessment, health-saving attitudes, a system of health-saving actions.
Health sociology	SPB concept. Value-motivational approach	A.I. Antonov, M.S. Bednyi, V.S. Zotin, V.M. Medkov, I.V. Zhuravleva, L.S. Shilova, L.Yu. Ivanova, G.A. Ivakhnenko	Health-saving motives are a component of self-preserving behavior and are considered in an inextricable relationship with the needs for preserving life and health at all stages of the life cycle. The motives of health-saving are, first of all, the motives of life expectancy.
Social demographic		I.B. Nazarova, A.A. Shabunova, V.R. Shukhatovich, O.N. Kalachikova, P.S. Korchagina, A.V. Korolenko	Health-saving motivation is a component of self-preserving behavior. The motives of health care indicate the true reasons for choosing health-saving behavior.
Source: own compilations.			

at different levels: biological, physiological, psychological, then motives arise at the highest level of reflection of needs – their awareness [3, p. 72].

Based on the provisions of *the concept of "psychology of relationships" (V.N. Myasishchev, R.A. Berezovskaya)*, health-saving motivation is an integral part of the attitude to health [15; 19]. At the same time, the value-motivational component, in which it is included, plays the role of a link between the cognitive and behavioral components of the attitude to health. The motivation of health saving is associated with the internal acceptance of the health value and the determination of the activity degree in its preservation and development [15, p. 223].

In Russian social psychology, an activity-based approach is also common in the study of self-preserving behavior. For example, the works of N.V. Yakovleva and her co-authors consider

motivation to take care of health as one of the components of health-saving behavior along with health self-assessment, health-saving attitudes, and a system of health-saving actions [20–22].

Within the framework of *health sociology*, there has been developed the *concept of self-preservation behavior (A.I. Antonov, M.S. Bednyi, V.S. Zotin, B.M. Medkov, I.V. Zhuravleva, L.S. Shilova, L.Yu. Ivanova, G.A. Ivakhnenko, etc.)*. According to its provisions, the motives of health-saving are a component of self-preserving behavior and are considered in an inseparable relationship with the needs for preserving and strengthening health at all stages of human life cycle. Thus, health-saving motives, first of all, are the motives of life expectancy. The value-motivational approach laid down in the basis of this concept is largely based on the categories of the theory of social psychology needs, but at the same time, considers health-saving activity as a kind of directly demographic behavior, and therefore recognizes its contribution to the determination of key demographic parameters: mortality, life expectancy and fertility of population [23, p. 253].

The study of the motivation of self-preserving behavior is also developing in the works of socio-demographic orientation (I.B. Nazarova [24], A.A. Shabunova, V.R. Shukhatovich [25; 26], O.N. Kalachikova, P.S. Korchagina [27], A.V. Korolenko [23], etc.). Within their framework, health-savings motives are interpreted more broadly, reflecting not only the survival motives, but also a wide range of reasons for choosing measures taken in relation to one's own health.

In the scientific literature, there are different approaches to the classification of health-saving motives *(Tab. 2)*. For example, Doctor of Sciences (Philology) A.I. Antonov divides them into econo-

Table 2. Approaches to the classification of health-saving motives

Authors	Types of motives
A.I. Antonov, T.N. Shushunova, E.S. Revyakin	- economic (related to the achievement of certain economic goals), - social (related to the achievement of goals that consist in increasing or maintaining a certain social status by a person), - psychological (determine the achievement of purely personal, internal goals of the individual)
T.V. Karaseva, E.V. Ruzhenskaya	- motives of lifestyle (humanistic, rehabilitation and recreation, personal prestige and achievement), - personal and professional development (cognitive, self-development, professional self-improvement), - social environment (identification, socialization, self-affirmation associated with a sense of duty), - pragmatic (competitiveness, compliance with professionally significant qualities, educational, negative motivation), - hedonic (emotional, psychophysiological, reflexive-volitional)
I.V. Zhuravleva, N.V. Lakomova	- health deterioration, - fear of a possible illness, - the desire to be stronger and healthier, - the impact of information from medical professionals, - the impact of information from the media, - behavior and example of others, school education, family traditions (upbringing)
N.S. Grigor'eva, T.V. Chubarova	- the motive of preserving health (when it is important to save what is it, and not to take actions that could harm health), - the motive of preventing the disease (which can be based on simply wanting to hurt, to go to the clinic to spend money on medicines and the procedure time, etc.) motif disability (can be an obstacle for studies or career development), - the motive of obtaining satisfaction from the state of one's health, the ability to improve physically, play sports, dance, etc.
Source: own compilations.	

[1] Antonov A.I. *Microsociology of the family: Study Aid.* Moscow: INFRA-M, 2005, p. 330.

mic, social and psychological[1]. At the same time, as already noted earlier, self-preservation motives are identified with the need for certain periods of life (the need for longevity). Economic motives are associated with the achievement of certain economic goals, namely, with the increase or preservation of an individual's economic position obtaining material benefits. In this case, health is considered by an individual as an economic category that requires significant investments, and is associated with a set of opportunities related to work and income generation [5, p. 18]. *Social motives* are associated with the achievement of goals that consist in increasing or maintaining a certain social status by a person. They are largely determined by the sociocultural norms which have developed in society. *Psychological motives* determine the achievement of purely personal, internal goals of the individual (personal interest to live up to a certain age) [28]. The same classification is followed by T.N. Shushunova [5], E.S. Revyakin [28], etc.

The researchers T.V. Karaseva and E.V. Ruzhenskaya identify the following types of health care motives: *lifestyle* motives (humanistic, rehabilitation and recreation, personal prestige and achievement), *personal and professional development* (cognitive, self-development, professional self-improvement), *social environment* (identification, socialization, self-affirmation associated with a sense of duty), *pragmatic* (competitiveness, compliance with professionally significant qualities, educational, and negative motivation) and *hedonic* (emotional, psychophysiological, and reflexive-volitional) [4].

The works of Doctor of Sciences (Sociology) I.V. Zhuravleva and her co-authors present another classification in which health-saving motives are considered as factors-stimuli of self-preserving behavior and are divided into such types as *health deterioration, fear of possible illness, the desire to be stronger and healthier, the influence of information from medical professionals, the impact of information from the media, behavior and example of others, school education, family traditions (upbringing)* [3; 29].

Doctor of Sciences (Politics) N.S. Grigorieva and Doctor of Sciences (Economics) T.V. Chubarova classify health-saving motives into motives of *preserving health, preventing illness, loss of working capacity and obtaining satisfaction from the state of their health, the ability to physically improve, play sports, dance*, etc. [30, p.205].

In this work, we have selected the following indicators for population typologization by the nature of health-saving attitudes: the range of motives that encourage taking care of health, the degree of health care severity (motivation degree), and recognition of responsibility for their own health (the level of an individual's self-determination).

Methodological aspects of the research

A lot of works have already carried out the typology of population according to certain parameters of health-saving behavior by means of statistical methods, in particular cluster analysis. For example, based on the case study of the wave of the Dutch cohort study SMILE, there are identified three population groups by cluster analysis on five aspects of lifestyle (smoking cessation, alcohol consumption, fruit consumption, vegetable consumption and exercise): unhealthy (low probability of physical activity, consumption of vegetables and fruits, moderate probability of compliance with the norm of alcohol consumption and smoking), healthy (high probability of compliance with the norm of physical activity and alcohol consumption, moderate probability of compliance with the norm of smoking, C. Chan and S. Leung, using a cluster analysis of survey data from Hong Kong residents, identified two population models in relation to physical education and proper nutrition – "healthy" and "less healthy" [32].

In a Russian study, A.V. Zelionko and his co-authors have identified three risk groups of population by the level of medical awareness and

motivation for health-saving behavior (well-being, relative and absolute risk) through cluster analysis [33]. In the work of E.P. Ammosova and her co-authors, the cluster analysis by the k-means method allows dividing the set of respondents into two groups depending on their attitudes toward their own health (passive position, active position) [34]. The study of N.M. Vasilyeva and M.D. Petrash, using clustering, carries out a typology of medical personnel depending on specific self-preservation practices and self-assessments of health (non-smokers and non-athletes with high and average self-assessments of health; smokers, but engaged in sports and evaluating health as average; non-smokers, engaged in sports and evaluating health as good) [35]. Based on the data of a sociological survey of enterprises' employees using cluster analysis, E.A. Riazanova has identified three types of risk-taking behavior: "low level of risk-taking, passive", "medium level of risk-taking, active" and "high level of risk-taking" [36]. Ya.M. Roshchina, based on the data of the Higher School of Economics, reflecting the practices of lifestyle in relation to health, using the k-means cluster analysis, has identified eight types of lifestyle that differ in the degree of negative effects on health, as well as the severity of its various factors [37].

Despite a large number of studies in the direction of the population typology by the nature of health-saving behavior, most of them use self-preservation practices directly as indicators for its implementation, while an equally important value-motivational component on which the decision on the implementation of certain actions in relation to health directly depends, most often remains out of sight. Our study is designed to fill this gap and expands the understanding of the types of health-saving attitudes that have developed in the population. Taking into account such aspects as the nature of motivation to take care of health, the degree of its severity and responsibility for health in the implementation of the population typology is a pronounced scientific novelty.

The information base of the study is the results of the next stage of the sociological monitoring of the physical health of the Vologda Oblast population, conducted by the Vologda Research Center of RAS in 2020 in the form of a handout questionnaire. The survey covered the population aged 18 years and older living in the territory of two major cities – Vologda and Cherepovets, as well as 8 municipal districts of the region. The sample size is 1500 people. The sampling error does not exceed 5% (the sample is quota-based by gender and age).

In order to typologize population by the nature of health-saving attitudes, we have used *cluster analysis method* which allows identifying the most similar objects in the data array and combine them into groups. In our study, the *motives of health care* are considered in an inextricable relationship with *health care degree* and *responsibility for it* and are evaluated using the appropriate questionnaire questions and encoded variables *(Tab. 3)*. At the first stage, the article selects variables for clustering, they are brought to a single form (standardization). At the second step, there is performed a hierarchical cluster analysis on a random sample (30 observations) (to determine the number of clusters), followed by an iterative cluster analysis using the k-means method (for the typology of the entire population of respondents) at the third stage. The measure of similarity of objects based on the selected features is calculated using the Ward method. The square of the Euclidean distance is used as a distance measure. The work carries out statistical data processing using the IBM SPSS STATISTICS 22 application software package.

Table 3. Indicators reflecting the respondents' health-saving attitudes

Questionnaire element	Health care degree	Motivation nature	Responsibility for health
Questionnaire question	To what extent do you take care of your health?	If you care about your health, what are your motivates?	Who do you consider responsible for your health?
Characteristics (answer options)	- I care very much - Mostly I care - I don't care enough - I don't care at all (not motivated)*	- The desire to have healthy children - The desire to increase (maintain) performance - Unwillingness to cause trouble, to be a burden to loved ones - Unwillingness to face medicine - The need for good health - Fear of getting sick - The desire to be an example for your children, loved ones - The desire to achieve significant goals in life (in work, study) - The desire for longevity - The desire to look good, to like - Deterioration of health, illness	- I consider myself responsible for my health - Family, relatives - State - Medical workers - Employer

* Those choosing this option did not answer the question about the motives of health care.
Source: Authors calculations according to the questionnaire for monitoring the physical health of the Vologda Oblast population in 2020.

Main results

The typology of population by the nature of health-saving attitudes. According to the results of the cluster analysis, the respondents are divided into three groups *(Tab. 4)*. The *first* group include respondents who are not motivated to take care of health, as a result, they care little or not at all for it, but, nevertheless, they recognize personal responsibility for their own health (*responsible, but unmotivated, caring little or not caring for health – 41%*). This type of population seems to be the most vulnerable in terms of maintaining health, as weak health-saving motivation or its complete absence, even with the awareness of personal responsibility for health, cannot ensure the effective implementation of healthy lifestyle practices.

The *second* group is those who mainly take care of their health, guide mainly by the need for good health, and place responsibility for its condition not only on themselves, but also on medical workers (*45% who share responsibility, are motivated and care for health*). Apparently, for this category of population, health is an instrumental value, a means to achieve goals, as evidenced by the reliance on the need for good health when taking care of health.

Table 4. Characteristics and content of population clusters depending on health-saving attitudes

Cluster no.	Characteristics of health-saving attitudes			Cluster content	
	Health care degree	Motivation nature	Responsibility for health	Abs.	%
1	They care little about their health or do not care at all	-	Recognize personal responsibility for health	610	40.7
2	Mostly or very health-conscious	Need for good health	Responsibility for health is imposed both on themselves and on medical workers	667	44.5
3	Mostly or very health-conscious	The desire to increase (maintain) working capacity; unwillingness to cause trouble, to be a burden to loved ones; need for good health; unwillingness to face medicine; fear of getting sick	Recognize personal responsibility for health	223	14.8

Source: own compilation.

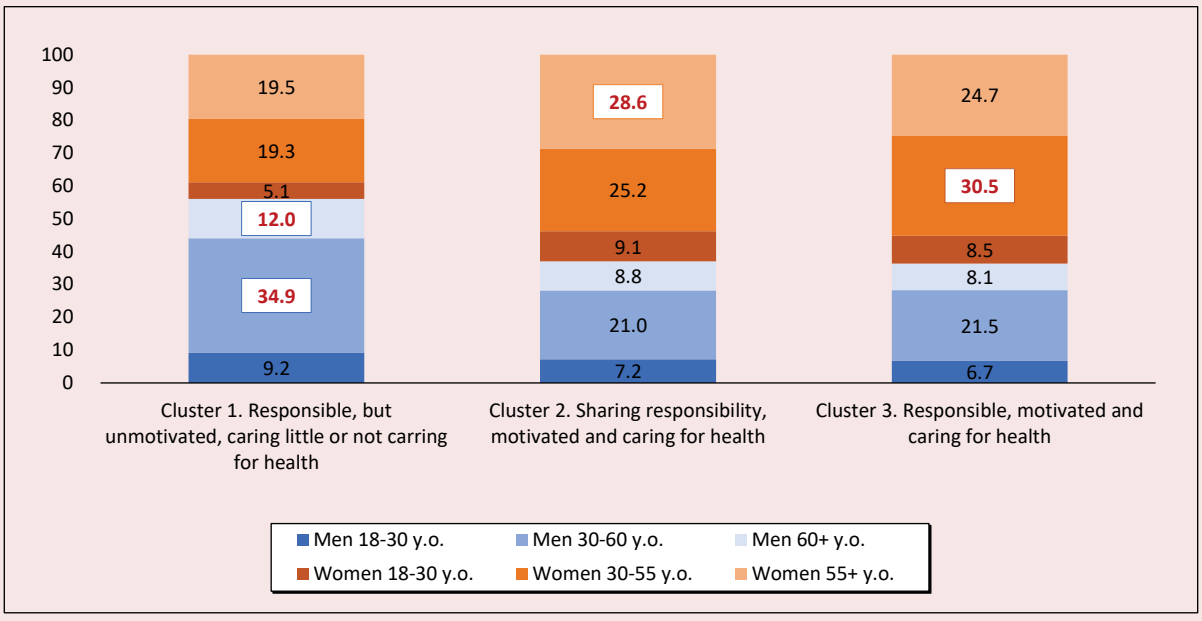
The *third* group consists of those who consider only themselves responsible for their own health, take full care of their health, focusing on a wide range of motives: the desire to increase (maintain) working capacity, the need for good health, unwillingness to cause trouble to loved ones, face medicine, fear of illness (*responsible, motivated and caring for health –15%*). This type of population seems to be the most prosperous in terms of maintaining their own health, as it has all the necessary health-saving settings: personal responsibility for health state, expressed motivation based on a complex of economic, social, and psychological motives.

Socio-demographic characteristics of the selected types. When studying the identified types of population by the nature of health-saving attitudes, it is important to consider their socio-demographic profile in the context of gender and age characteristics, educational and family status, income level, and territory of residence.

Let us analyze the gender and age characteristics of the identified types of respondents. For instance, among the representatives of the first cluster there are significantly more men (56% vs. 37 in the second cluster and 36 in the third), while in the second and third clusters, on the contrary, there are women (63 and 64%, respectively; *Fig. 1*). At the same time, men of the age group 30–60 years are more common in the first cluster (35% vs. 21 in the second cluster and 22 in the third), as well as 60 years and older (12% vs. 9 in the second cluster and 8 in the third). In turn, among the representatives of the second cluster, there are more women aged 55 years and older (29% against 20 in the first cluster and 25 in the third). The third cluster more often included middle-aged women – 30–55 years (31% vs. 19 in the first cluster and 25 in the second).

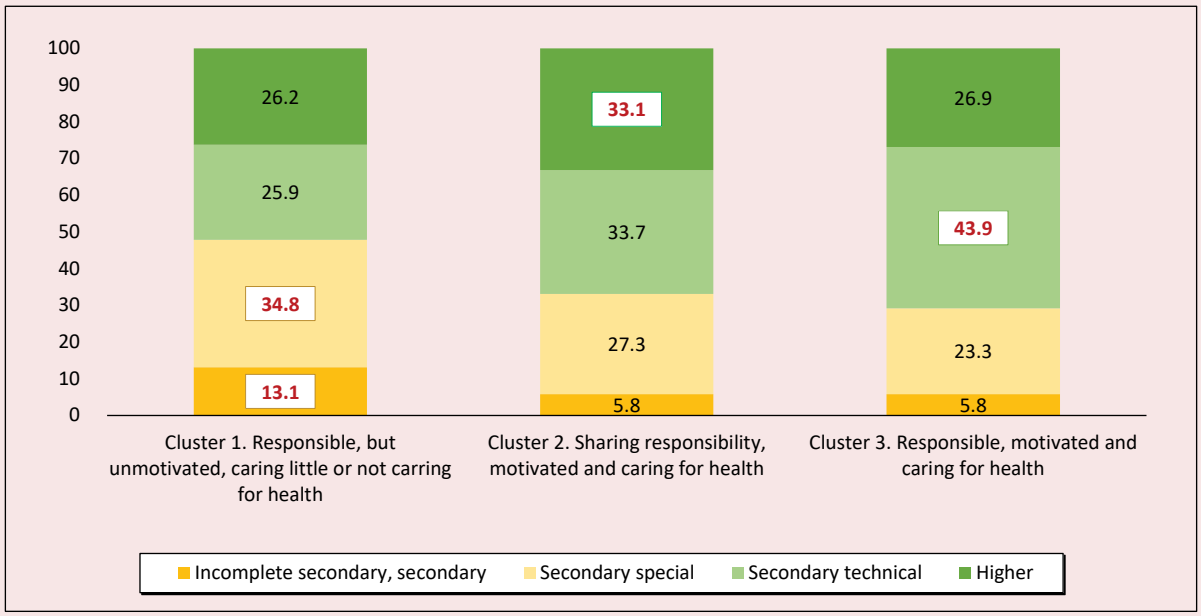
As for the differences in educational status, people with incomplete secondary and secondary education are more common in the first cluster (13% vs. 6 in the second and third clusters), as

Figure 1. Population clusters by the nature of health-saving attitudes in the context of gender and age groups, %



Source: own compilation.

Figure 2. Population clusters by the nature of health-saving attitudes in the context of education level, %



Source: own compilation.

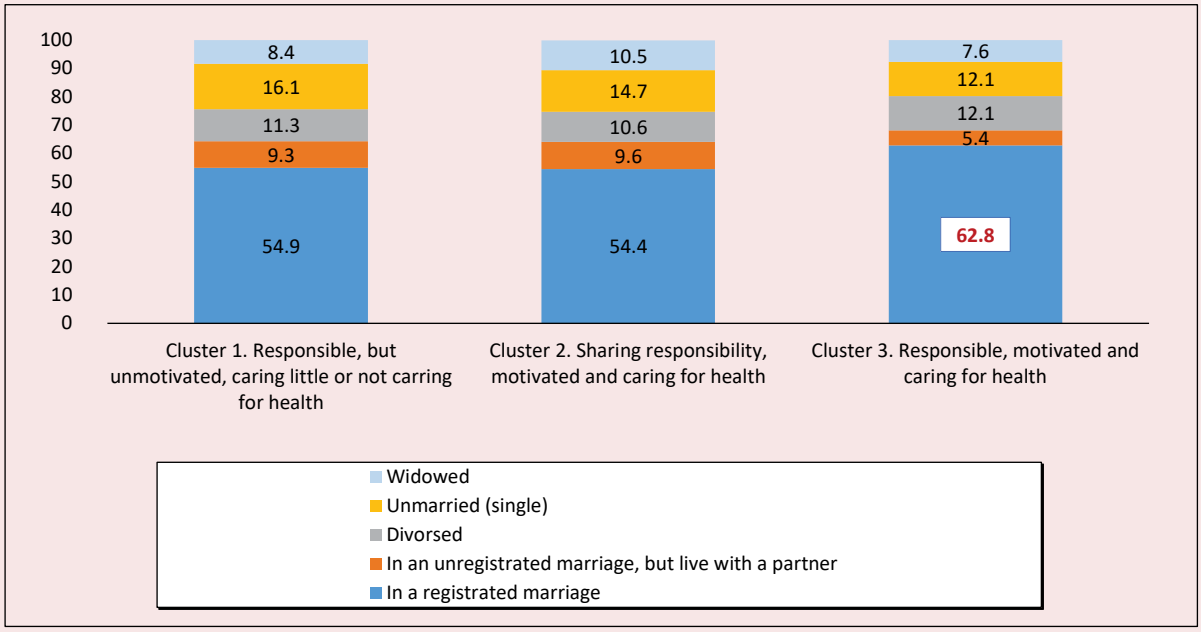
well as specialized secondary (35% vs. 27 in the second cluster and 23 in the third; *Fig. 2*). Among the representatives of the second cluster, there are significantly more people who have received higher education (33% vs. 26 in the first cluster and 27 in the third). The respondents of the third cluster are more likely to have a secondary technical education (44% vs. 26 in the first cluster and 34 in the second).

The analysis of cluster differentiation by marital and family status of respondents did not find statistically significant differences ($\chi^2 = 13.310$, $p = 0.347$). Nevertheless, attention is drawn to the fact of the predominance of those who are officially married among the representatives of the third cluster (63% against 55 in the first cluster and 54 in the second; *Fig. 3*). In many respects, the observed picture is explained by the age specifics of its contingent: almost a third of it consists of women of the middle age group (30–55 years), the vast majority of whom live in an official marriage union (65%).

Considering the differences between clusters by the level of income purchasing power, it is worth noting the following. In the first cluster, respondents are more likely to say that they have enough available money to purchase the necessary products and clothing, but larger purchases have to be postponed for later (53% vs. 49 in the second cluster and 46 in the third; *Fig. 4*). More than a third of the representatives of the third cluster are in a difficult financial situation when there is enough money only for the purchase of food (35% vs. 32 in the second and 30 in the first). In the second cluster, there are more respondents who most positively characterize their level of well-being: for them, there are no difficulties to purchase most durable goods or they do not deny themselves anything at all (15% vs. 10 in the first cluster and 13 in the third).

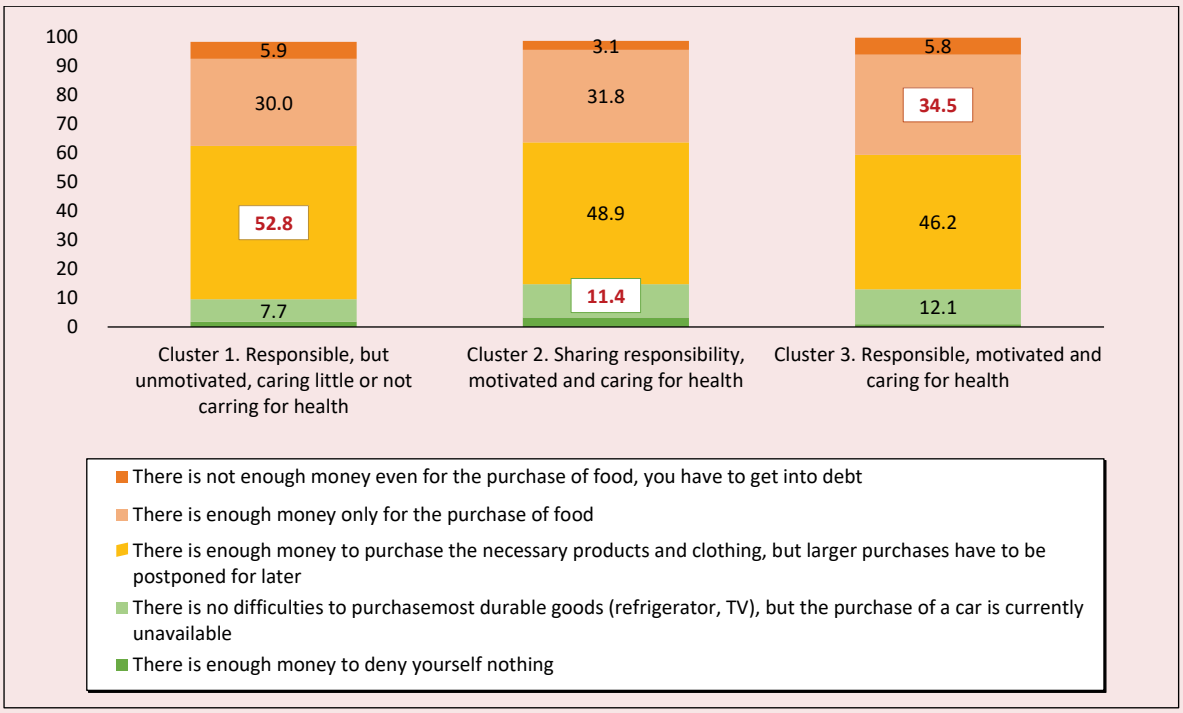
In addition, there is a pronounced differentiation of clusters by the territory of residence of the respondents who are part of them. For instance, among the representatives of the first

Figure 3. Population clusters by the nature of health-saving attitudes in the context of marital and family status, %



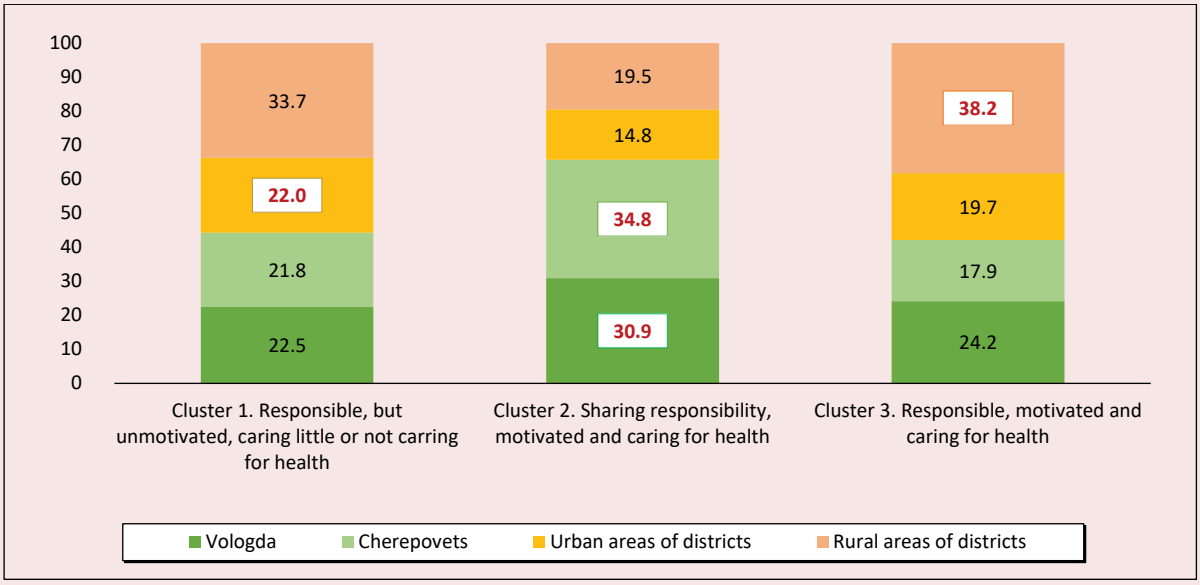
Source: own compilation.

Figure 4. Population clusters by the nature of health-saving attitudes in the context of the purchasing power of income, %



Source: own compilation.

Figure 5. Population clusters by the nature of health-saving attitudes in the context of the territory of respondents' residence, %



Source: own compilation.

cluster there are more residents of district cities of the region (22% vs. 15 in the second cluster and 20 in the third; *Fig. 5*). The majority of respondents of the second cluster are the population of large cities (66% vs. 44 in the first cluster and 42 in the third), in particular, the regional center – Vologda (31% vs. 22 in the first and 23 in the third) and the industrial center – Cherepovets (35% vs. 22 and 18). Respondents from rural areas of municipal districts of the region are significantly more likely to be a part of the third cluster (38% vs. 34 in the first cluster and 20 in the second). The transfer of responsibility for health to medical workers by representatives of the second cluster, most of whom are the population of large cities, may be due to higher requests of citizens to the health care system [3, p. 138].

Attitudes toward health care are an important driving force for implementation of health-saving practices. According to the analysis, the representatives of the third cluster are the most active in all healthy lifestyle practices: they are much more likely to give up smoking (57% vs. 44 in the second and 22 in the first clusters), visit the bath, sauna (51% vs. 26 and 16), seek medical help in a timely manner (47% vs. 44 and 15), walk (46% vs. 24 and 13), take care of the quality of drinking water (41% vs. 27 and 11), observe the regime and keep a diet (34% vs. 28 and 10), etc. (*Tab. 5*). In turn, all health-saving measures are the least popular among the respondents of the first cluster, among whom the proportion of those who do nothing to preserve and strengthen their own health is the largest (54% vs. 18 in the second and 12 in the first cluster). In many respects, the observed picture is explained by gender differences in attitudes toward health: among male population of the region, compared with female, the proportion of those who refuse any measures to preserve and strengthen is significantly higher (37% vs. 25). And more than half of the representatives of the first cluster are men (56%).

Table 5. Prevalence of healthy lifestyle practices in clusters by the nature of health-saving attitudes, %

Healthy lifestyle practices*	Cluster 1. Responsible, but unmotivated, caring little or not caring for health	Cluster 2. Sharing responsibility, motivated and caring for health	Cluster 3. Responsible, motivated and caring for health
No smoking	***21.8***	44.2	***57.4***
Go to the doctor at the first signs of the disease, regularly undergo a medical examination	***14.6***	43.9	***47.1***
Go to the bathhouse, sauna	***15.9***	25.9	***50.7***
Try to walk more, take walks in rest areas	***13.1***	24.0	***46.2***
Use household appliances to purify drinking water, buy bottled water, use water from special sources (springs, wells)	***10.8***	27.0	***40.8***
Keep a diet, try to balance a diet	***9.7***	27.9	***34.1***
Observe moderation in alcohol consumption	***12.5***	16.9	***33.6***
Try to organize free time with benefits for health, self-development, self-realization	***8.5***	19.0	***37.2***
Try to optimally combine workloads and rest	***8.5***	14.7	***36.3***
Try to control mental state	***5.4***	14.2	***35.0***
If possible, undergo a treatment course in a sanatorium, at a resort, etc.	***2.5***	13.3	***14.8***
Actively workout, harden	***3.9***	18.4	***16.6***
Do nothing specifically	***53.8***	***12.3***	***18.4***

* Answers to the question "What are you personally doing to preserve and strengthen your health?"
The sum of the answers is not equal to 100%, as the answer offered a choice of all suitable options.
Source: own compilations.

Discussion of the results

The obtained results of the study, in particular, the socio-demographic features of health-saving attitudes of population, largely echo the data of other Russian studies. For example, a lower motivation to take care of health in men compared to women is previously confirmed in the works of I.B. Nazarova [38], L.Yu. Ivanova [39], I.P. Popova [40], S.S. Gordeeva [41], N.I. Pautova and I.S. Pautov [42]. The fact of improving the characteristics of caring for their own health as the education level increases is proved in the works of A.A. Kovaleva [12], A.A. Vyalshina [43], S.A. Vangorodskoy [6] and others. The relationship between living standards and attitudes toward health has been justified in many works. For example, as the study of S.A. Vangorodskaya has showed, as the well-being increases, the respondents' interest in their health increases, its value in the rating of value dispositions increases [6].

However, some of the identified patterns do not correlate with the previously obtained conclusions. For example, the works of I.B. Nazarova [38], I.S. Pautov [44] prove a less active position of rural population in relation to their health compared to urban residents which is associated with lower availability of medical services, physical education and sports facilities in rural areas. While the most responsible position in relation to their own health in our study is demonstrated, on the contrary, not by urban, but by rural residents.

Despite the fact that Russian scientists A.I. Antonov and V.M. Medkov [45], A.I. Kuzmin [46], A.B. Sinelnikov [47], P.M. Kozyreva and A.I. Smirnov [48] confirmed the positive influence of family status (official marriage) on health attitudes, in our case this pattern is not found. The observed discrepancies indicate both the regional specifics of self-preservation attitudes of population, and the need for a more detailed study of their differences at the individual level.

The conducted research contributes to the development of both fundamental and applied science. Its theoretical significance lies in the generalization of approaches to the interpretation of health-saving motivation and its content, to the allocation of its structural components (health care degree, motivation nature, responsibility for health). The practical significance and scientific novelty are concentrated in population typology according to the characteristics of health-saving motivation which is especially important for understanding the behavioral patterns of population in relation to their own health and, as a result, for finding tools for managing them.

Conclusion

The cluster analysis, conducted on the data of a sociological survey of the Vologda Oblast residents, revealed three types of population by the nature of health-saving attitudes: responsible, but unmotivated, caring little or not caring for health; sharing responsibility, motivated and caring for health and responsible, motivated and caring for health. Based on the results of the consideration of the gender, age, educational, territorial and other parameters of the clusters, a *socio-demographic portrait* is determined for each of them:

1 cluster "Responsible, but unmotivated, caring little or not caring for health" is mainly middle-aged or older men living in the districts of the region (more often in district cities), having incomplete secondary, secondary or secondary special education, more often describing their well-being as "available funds are sufficient to purchase the necessary products and clothing, but larger purchases have to be postponed for later".

2 cluster "Sharing responsibility, motivated and caring for health" is mainly women 55 years and older, residents of large cities (Vologda and Cherepovets), with higher education, more often highly evaluating their well-being level.

3 cluster "Responsible, motivated and caring for health" is mainly middle-aged women (30–55 years old) living in rural areas of the region, with secondary technical education, more often noting that they only have enough money to buy food.

In addition, the study allowed establishing that representatives of the third cluster are more committed to a healthy lifestyle – among them, all self-preservation practices (giving up bad habits, proper nutrition, physical and medical activity, etc.) are most widespread, while more than half of the respondents of the first cluster do not take any measures regarding their own health. Based on this, we can conclude that personal responsibility for one's own health, expressed concern for the condition, orientation to a wide range of health-saving motives contribute to the greatest involvement of population in the practice of healthy lifestyle, while low motivation to take care of health or its absence, on the contrary, is more likely to contribute to the rejection of any self-preservation measures.

The results of the study help to better understand the types of health-saving attitudes that have developed in population, to assess their impact on adherence to a healthy lifestyle which is of great practical importance for managing self-preservation behavior, in particular for determining behavioral risk groups of population, as well as adjusting health attitudes. So, for example, forfirst cluster representatives (responsible, but unmotivated, caring little or not caring for health), it becomes fundamentally important to purposefully stimulate motivation to lead a healthy lifestyle, increase awareness in various areas of knowledge about health care (about behavioral risk factors including bad habits, and their impact on health; about ways to overcome risk factors and "improve" lifestyle; about a variety of health-saving practices). Work with representatives

of the second cluster (sharing responsibility, motivated and caring for health) should be focused on increasing personal responsibility for health and fundamental importance of health by informing about the complex nature of the impact of its condition on all aspects of human life. For representatives of the third cluster (responsible, motivated and caring for health), it is important to maintain a high motivation level to take care of health. However, their more vulnerable financial situation compared to others poses a threat to the preservation of positive health-saving attitudes.

Despite the increased attention of the state to the issue of stimulating population to lead a healthy lifestyle, the established approach in state policy focuses mainly on the personal behavior of a person, often without taking into account their social context (level and living conditions). As a result, as N.S. Grigorieva and T.V. Chubarova note, there is an imbalance in the political strategies of the state and personal strategies of citizens. Even if a person is aware of the need to change health behavior, he or she may not have the institutional capacity to do so. For example, low incomes do not allow using the services of paid sports complexes or buying top-quality products, etc. [30, p. 203]. Thus, an important condition for the successful implementation of the policy of motivation for a healthy lifestyle should be the solution of the problem of insufficient level and quality of life of citizens.

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Urban Agglomerations in the Settlement System of the North of Russia*

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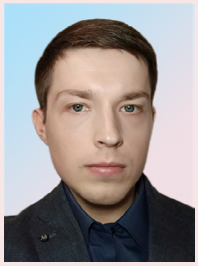

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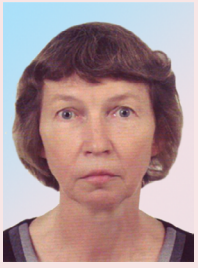

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Abstract. The article examines the evolution of the formation of cities and urban agglomerations in the North of Russia. The aim is to identify cities that meet the criteria of "northern urban agglomeration" from the large cities in the North of Russia. We propose criteria and indicators that make it possible to distinguish urban agglomerations in the urban space; it is noted that for northern urban agglomerations the evaluation criteria can be applied less strictly and indicators less important. We analyze the urban settlement of northern Russia, focusing on northern cities, their structure and the average density of settlements; we consider separately urban-type settlements that contribute to the population density of northern territories, increasing the density of settlements. The focus is on 18 cities with more than 100,000 inhabitants and four cities with a population of a hundred thousand in different years, the core cities have at least two satellite settlements, according to the criteria proposed, they correspond to the concept of an urban agglomeration core city. We consider and group the selected urban agglomerations according to the structure of satellite settlements and the population living in the zones located within 50, 100 and 150 km from the core. With the help of a review of domestic and foreign literature, we have revealed the essence and content of the category "agglomeration effect". The article identifies three types of agglomeration effects: local objects sharing; cost reduction; and labor pooling. There are two types of effects: localization (clustering) and urbanization effects; the localization effect is the result of enterprises working together in a common area, the urbanization effect is the concentration of organizations in one area, regardless of whether there is thematic proximity between them. Along with the advantages, urban agglomerations cause environmental, economic, political and social problems and pose threats to the stability of small and medium-sized cities; increasing rural deprivation; which will cause further depopulation of large parts of the country, putting the security and integrity of the country at risk.

Key words: the North of Russia, population, settlement system, cities, urban settlements, criteria and indicators, urban agglomerations, agglomeration effect.

Introduction

The colonization and settlement of the European North began in the 10th and 12th centuries; Siberia and the Far East were annexed later (from the late 16th and early 17th centuries to the middle of the 19th century). The incoming population, mastering new, outlying territories, built ostrogs/fortresses, where the resident population was formed. These settlements were considered cities by their status, regardless of the number of inhabitants. Among the first cities founded in the North of Russia were Arkhangelsk in 1584, Yakutsk in 1643, Yeniseisk in 1676, Kirensk in 1775, Petrozavodsk in 1777, and Syktyvkar in 1780. A total of 26 cities were formed prior to the period of contemporary history of Russia (before 1917) [1, pp. 113–116]. Today, five of them are big, three are large, one is medium, and 17 are small. The city of Arkhangelsk has become the most populous not only in the North of Russia, but also in the World Arctic, with 346,979 people (2020). The foreign North and the World Arctic are significantly inferior to the northern and Arctic regions of Russia by the number of urban settlements and average population [2, pp. 10–14].

Industrialization of the country, extensive development of natural resources of peripheral territories and, as a consequence, the formation of an extensive network of urban settlements by the end of the 20th century turned the North of Russia into a highly urbanized region [3]. Despite the successes of industrialization, it remained agrarian in 1939, with the rural population of 65.9% and the urban population of 34.1%. In subsequent years,

the proportion of the urban population increased rapidly: 1959 – 61.0%, 1970 – 67.1%, 1989 – 77.1%, 2020 – 79.2%. At present, the urbanization rate (74%) in the North of Russia is a little lower than in the Nordic countries: Denmark with 88%, Sweden with 88%, Norway with 82%, and Canada with 81%[1].

In the North of Russia from 1939 to 2020 the number of cities has increased from 40 to 141, and the average population – from 27.5 to 48.7 thousand people. The number of big and large cities has grown from 2 to 18, but their population has remained virtually unchanged: in 1939 – 200.8, and in 2020 – 218.3 thousand people – 218.3 thousand people.

Our goal is to identify cities that meet the criteria of "northern urban agglomeration" among the big and large cities of the North of Russia. This requires solving a number of tasks: to determine the criteria and indicators that allow distinguishing urban agglomerations among cities; to compare the main characteristics of the northern urban agglomerations, to briefly present the fields of their specialization.

The object of the study is urban settlements of 13 regions, the territories of which fully belong to the Far North and areas equated to them[2], and 11 regions, the territories of which partially belong to the Far North and areas equated to them. The subject of the study is the Northern urban agglomerations and the agglomeration effect on satellite settlements located in the temporal and transport accessibility from the core.

The relevance of the study lies in the fact that with the reduction in urban population, the number of large and small cities, urban-type settlements, the North more than ever needs the socio-economic resources and innovation concentration centers. This role can be played by "northern urban agglomerations", which are formed not by absorbing the neighboring settlements, but, on the contrary, contribute to their development. The elements of novelty of the work include the substantiation of criteria and indicators for defining "northern urban agglomerations"; the identification of 19 agglomerations and their classification by the weight of the core, the number of adjacent settlements, industry specialization; the assessment of demographic dynamics of agglomeration cores in the context of high migration outflows from the northern territories.

Urban agglomerations: definition, criteria, indicators

The term "agglomeration" comes from the Latin "agglomero" – "I attach, accumulate, join". It was introduced in 1909 by A. Weber, who defined agglomeration as "the concentration of economic activity or entities in particular localities" [4]. A. Marshall made a significant contribution to the development of agglomeration theory, identifying it with a "localized industry" and proving the existence of agglomeration effect arising from the economy of localization, scale and urbanization [5]. The need for the development of urban agglomerations meets the strategic interests of the state, contributes to the development of all the territories of the agglomeration area, transport infrastructure, the creation of a supporting framework [6, p. 13].

There are many definitions of "urban agglomeration" in the literature. According to A.N. Clark, "an agglomeration is an urbanized area without clear boundaries, consisting of several settlements and their suburbs, united in the process of expansion of individual cities"[3]. The UN considers an agglomeration as an urbanized area

[1] D*emoscope Weekly*. Available at: http://www.demoscope.ru/weekly/app/world2020_0.php. 2020. No. 879-880 (accessed: December 10, 2020).

[2] The authors use the phrase "Russian North" when referring to 13 regions and "North of Russia" when referring to all 24 subjects.

[3] Clark A.N. *The Penguin Dictionary of Geography*. L., 1998. P. 19.

consisting of a large city in the center and a complex of settlements around it[4]. Agglomeration is "a territorially compact location of various settlements, actually merging and united into a complex, multi-component socio-economic system with active internal production and cooperation, transport and socio-cultural ties" [7, p. 11]. Agglomeration is a process of concentration of new settlements and old single-industry towns around certain cities and involvement of suburbs, nearby towns and urban settlements in the functioning of the core city [8, p. 134; 9, p. 299]. There are big (500 thousand to 1 million people) and large (more than 1 million people) urban agglomerations[5]. This classification does not coincide with the classification of cities: large – from 250 thousand to 1 million people, the largest – with a population over 1 million people[6]. But this is the population of cities without adjacent settlements. We suggest considering urban agglomerations as small – with a population of up to 250 thousand people, medium – from 250 to 500 thousand people, and large – from 500 thousand to 1 million people.

There are monocentric (single-center) urban agglomerations with one core city, which subordinates all other settlements located in its suburban area and far exceeds them in size and economic potential, and there are polycentric (multicenter) urban agglomerations with several interconnected city centers[7].

The formation of agglomerations is a natural, objective process of concentration of human, material and financial resources for the rational use of not only the territory potential, but also urban industrial infrastructure, engineering networks, knowledge and technology [8, p. 135].

Urban agglomerations are "the most important nodes of the settlement supporting framework, their territories represent the most valuable, significant spaces of the country, concentrating its socio-economic, scientific, educational and demographic potential" [10, p. 28].

Almost every "large city with a population over 100 thousand people has a real prerequisite to create around itself associated satellite cities to form a large urban agglomeration. Urbanization processes can proceed both extensively and intensively" [11, p. 136]. An urban agglomeration is, first of all, "a complex settlement structure, for the identification of which a peculiar set of methods, mainly from economic geography, spatial planning and urban planning are used" [12, p. 182]. In foreign countries, the "economic approach" is widely used in the allocation of urban agglomerations due to the active development of theoretical foundations within the concepts of spatial economics [13] and new economic geography [14].

The formation of megacities or urban agglomerations, along with the positive moments (the demand for labor resources grows, labor productivity increases) has a number of negative moments: the environmental impact, the increase in mental illnesses and criminalization of society [15, p. 82]. The pros and cons of urban agglomerations are noted by O.A. Kozlova and O.N. Sos'kova. They refer "changes in the population way of life, a significant increase in life expectancy, the spread of literacy, the growth of the population educational and culture level" to the positive aspects. At the same time, an urban agglomeration "generates

[4] *World Urbanization Prospects: The 2007 Revision. Highlights.* New York: United Nations, 2008. P. 11. Available at: http://www.un.org/desa/population/publications/wup2007/2007WUP_Highlights_web.pdf (accessed: March 10, 2021).

[5] On the approval of the spatial development strategy in the Russian Federation for the period up to 2025: Government Order no. 207-p, dated February 13, 2019.

[6] "Urban development. Urban and rural planning and development": Set of rules, SP 42.13330.2016. Revised edition of SNiP 2.07.01-89. Available at: http://docs.cntd.ru/document/456054209 (accessed: December 1, 2020).

[7] Ed. by Valenteya D.I. *Demographic Encyclopedic Dictionary*. Moscow: Sovetskaya entsiklopediya, 1985. P. 98.

environmental, economic, political and social problems, creates stability problems for small and medium-sized cities" [16, p. 66].

"Agglomerations themselves are incapable of normal reproduction, they draw into themselves the population of the surrounding territories, especially young people in active reproductive age, as a result, deepening the depressed state of the surrounding territories" [17, p. 57, 59]. Focusing on "the development of large urban agglomerations is a way to eliminate small and medium-sized cities, to increase the damage of rural areas; it will cause further depopulation of a large part of the territories, will call into question the security and integrity of the country" [18, p. 6]. E.I. Weinberg sees the negative consequences of the agglomerations sprawl in the fact that within them "the load on the territory increases, many environmental problems appear. Their development increases time expenditures on transportation, transport fatigue grows, the population concentrates in a limited number of areas, increasing the polarization of space, there is a reduction in the developed space" [19, p. 32–33]. The consequences of the cities "shrinkage" at the present stage are considered in [20].

When creating agglomerations it is necessary to meet a number of conditions: the center of the agglomeration should not increase by administrative means; the suburbs to be incorporated remain legally and administratively outside the urban core; accession is physical, by building spaces between settlements and the core, transport links [21, p. 88]. Agglomeration processes are hindered by a number of factors: "the spatial isolation of urban settlements, the presence of large uninhabited spaces in the zone of their influence; the fear of municipalities to lose independence; a possible conflict of interests between the center and the periphery; increased load on transport and engineering infrastructure of the territory" [22, p. 419].

Urban agglomerations can be created both naturally (absorption and merger) and artificially, when weak municipalities are part of strong ones. In any case, the consolidation of efforts will "contribute to solving the problems of creating new jobs, the efficient use of all resources, which will help avoid crisis processes that begin to be felt at the grassroots level earlier than in large cities, and even more so in agglomerations" [8, p. 136].

Western researchers G. Duranton and D. Puga write that the ratio of urban systems (their size) is largely determined by the history of development of territories, their industry specialization and the network of transport infrastructure. But there is also an inverse relationship: the urban structure sets the spatial framework, reserves and limitations of development. Large cities have the agglomeration economy resources and benefits of economy of scope [23]. Urban agglomerations are more sustainable than other cities for the reason that they have an equal development of all processes: economic, socio-demographic and environmental [24, p. 112].

Criteria and indicators for distinguishing urban agglomerations. In order to include a city or urban settlements in an urban agglomeration, it is necessary to follow certain criteria and indicators. F.M. Listengurt proposed the following criteria for distinguishing and classifying urban agglomerations: 1) urban population over 110 thousand people with a minimum central city of 100 thousand people; 2) the time spent on regular access to the center (stations) of the main city – 2 hours gross; 3) the proportion of the urban settlements population in the outer zone in the total urban population of the agglomeration (agglomeration index) minimum 10%; 4) the number of urban settlements in the outer zone of agglomeration minimum three; 5) the abstract indicator of the degree and character of the urban settlements concentration in the

agglomeration outer zone (the agglomeration coefficient is the ratio of the urban settlements density to the average shortest distance between them) is minimum 0.1 [25, p. 45].

In order to define agglomerations the following indicators are most often used: the threshold population of the core is 50–250 thousand people, in adjacent settlements (satellites) – at least 50 thousand people, located in 1.5–2 hour transport accessibility [12, p. 185–186, 189] or located within 50, 100 and 150 km from a large city.[9, p. 299]. The "growth corridor", the distance of a satellite city from the core, can range from 50 to 200 km [26, p. 183].

When distinguishing urban agglomerations, one should take into account that at present they are moving to a new level, from the scalar form (point agglomerations) to the vector form – the formation and development of agglomerative corridors [16, p. 67].

Thus, selecting and analyzing urban agglomerations, we previously considered cities and urban-type settlements in all 294 urban and municipal districts belonging to the North of Russia. The data on the population density of the settlements were obtained from the censuses of 1939–2010[8], as well as from the current statistical records at the beginning of the year 2020[9]. Information on changes in the categories of settlements and their economic specialization is taken from the encyclopedia "All Russia. Cities and towns"[10], and from official websites of regions and municipalities. The data on the geographic coordinates of the settlements were obtained from the GeoNames geographic database[11].

The cities with a maximum population over 100 thousand inhabitants, which are the largest settlements in their 150–kilometer neighborhoods, while at the same time they are not the only settlements there, are selected as the cores of the northern agglomerations. Then a list of urban satellite settlements by zones of accessibility (50, 100 and 150 km) was formed. The settlements that were in the accessibility zone of two agglomerations at once were assigned to one of them on the basis of economic specialization and spatial proximity. The calculations were performed using the algorithm implemented in the Julia programming language, using the Geodesy.jl (to estimate distances between settlements) and VegaLite.jl (to create map schemes).

Northern agglomerations are characterized by a number of features: 1) smaller population of both the core and satellites; 2) the number of satellites is not strictly limited; 3) they play a major role on the scale of the northern region, as well as having all-Russian significance in the division of labor, sectoral specialization [27, p. 11].

Agglomeration effect as a factor in the transformation of the settlement system: from simple forms to agglomerations. Agglomeration effect (agglomeration economies) is an economic benefit from the territorial concentration of industries and other economic objects in cities and agglomerations, in relatively close to each other points. The agglomeration effect manifests the totality and interaction of external economy factors for different objects included in the agglomeration[12]. The creation of urban agglomerations involves obtaining "a synergistic effect that significantly increases the efficiency of economic processes and social development of the territories that make up the agglomeration" [7, p. 10].

[8] Censuses of the Russian Empire, the USSR, the 15 newly independent states. *Demoscope Weekly*. Available at: http://www.demoscope.ru/weekly/ssp/census.php

[9] Bulletin "Population of the Russian Federation by municipalities". Available at: https://rosstat.gov.ru/compendium/document/13282

[10] *All Russia. Cities and Towns*. Encyclopedia. Moscow: Institut ekonomiki i upravleniya v promyshlennosti, 2001. 575 p.

[11] *The GeoNames geographical database*. Available at: https://www.geonames.org

[12] Lopatnikov L.I. *Economic and Mathematical Dictionary: Dictionary of modern Economic Science*. 5th ed., reprint. and add. Moscow: Delo, 2003. 520 p.

There are two types of agglomeration effects: localization (clustering) and urbanization effects; the localization effect is the result of joint activities of enterprises in a common area, the urbanization effect is the concentration of organizations in one area, regardless of whether there is thematic proximity between them. To evaluate the localization and urbanization effects, the following indicators are used: labor productivity, added value, employment, wage level, number of issued patents [28, pp. 318, 323].

A key advantage of concentration in an urban environment is proximity, which makes it easy for subjects to interact between firms, individuals, institutions, etc. This interaction, in turn, allows the economy and production output to exceed the sum of the parts, for reasons that include specialization, shared values and practices, and face-to-face contacts. In addition, urban interaction stimulates the dynamic forces of problem solving, cooperation, learning, competition and technical innovation [29; 30]. The advantages of cities for the development of the economy and from the point of view of the quality of life are the consequence of a more compact economic agents' location [31]. This saves on transportation costs, increases the exchange of information and practices, and makes it easier to find employees [32].

The economic benefits fade with distance from the agglomeration center [33]. This fact is also confirmed in domestic studies, where it is indicated that at distances of more than 60 km from the center the effects weaken. At the same time, when the population of an agglomeration doubles, factor productivity in various sectors of economic activity increases by 2–10%. The territories where 100 thousand people live within an hour and a half accessibility demonstrate a local maximum of labor productivity in industry and a significantly lower one in services sector [32, p. 52, 56, 57].

Modern agglomerations are more sustainable in their development. This is related to a more efficient use of human, material and financial resources, as well as the synergy effect from the rational use of not only the territory resources, but also the resources of the productive urban infrastructure, engineering networks, knowledge and technology [9, p. 299]. Sustainable development of northern agglomerations is possible only with the rational formation of the settlement system, considering demographic potential, settlement economic specialization [34] and territory natural features.

The agglomeration economy provides its members with a number of advantages: "lower costs of access to the market of goods and raw materials, infrastructure development, matching supply and demand for labor, which is stimulated by high wages; concentration and diversification of resources make it possible to save on scale and combine production factors" [35, p. 92]. Agglomeration effect shows as concentration of final goods and services producers and an increase in real income. There are three types of agglomeration effect: joint use of local facilities; reduction of costs; pooling of labor [36, p. 423].

Cities and agglomerations in the settlement system of the North of Russia. Before we consider urban agglomerations, let us explain that by "northern urban agglomeration" we mean the concentration of urban population around the core city, which has a population over 100 thousand people, and at least two urban settlements within a radius of 150 km. As an exception, we refer to the northern urban agglomerations those agglomerations with core cities that in different years had a population of one hundred thousand people. The northern urban agglomeration provides adjacent areas with the "agglomeration effect" through the transfer of innovation and the latest technology, offering a wide range of socio-cultural

and educational services. Given the underdeveloped road network, scattered and remote settlements, only a core city can provide a range of emergency medical services, aviation services.

In the North of Russia there are 141 cities, six of them are large (Surgut, Arkhangelsk, Yakutsk, Murmansk, Petrozavodsk and Nizhnevartovsk), 12 are big and medium-sized, 111 – small and 234 – urban-type settlements. In the structure of cities prevail small and medium-sized cities – 123 (87.2%). The proportion of big and large cities is 12.8%, with almost half of the population living there – 39.8%. The population of all groups was growing until 1989, and then followed a decline, the same can be said about the average populousness of settlements *(Tab. 1)*.

The peak in city formation in the North of Russia occurred between 1939 and 1959 (45 cities). The city formation took place after the collapse of the Soviet Union. From 1989 to 2002, 18 cities emerged. In the following decades, however, only one new city emerged, it was Tarko-Sale in the Yamalo-Nenets Autonomous Okrug. Eight settlements were deprived of city status. In 2004, the cities of Talnakh and Kayerkan were incorporated into Norilsk. The towns of Lesogorsk, Krasnogorsk, Gornozavodsk, Chekhov (Sakhalin Oblast), and Klyuchi (Kamchatka Krai) became rural settlements between 1993 and 2004. The town of Shakhtersk, Sakhalin Oblast, was incorporated as an urban settlement in 2017 *(Tab. 2)*. The data show that cities in the North represent a more stable form of settlement than urban-type settlements. The average populousness there increases from 47.7 thousand people in 2002 to 48.7 in 2020.

Along with small and medium-sized cities, urban-type settlements contribute to the cohesion and population density of the northern territories. In a number of urban areas, the settlement system consists of one support city and a network of small urban settlements connected with it. In some northern and arctic territories there are no cities, and the role of supporting settlements for the development of the North and life support of people is performed by urban-type settlements. Such settlements include Anadyr, Igarka, Pevek and Tiksi [37, p. 37]. In the North of Russia, the peak in the formation of settlements fell on the period from

Table 1. Population and settlement indicators of the North of Russia, 1939–2020*

Indicator	1939	1959	1970	1979	1989	2002	2010	2020
Population, thou. people, including:	**4 232.0**	**6 907.3**	**8 417.1**	**10 181.0**	**12 807.8**	**10 818.9**	**10 158.4**	**9 858.5**
cities	1 100.7	2 651.1	3 834.5	5 279.6	7 482.6	7 005.3	6 830.5	6 861.9
urban-type settlements	342.0	1 563.1	1 809.2	2 138.1	2 392.4	1 385.6	1 077.1	950.3
rural settlements	2 789.3	2 693.1	2 773.4	2 763.3	2 932.8	2 428.0	2 250.8	2 046.3
Urban settlements, units	**104**	**411**	**487**	**544**	**588**	**494**	**404**	**375**
cities, incl.	40	85	99	110	130	147	142	141
large (more than 250 thou. people)	1	1	2	3	8	6	7	6
big (100–250 thou. people)	1	4	9	12	9	11	10	12
medium (50–100 thou. people)	3	9	6	10	21	14	12	12
small (less than 50 thou. people)	35	71	82	85	92	116	113	111
urban-type settlements	64	326	388	434	458	347	262	234
Average populousness, people								
cities	27 519	31 189	38 733	47 996	57 558	47 655	48 103	48 666
urban-type settlements	5 343	4 795	4 663	4 927	5 224	3 993	4 111	4 061

* Censuses 1939–1979 – present population; censuses 1989–2010, current statistics 2020 – resident population. Sources: Censuses of the Russian Empire, the USSR, and the 15 newly independent states. Demoscope Weekly. Available at: http://www.demoscope.ru/weekly/ssp/census.php; The population of the Russian Federation by municipality: bulletin. Available at: https://rosstat.gov.ru/compendium/document/13282

Table 2. Dynamics of the number of cities in the North of Russia, 1939–2020, units

Administrative-territorial transformation	1939	1959	1970	1979	1989	2002	2010	2020	In total
Cities, in total	40	85	99	110	130	147	142	141	149
Change in the number of cities since the previous census									
Retained the status of the city (without transformations)	–	40	85	99	110	129	141	141	141
New cities formed	–	45	14	11	20	18	1	0	149
Deprived of the status of a city, of which:	–	0	0	0	0	1	6	1	8
– merged with other cities	–	0	0	0	0	0	2	0	2
– converted into an urban-type settlement	–	0	0	0	0	0	0	1	1
– converted into rural settlements	–	0	0	0	0	1	4	0	5

Source: Censuses of the Russian Empire, the USSR, and the 15 newly independent states. Demoscope Weekly. Available at: http://www.demoscope.ru/weekly/ssp/census.php; The population of the Russian Federation by municipality: bulletin. Available at: https://rosstat.gov.ru/compendium/document/13282

1939 to 1959 (279 urban settlements). Then this process gradually slowed down. Only 10 urban-type settlements were formed in modern Russia.

It was assumed that urban-type settlements would eventually be transformed into cities as the population grew. However, in the North only 54 out of 581 (9.3%) became cities. Another 29 urban-type settlements (5.0%) were merged with other cities or towns. By 2020, 234 settlements (40.3%) retained their urban-type status, while the majority were deprived of this status. 37.7% were transformed into rural settlements, and 7.7% were abolished (more than half of them were abolished in 1989–2010). Since 1989, statistics began to record urban-type settlements without population, which, however, were not officially abolished. In 2020, there were 10 urban-type settlements without population in the North *(Tab. 3)*.

From cities and urban settlements to the northern urban agglomerations. Out of all the cities in the North of Russia, 18 cities have a population over 100 thousand people (2020). Four cities in different years had a population of one hundred thousand, so they can claim the role of agglomeration cores

Table 3. Dynamics of the number of urban-type settlements in the North of Russia, 1939–2020, units

Administrative-territorial transformation	1939	1959	1970	1979	1989	2002	2010	2020	In total
Urban-type settlements, in total:	64	326	388	434	458	347	262	234	581
– without population	0	0	0	0	1	2	8	10	–
Changes in the number of urban-type settlements since the previous census									
Retained the status of the urban-type settlement (no transformation)	–	47	286	358	408	339	261	233	234
New settlements of urban type formed	–	279	102	76	50	8	1	1	581
Deprived of the status of the urban-type settlement of which:	–	17	40	30	26	119	86	29	347
– categorized as cities	–	6	11	9	16	11	1	0	54
– merged with other urban-type settlements or cities	–	3	6	2	2	8	7	1	29
– converted into rural settlements	–	2	18	15	6	89	64	25	219
– abolished	–	6	4	5	2	11	14	3	45

Source: Censuses of the Russian Empire, the USSR, and the 15 newly independent states. Demoscope Weekly. Available at: http://www.demoscope.ru/weekly/ssp/census.php; The population of the Russian Federation by municipality: bulletin. Available at: https://rosstat.gov.ru/compendium/document/13282

according to the main/first criterion ("population size"). In different historical periods there were formed 22 cities: 8 during the Tsarist period and 14 during the Soviet period. The proportion of the urban population, formed during the Tsarist period (colonization of the North, 1584–1917), decreased from 40.5% to 25.4% (1939–2020), but they retained their first place. The percentage of urban residents, formed during the period of industrialization and urbanization of the North (Gulag period, 1918–1959), increased from 8.3% to 15.0%. During the period of policy change from coercion to encouragement (the period of "northern romance", 1960–1989), the proportion of the urban population increased from 1.0% to 14.0%. In general, we can note that the proportion of large cities in the urban population decreased from 36.3% (1939) to 24.3% (2020), large cities increased from 10.6% to 26.0%, and the proportion of the population "lost" by large cities increased from 1.9% to 4.1%, respectively. The proportion of the population of large cities decreased as Bratsk, Severodvinsk and Petropavlovsk-Kamchatsky left this group *(Tab. 4)*.

After 22 cities were analyzed according to the second criterion (the presence of satellites or urban-type settlements), Khanty-Mansiysk was excluded from the sample as not meeting the selection criterion. Two cities, Severodvinsk and Nefteyugansk, were included in the Arkhangelsk and Surgut urban

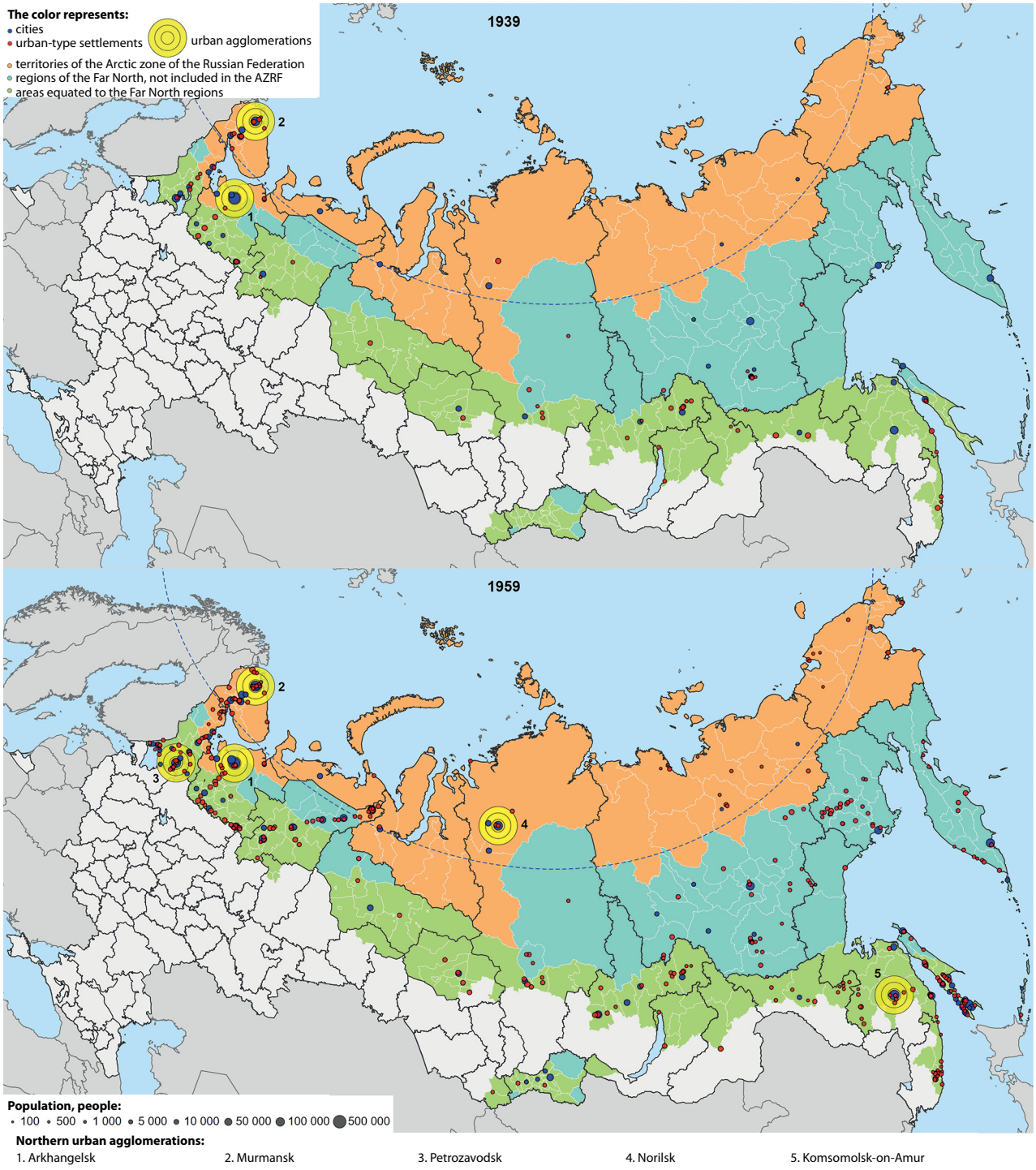
Table 4. Dynamics of the big and large cities population of the North of Russia, 1939–2020, people*

No.	City	Year of establishment	1939	1959	1970	1979	1989	2002	2010	2020
1	Arkhangelsk	1584	284 570	256 309	342 590	385 028	416 812	356 051	348 783	346 979
2	Yakutsk	1643	52 882	74 330	107 617	152 368	187 661	210 642	269 601	322 987
3	Petrozavodsk	1777	69 723	135 256	184 481	234 103	269 581	266 160	261 987	281 023
4	Syktyvkar	1780	25 281	64 461	125 088	170 980	231 673	230 011	235 006	244 403
5	Petropavlovsk-Kamchatsky	1812	35 373	85 582	153 885	214 977	273 368	198 028	179 780	179 586
6	Yuzhno-Sakhalinsk	1905	–	85 510	105 840	139 861	156 347	175 085	181 728	200 636
7	Kyzyl	1914	–	34 462	51 683	66 027	83 822	104 105	109 918	119 438
8	Murmansk	1916	117 069	221 874	308 642	380 817	472 274	336 137	307 257	287 847
9	Komsomolsk-on-Amur	1932	70 808	177 278	218 127	263 950	316 224	281 035	263 906	244 768
10	Severodvinsk	1938	21 304	78 657	144 672	197 232	253 864	201 551	192 353	181 990
11	Khanty-Mansiysk	1950	–	20 677	24 754	28 266	35 494	53 953	80 151	101 466
12	Norilsk	1953	–	109 442	135 487	180 358	179 757	134 832	175 365	181 830
13	Bratsk	1955	–	51 455	155 362	213 725	257 587	259 335	246 319	226 269
14	Surgut	1965	–	–	34 011	107 343	250 198	285 027	306 675	380 632
15	Nefteyugansk	1967	–	–	19 675	52 393	94 578	107 830	122 855	127 255
16	Nizhnevartovsk	1972	–	–	–	108 740	244 752	239 044	251 694	277 668
17	Novy Urengoy	1980	–	–	–	–	95 254	94 456	104 107	118 033
18	Noyabrsk	1982	–	–	–	–	87 144	96 440	110 620	106 911
Formerly big cities										
1	Magadan	1939	27 313	62 225	92 105	121 250	151 520	99 399	95 982	92 052
2	Ukhta	1943	–	36 154	62 923	87 467	112 876	103 340	99 591	93 716
3	Vorkuta	1943	–	55 668	89 742	100 210	115 329	84 917	70 548	52 776
4	Ust-Ilimsk	1973	–	–	–	68 641	110 335	100 592	86 610	80 419

* Censuses 1939–1979 – present population; censuses 1989–2010, current statistics 2020 – resident population. Sources: Censuses of the Russian Empire, the USSR, and the 15 newly independent states. Demoscope Weekly. Available at: http://www.demoscope.ru/weekly/ssp/census.php; The population of the Russian Federation by municipality: bulletin. Available at: https://rosstat.gov.ru/compendium/document/13282

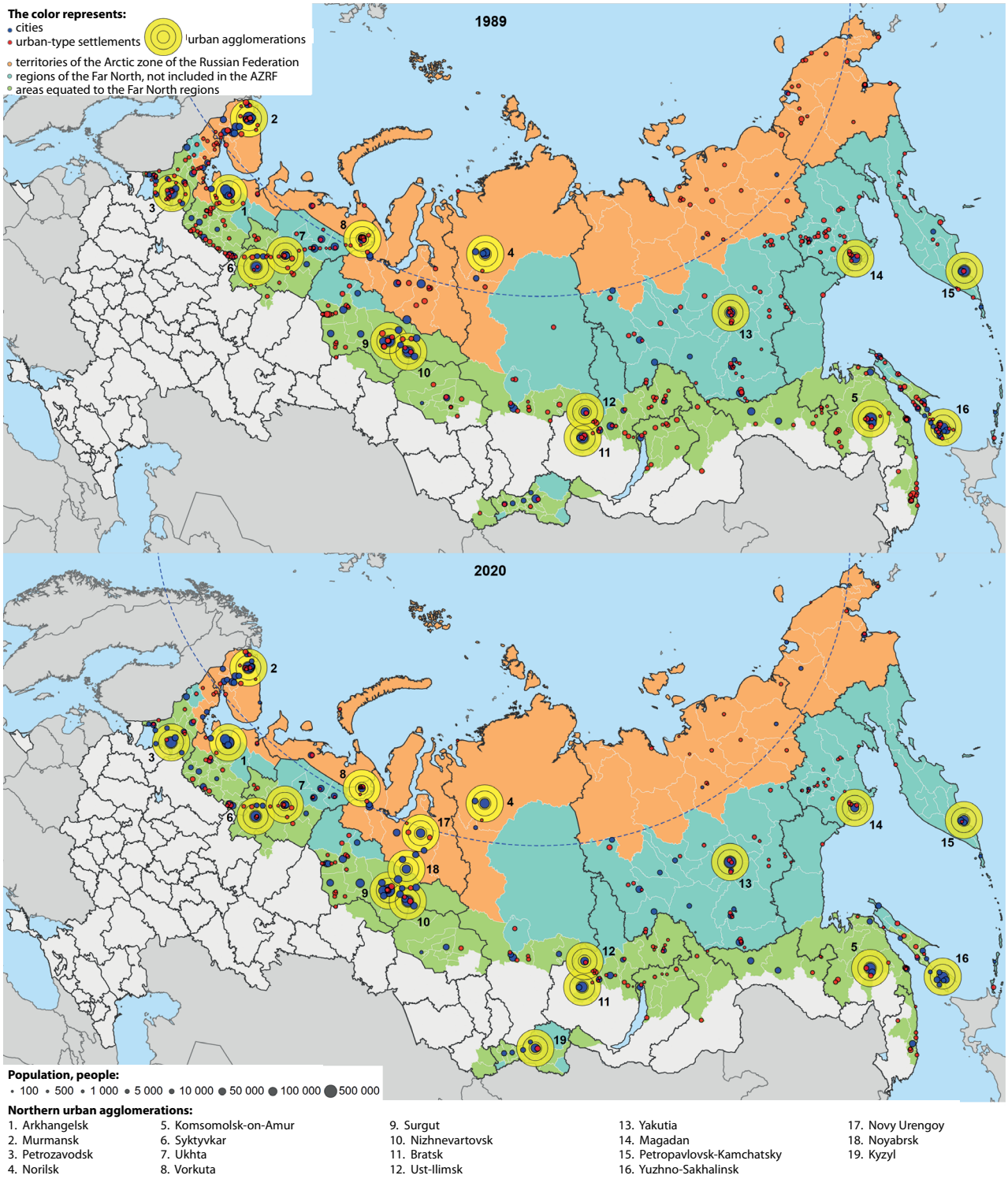
agglomerations. Thus, the role of urban agglomerations is claimed by 19 cities, six in the European and 13 in the Asian part of the North of Russia. The Northern urban agglomerations include 105 urban settlements (without core cities), including 46 cities and 59 urban-type settlements. And as of 1939, only two cities in the European part of the North of Russia met the criteria: Arkhangelsk and Murmansk. By 1959 they were joined by Petrozavodsk, Norilsk and Komsomolsk-on-Amur *(Fig. 1)*.

Figure 1. Urban agglomerations in the settlement system of the North of Russia, 1939 and 1959



In the period from 1959 to 1989 most of the northern agglomerations (11 out of 19) were formed. Most of them (3) were in the Komi Republic. The last three core cities, which crossed the 100-thousand mark, were Novy Urengoy, Noyabrsk and Kyzyl, all in the Asian part of the North. The concentration of agglomerations in the oil and gas regions of Western Siberia has increased *(Fig. 2)*.

Figure 2. Urban agglomerations in the settlement system of the North of Russia, 1989 and 2020



Let us compare urban agglomerations according to the following indicators: the population, including gravity zones; the core city proportion in the total population; the number of cities and urban-type settlements at the core city; the main specialization fields.

The European North of Russia includes six urban agglomerations, comprising 26 cities and 30 urban-type settlements *(Tab. 5)*. According to the distance from the core city, the population was distributed as follows: in the core city – 65.5%, in zone 1 – 23.2%, in zone 2 – 3.2% and in zone

Table 5. Urban agglomerations of the North of Russia, 2020

Core and population	Urban settlements by distance from the core and population		
	1 zone, up to 50 km	2 zone, 51–100 km	3 zone, 101–150 km
Large northern agglomerations			
Arkhangelsk 588,210 people, incl. 346,979 – core	**219,689 people, incl.:** 181,990 – Severodvinsk (34 km) 37,699 – Novodvinsk (19 km)	–	**21,542 people, incl.:** 18,493 – Onega (138 km), 3,049 – Obozersky (122 km)
Murmansk 530,495 people, incl. 287,847 – core	**133,012 people, incl.:** 53,525 – Severomorsk (16 km) 17,494 – Polar (28 km) 13,726 – Murmashi (21 km) 13,157 Gadzhievo (32 km) 12,826 – Snezhnogorsk (25 km) 9,690 – Kola (11 km) 5,726 – Safonovo (12 km) 4,927 – Molochny (14 km) 1,941 – Kildinstroy (20 km)	**34,304 people, incl.:** 20,364 – Olenegorsk (93 km) 9,246 – Zaozyorsk (54 km) 3,480 – Pechenga (97 km) 1,214 – Verkhnetulomsky (67 km)	**75,332 people, incl:** 41,145 – Monchegorsk (116 km) 14,706 – Zapolyarny (103 km) 11,012 – Nikel (124 km) 8,002 – Revda (131 km) 467 – Tumanniy (105 km)
Middle northern agglomerations			
Petrozavodsk 359,120 people, incl. 281,023 – core	**32,670 people, incl.:** 29,218 – Kondopoga (47 km) 3,452 – Pryazha (40 km)	–	**45,427 people, incl:** 14,091 – Medvezhegorsk (126 km) 8,678 – Suoyarvi (115 km) 8,606 – Pudozh (115 km) 8,026 – Olonets (116 km) 4,276 – Pindushi (127 km) 1,750 – Povenets (121 km)
Syktyvkar 292,082 people, incl. 244,403 – core	**14,482 people, incl.:** 8,471 – Krasnozatonsky (9 km) 4,196 – Verkhnyaya Maksakovka (9 km) 1,815 – Sedkyrkeshch (10 km)	**16,702 people, incl.:** 9,558 – Mikun (86 km) 7,144 – Zheshart (80 km)	**16,495 people, incl.:** 12,379 – Yemva (103 km) 4,116 – Urdoma (121 km)
Small northern agglomerations			
Ukhta 151,033 people, incl. 93,716 – core	**42,469 people, incl.:** 26,004 – Sosnogorsk (11 km) 7,321 – Yarega (16 km) 5,813 – Vodny (15 km) 3,331 – Shudayag (6 km)	**12,742 people, incl.:** 8,998 – Nizhny Odes (59 km) 2,730 – Voivozh (99 km) 1,014 – Borovoy (55 km)	**2,106 people, incl.:** 2,106 – Sindor (120 km)
Vorkuta 72,681 people, incl. 52,776 – core	**19,389 people, incl.:** 9,442 – Vorgashor (15 km) 8,025 – Severny (15 km) 1,362 – Zapolyarny (14 km) 560 – Komsomolsky (13 km)	**516 people, incl.:** 516 – Yeletsky (51 km)	

Source: The population of the Russian Federation by municipality: bulletin. Available at: https://rosstat.gov.ru/compendium/document/13282; The GeoNames geographical database. Available at: https://www.geonames.org

3 – 8.1%. Three urban agglomerations belong to the Arctic Zone of the Russian Federation (AZRF). All six agglomerations meet the criteria of agglomeration even within a radius of up to 50 km.

The Arkhangelsk Arctic urban agglomeration stands out in terms of population, it consists of three cities and one urban-type settlement (the city of Severodvinsk could claim to be a core city by the first criterion). Economically, it is one of the most diversified centers in the North: shipbuilding and ship repair, education, timber industry and transport are well developed. The proportion of core-city population is 59.0%.

The Murmansk Arctic urban agglomeration takes the first place by the number of urban settlements in the satellite zone, it consists of nine cities and nine urban-type settlements. This may explain the fact that it has the lowest proportion of the core city population – 54.2%. It specializes mainly in maritime transport, fishing and fish processing, and ship repair.

The Petrozavodsk urban agglomeration includes five cities and three urban-type settlements. It is distinguished by the fact that it includes the most settlements located in the third zone – four cities and two urban-type settlements. According to the proportion of the core city population it ranks second with 78.3%. Mechanical engineering, metalworking, timber, food, light industry, transportation hub are developed here.

The Syktyvkar urban agglomeration has the highest proportion of the core city – 83.7%. This is caused by the fact that in the gravity zone there are two small cities and five small urban-type settlements. It specializes in the timber and pulp and paper industry, the production of nonwovens, and the food industry.

The Ukhta urban agglomeration has a closely located satellite town – Sosnogorsk, and seven urban-type settlements, the proportion of the core city is 62.1%. It is the center of oil and gas industry.

The Vorkuta urban agglomeration is part of the AZRF, there are five urban-type settlements in the zone of influence, the proportion of the core city is 72.6%. In 1989 the agglomeration included 12 urban-type settlements, and its population reached 216.8 thousand people. It specializes in the coal mining industry.

In the Asian part of the North there are 13 urban agglomerations, with 39 cities and 29 urban-type settlements, three agglomerations completely belong to the AZRF *(Tab. 6)*. By distance from the core city, the population was distributed as follows: in the core – 70.7%, in the first zone – 14.4%, in the second zone – 8.5% and in the third zone – 6.4%. Among 13 agglomerations meeting the criteria in a radius of up to 50 km – 7, with an increase in the radius up to 100 km – 10.

The Surgut urban agglomeration is the largest in terms of population with 729.7 thousand people, it consists of four towns and four urban-type settlements. The city of Nefteyugansk corresponds to the status of a core city in terms of population. The proportion of the core city is the lowest among the northern agglomerations – 52.1%. Surgut agglomeration has a high cohesion of settlements: the first zone has 27.5%, the second 11.1%, and the third 9.3% of the urban population. It specializes in the production and processing of oil and associated gas.

The Nizhnevartovsk urban agglomeration includes five cities and three urban-type settlements, has an even distribution of population by zones, 14.5%, 16.8% and 14.0% respectively, the core city accounts for 54.7% of the urban population. It is the center of the oil and gas industry.

Table 6. Urban agglomerations of the Asian part of the North of Russia, 2020

Core and population	Urban settlements by distance from the core and population		
	1 zone, up to 50 km	2 zone, 51–100 km	3 zone, 101–150 km
Large northern agglomerations			
Surgut 729,715 people, incl. 380,632 – core	**200,587 people, incl.:** 127,255 – Nefteyugansk (47 km) 26,328 – Poikovsky (5 km) 23,342 – Fedorovsky (43 km) 17,774 – Bely Yar (9 km) 5,888 – Barsovo (12 km)	**80,768 people, incl.:** 41,199 – Lyantor (79 km) 39,570 – Pyt-Yakh (63 km)	**67,727 people, incl.:** 67,727 – Kogalym (126 km)
Nizhnevartovsk 507,739 people, incl. 277,668 – core	**73,354 people, incl.:** 46,643 – Megion (26 km) 19,904 – Izluchinsk (21 km) 6,807 – Vysoky (40 km)	**85,476 people, incl.:** 44,646 – Langepas (81 km) 40,830 – Strezhevoy (61 km)	**71,241 people, incl.:** 43,666 – Raduzhny (138 km) 18,074 – Pokachi (108 km) 9,501 – Novoagansk (113 km)
Middle northern agglomerations			
Yakutsk 352,926 people, incl. 322,987 – core	**14,431 people, incl.:** 10,352 – Zhatai (15 km) 4,079 – Nizhny Bestyakh (12 km)	**15,508 people, incl.:** 9,385 – Pokrovsk (70 km) 6,123 – Mokhsogollokh (83 km)	–
Komsomolsk-on-Amur 306,155 people, incl. 244,768 – core	**50,514 people, incl.:** 38,913 – Amursk (36 km) 11,601 – Sunny (32 km)	**10,873 people, incl.:** 10,873 – Elban (62 km)	–
Yuzhno-Sakhalinsk 296,622 people, incl. 200,636 – core	**552 people, incl.:** 34,023 – Korsakov (36 km) 11,851 – Dolinsk (42 km) 9,378 – Aniva (31 km)	**36,963 people, incl.:** 27,148 – Kholmsk (53 km) 9,815 – Nevelsk (74 km)	**3,771 people, incl.:** 3,771 – Tomari (103 km)
Small northern agglomerations			
Bratsk 248,129 people, incl. 226,269 – core	**20,833 people, incl.:** 20,833 – Vihorevka (27 km)	**1,027 people, incl.:** 1,027 – Vidim (98 km)	–
Petropavlovsk-Kamchatsky 242,692 people, incl. 179,586 – core	**63,106 people, incl.:** 39,345 – Yelizovo (24 km) 22,223 – Vilyuchinsk (21 km) 1,538 – Vulkanny (21 km)	–	–
Norilsk 203,300 people, incl. 181,830 – core	–	**20,804 people, incl.:** 20,804 – Dudinka (80 km)	**666 people, incl.:** 666 – Snezhnogorsk (142 km)
Noyabrsk 167,633 people, incl. 106,911 – core	–	**31,561 people, incl.:** 31,561 – Muravlenko (81 km)	**29,161 people, incl.:** 29,161 – Gubkinsky (148 km)
Novy Urengoy 161,495 people, incl. 118,033 – core	–	**9,997 people, incl.:** 9,997 – Urengoy (80 km)	**33,465 people, incl.:** 21,501 – Tarko-Sale (140 km) 11,140 – Pangody (101 km) 824 – Zapolyarny (132 km)
Kyzyl 154,805 people, incl. 119,438 – core	**19,282 people, incl.:** 19,282 – Kaa-Khem (20 km)	**4,903 people, incl.:** 4,903 – Turan (61 km)	**11,182 people, incl.:** 11,182 – Shagonar (107 km)
Magadan 110,237 people, incl. 92,052 – core	**12,931 people, incl.:** 6,070 – Ola (28 km) 4,811 – Sokol (40 km) 2,050 – Uptar (38 km)	**5,254 people, incl.:** 3,555 – Tent (60 km) 1,699 – Glass (54 km)	–
Ust-Ilimsk 100,628 people, incl. 80,419 – core	**6,319 people, incl.:** 6,319 – Railway (13 km)	**883 people, incl.:** 883 – Radishchev (99 km)	**13,007 people, incl.:** 9,112 – Novaya Igirma (122 km) 2,983 – Rudnogorsk (105 km) 912 – Yangel (121 km)

References: The population of the Russian Federation by municipality: bulletin. Available at: https://rosstat.gov.ru/compendium/document/13282; The GeoNames geographical database. Available at: https://www.geonames.org

The Yakutian urban agglomeration has the highest proportion of the core city population – 91.5%, it includes three urban-type settlements and one town Pokrovsk. The agglomeration has no pronounced economic specialization. Energy, trade, and the social sphere are developed here.

The Komsomolsk-on-Amur urban agglomeration includes one town Amursk and two urban-type settlements located within the first and second zones. It is the center of military-industrial complex (aircraft building, shipbuilding), metallurgy.

The Yuzhno-Sakhalinsk urban agglomeration is the only agglomeration that does not have an urban-type settlement and contains six towns. The core city accounts for 67.6% of the urban population. It is a multifunctional center with a predominance of electric power, food industry, and transportation.

The Bratsk urban agglomeration ranks second in terms of core city size (91.2% of the urban population), has a minimum of satellite settlements (Vikhorevka and Vidim). It specializes in hydropower, timber, pulp and paper, and aluminum production.

The Petropavlovsk-Kamchatsky urban agglomeration is located within the northeast, specializing in the fish processing, ship repair, and mining industries. It includes two towns and one urban-type settlement, located in the first zone, within a radius of up to 25 km. The core city accounts for 74.0% of the urban population.

The Norilsk Arctic urban agglomeration includes one town ("Dudinka") and one urban-type settlement ("Snezhnogorsk"). The cities of the first zone Talnakh and Kaierkan were incorporated into Norilsk in 2004, so the proportion of the core city is quite high – 89.5%. The city-forming enterprise is Metals and Mining Company "Nornickel", its main products are nickel, cobalt, copper, platinum group metals, gold, silver. The enterprises employ more than 50% of the population, the city's budget depends on the tax revenues of "Nornickel" by more than 90%.

The Noyabrsk Arctic urban agglomeration has two urban settlements: Muravlenko and Gubkinsky, located in the second and third zones, respectively. It specializes in oil and gas industry.

The Novy Urengoy Arctic urban agglomeration includes one town (Tarko-Sale) and three urban-type settlements located within the second and third zones, there are no settlements adjacent to the core city, it accounts for 73.1% of the urban population. It is the center of gas production.

The Kyzyl urban agglomeration combines the nearby Kaa-Khem urban-type settlement and two towns: Turan and Shagonar. The proportion of the core city is 77.1%. Kyzyl industry is represented by small manufacturing, mining, and energy companies.

Magadan urban agglomeration has no satellite towns, five small towns are located in the first and second zones, the proportion of the core city by population is 83.5%. The economy is based on the mining and energy industries. These industries account for about 95% of annual production and employ more than 20% of the population.

The Ust-Ilimsk urban agglomeration includes five urban-type settlements, the core city accounts for 79.9% of the urban population. The basis of the economy is formed by manufacturing companies, primarily "Ilim Group".

Conclusion

Using the value of the main indicator "population size" for a core city of more than 100 thousand people and the criterion of having at least two settlements in the agglomeration corridor, we have identified 19 "northern urban agglomerations", of which six are fully included in the Russian Arctic. In terms of population size, 10 agglomerations are

small, 5 are medium-sized and 4 are large (Surgut: 729,700, Arkhangelsk: 588,200, Murmansk: 530,300 and Nizhnevartovsk: 507,700). In large agglomerations, the proportion of core cities in the population is the lowest at 54.9%, in medium-sized ones – 80.5%, and in small ones – 77.6%. There is a regularity in average population density of satellite settlements: in large agglomerations it is 27,975 people, in medium ones – 11,182, in small ones – 9,272. This pattern can be considered a manifestation of the "agglomeration effect".

The total area of the Russian North territories is 11 million 810.9 thousand square kilometers. 19 northern urban agglomerations located within a radius of 150 km, accounts for 1 million 343.0 thousand square kilometers without crossing areas, or 11.4% of the total area. This means that the developed area is small, and the process of forming northern urban agglomerations is not completed. Out of the 375 cities and towns, only 124 (33.1%) are included in the agglomerations, of 141 towns – 65 (46.1%), of 234 urban-type settlements – 59 (25.2%). Most urban settlements are located in the first and second zones (75.8%), that is, within a radius of accessibility of 100 km.

Using the cartographic method, we can see that only a small part of the Russian North is covered by urban agglomerations; the most populated is the European part, while the Asian part of the Russian North is less populated. The map clearly shows the proximity of Syktyvkar and Ukhta, Novo-Urengoi, Noyabrsk, Surgut and Nizhnevartovsk, Bratsk and Ust-Ilimsk urban agglomerations. With improved transport communications and reduced travel time between their cores, they could form new, larger agglomerations.

The analysis of works on the agglomeration effect estimation has shown that its calculation requires: 1) hard work on the collection and analysis of socio-economic information, 2) the presence of an interested customer possessing information resource or having access to it, 3) funds and human resources to carry out a sociological survey to study the pull-push migration within the agglomeration area. The experience of such work in the Sverdlovsk Oblast is presented in [38, p. 47–50]. In the future, it will be necessary to calculate the agglomeration effect for northern urban agglomerations using the proposed indicators.

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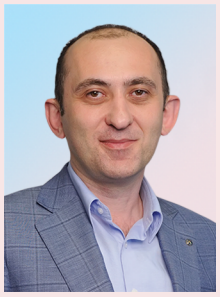
Strategic Priorities for the Russian Seaports Cargo Turnover Structure Development*



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Abstract. Trends in the world economy and trade, as well as the process of globalization, contribute to the seaports development as a strategic driver of economic growth in many countries. Seaports play a major role in optimizing trade relations; they act as key nodes in global transport chains and serve as connecting elements of the socio-economic systems in many countries. We have identified global, national and regional trends in the development of port facilities, analyzed cargo transshipment in the sea ports that are strategic objects of the state; this determines the need to improve methods and forms of management of their development on the basis of advanced technology. The development of port infrastructure will ensure economic growth both in the regional location and in the country as a whole. It is in the regions that it is necessary to form a competitive environment for economic entities, in particular seaports. Their development should have a positive impact on economic and social aspects: economic growth of territorial entities, market competition, development of innovative technologies and investment inflow. Empirical estimates of the links of neighboring regions economic growth were obtained on the basis of Moran's *I*, as well as from studies on how Russia's export cargo flows through seaports depend on GDP and on the index of industrial production in the period from 2006 to 2018. We analyzed the relationship between cargo turnover and shocks such as the financial and economic crisis of 2008–2009 and the imposition of sanctions, which for obvious reasons increase the observed volatility of international trade and, in particular, cargo volumes in ports. In the conclusion of the article we have formulated strategic priorities for the development of cargo turnover structure in sea ports on the basis of the identified opportunities and the obtained forecasts.

Key words: seaports, maritime transport, cargo flows, cargo turnover structure, strategic priorities, port infrastructure, Moran's *I*, autoregressive model with distributed lag, ex-post analysis, OTSW-analysis, strategizing.

Goal setting and overview of studies

Russia has a long coastline and an advantageous geostrategic location between Europe and Asia. Therefore, its seaports play a major role in the system of factors for the development of the national economic complex and service of foreign trade [1; 2]. Consistent implementation of an economically sound and efficient strategy for the development of the seaports' cargo turnover structure will ensure economic growth both in the regions and in the country. In this regard, investigation of Russian seaports' cargo transshipment processes becomes extremely relevant: reasons for the dynamics of volumes, commodity structure, and the most stable observed trends [3]. One of the relevant tasks is to select and justify strategic priorities for the development of the seaports' cargo turnover structure, implementation of which is secured by available resources and competitive advantages. Absence of such priorities leads to the situation when the management of the country's port economy is focused on solving accumulated problems, rather than determining long-term development prospects.

Theoretical and methodological basis of the work includes the works of scientists devoted to the analysis of global trade and its prospects, the study of sea transportation and cargo, as well as the theory and methodology of strategizing: V.L. Kvint [4; 5], Yu.A. Shcherbanin [6], V.I. Rusakov [7], D.Yu. Golyzhnikova [8], E.N. Smirnov [9], P.E. Achurra-Gonzalez, P. Angeloudis, N. Goldbeck [10], T. Lakshmanan [11], Z.H. Munim, H. Schramm [12], T.B. Bjorner [13], M. Kulshreshtha и B. Nag [14], D.J. House [15].

We thoroughly discuss economic importance and capabilities of modern seaports, including COVID-19 pandemic, in the article [16]. Due to

rapid changes taking place in the countries' economies, a modern seaport becomes a logistics and industrial hub in complex intertwining global chains. Thus, modern ports should form competitive advantages that ensure their attractiveness for cargo carriers. Justification of relevant strategic priorities will make such ports attractive for investment and allow creating conditions for their infrastructure modernization.

The article [17] studies the factors that contribute to ports becoming more stable. One of the studies' fundamental questions is how to quantify intangible performance indicators of ports. Obviously, there are inputs and outputs that can be measured and evaluated using conventional tools, but many of them are limited to "measurable" data about port management and their operations. In the work [18], these general problems are considered within the framework of this area; a comprehensive scheme for evaluating the ports' efficiency is created on the basis of generalization of various points of view.

The article [19] discusses the evolution of the "seaport" concept, characteristics of services, and socio-economic changes.

To holistically understand the problems related to seaports and their development, it is necessary consider legal peculiarities of regulating this sphere. The problems of harmonization of national and international legal norms, the lack of uniformity in the sources of private international maritime law are discussed in article [20].

They obviously create an additional barrier to increasing cargo flows through seaports. Simultaneously, the author concludes that it is very difficult for many carriers to abandon the Hague-Visby rules, despite their obsolescence, since the mechanisms of relations with the clientele are already established.

The article [21] became one of the first Russian domestic works on similar problems. In it, the interdependence between the level of transport infrastructure development and macroeconomic indicators is studied on the basis of panel data.

The dependence of Russian maritime transport on the growth rates of the global economy and international trade is discussed in the article [22]. Consideration of trends in the development of international maritime transport is necessary for forecasting cargo turnover and the volume of the Russian Federation's port capacity. For example, in 2015, the growth rate of global trade was lower than the growth rate of the global economy, and it reduced the growth rate of international maritime transport. It is noted that the growth rate of cargo turnover of Russian seaports is higher than the global average, and the devaluation of the national currency, sanctions, and import substitution are changing the cargo turnover structure of Russian ports. A significant role of Asian countries in the global trade, according to the author, contributes to the implementation of innovative scenario of the Strategy on the Development of Russian Seaport Infrastructure till 2030.

The article [23] pays special attention to the econometric analysis of cargo transportation using the autoregressive model with a distributed lag and the vector autoregression model. It studies the interrelation between the demand for cargo flows and the macroeconomic situation and estimates the long-term elasticity of the demand for cargo transportation. In the work [24], the authors assess the relationship of export cargo flows of the Russian Federation with macroeconomic indicators, paying special attention to cargo transshipment in domestic ports and ports in neighboring countries.

We provide detailed statistics for redirections of cargo from Ukrainian and Baltic ports to Russian ones. Such sources as "Review of UNCTAD Maritime Transport"[1] and "State of marine basins of Russia"[2] in the journal "Seaports" ("Morskie porty") review all activity of the Russian port complex.

[1] *UNCTAD. Review of Maritime Transport.* Available at: http://unctad.org

[2] *Seaports*, no. 1 (42) 2006 – no. 10 (182) 2019, information is provided by ZAO "Mortsentr-TEK".

The study of global and national strategic trends in the development of seaports, as well as the analysis of scientific literature, determined the ***relevance*** of developing an approach to identifying and formulating strategic priorities in the development of the Russian seaports' cargo turnover structure, assessing factors that stimulate the implementation of identified opportunities and limit their potential. Realization of the Russian seaports' strategic potential will ensure the solution of the most important tasks of the national economy: organization of sea cargo transportation in accordance with the modern economy's requirements, introduction of efficient mechanisms for organizing activities of seaports integrated into international transport relations, creation of new high-tech jobs, growth of income, tax revenues, etc.

The purpose of this work is to substantiate strategic priorities for the development of the Russian seaports' structure of cargo turnover. To achieve it, the following ***tasks*** were solved in accordance with the logic of the study:

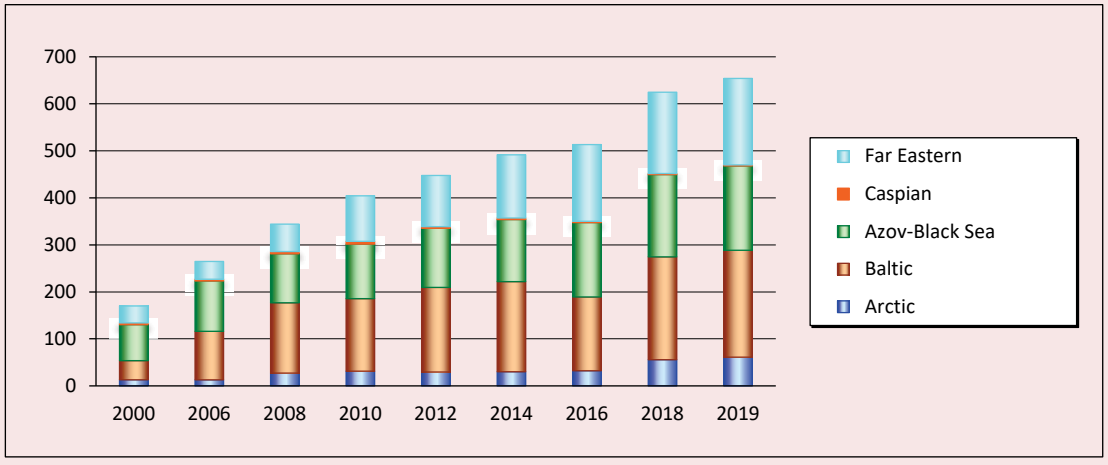
- to identify the strategic role of seaports;
- to analyze global strategic trends in the development of the cargo turnover structure of sea transportation and port infrastructure;
- to analyze the state of the Russian maritime infrastructure and the dynamics of the cargo turnover structure of sea transportation through the basins;
- to conduct an econometric analysis of the relationship between the volume of cargo flows in Russia and national macroeconomic indicators;
- to substantiate strategic priorities for the development of the Russian seaports' cargo turnover structure, provided with resources and competitive advantages.

The information and empirical basis of the study includes data of the Federal State Statistics Service (Rosstat), World Bank, ZAO "Mortsentr-TEK", UNCTAD conferences, and statistical data of Associations of Commercial Sea Ports (ACSP).

Analysis of the dynamics of maritime transportation

The volume of cargo transportation through seaports increases every year, and such positive dynamics is largely ensured by sustainable development of the port transport infrastructure. The main trend in the development of the seaports' infrastructure is the increase in port capacity and investment in the industry [25]. Several key investment projects are being implemented to

Figure 1. Volume of transshipment of export cargo in Russian sea basins n 2000–2019, mill. tons



Complied according to: data of the journal "Seaports". 2000–2018, information is provided by ZAO "Mortsentr-TEK".

increase the seaports' capacity, which are planned to be completed by 2030 [26].

We would like to start by studying the export cargo flow, since export has always been considered the most popular transportation type. *Figure 1* shows a graph of changes in cargo turnover in the marine basins of Russia in 2000–2019.

These data show a steady increase in cargo turnover across all Russian basins over the past 19 years. It was mostly assured by an increase in transshipment of coal, ore, oil and petroleum products, liquefied gas, wood, cargo in containers and grain. Special attention should be paid to the positive dynamics of the activities of companies engaged in the process of loading and unloading ships. After the USSR collapse, the stevedoring industry became an impetus for the growth of cargo transshipment in Russian seaports. This activity led to an increase in cargo turnover in 1990–2014 by 28%[3].

State regulation of the development of Russian seaports in 1990–2020

Various state programs ensuring the improvement of port infrastructure, including increase in port capacity, automation of port activity processes, retraining of personnel of the navy, improvement of port areas and general transport infrastructure, positively affected the growth of cargo transshipment. Obviously, general transport infrastructure acts as a key development driver of cargo transshipment, since 83% of cargo was delivered by pipeline and rail transport in 2018.

The most important element of state regulation is the fact that this issue is included in the Development Strategy of Russia until 2030[4]. It provides information that cargo processing in seaports will grow, and the transport infrastructure will improve, which is related mostly to the development of trade and economic relations between Russia and far abroad. At the same time, the draft Strategy assumes that the cargo basis of the north-western and southern routes, which is processed in the ports of the Baltic States and Ukraine, will be reoriented to Russian seaports. This will entail the reorientation of port facilities and the improvement of port infrastructure.

The question of the development of seaports has been raised for a long time. As part of the implementation of the federal target program "Revival of the merchant fleet for 1993–2000", the volume of transshipment of Russian cargo in seaports increased by 56% (from 176.1 million tons in 1993 to 275.1 million tons in 2001), including 82% in Russian ports (from 113.0 to 205.6 million tons).

The subprogram "Sea transport" of the federal target program "Modernization of the transport system of Russia (2002–2010)" set the task of meeting the needs of the Russian economy and foreign trade in the transshipment of export-import, transit and coastal cargo at a high technical, technological, and organizational level in close cooperation with related modes of transport and cargo owners. As a result of the implementation of the proposed measures, modern high-tech mechanized transshipment complexes with a capacity of 317 million tons were introduced in 2002–2009.

Therefore, in 2011–2018, within the "Sea transport" subprogram of the federal target program "Development of the transport system of Russia for 2010–2020", port infrastructure development was implemented. To complete the picture, it is appropriate to indicate the distribution of cargo delivery for departure to the seaports of Russia *(Fig. 2)*.

The federal project includes a comprehensive plan for the modernization of the primary infrastructure until 2024, which assumes an increase in capacity of the seaports of the Russian Federation for all basins in total to 1.3 billion tons.

[3] Statistics. Associations of Commercial Sea Ports. Available at: http://www.morport.com/rus/content/statistika

[4] Federal target program "Development of the transport system of Russia until 2030".

Figure 2. Cargo delivery (for sea departure) to Russian seaports by various modes of transport, 2019, mill. tons

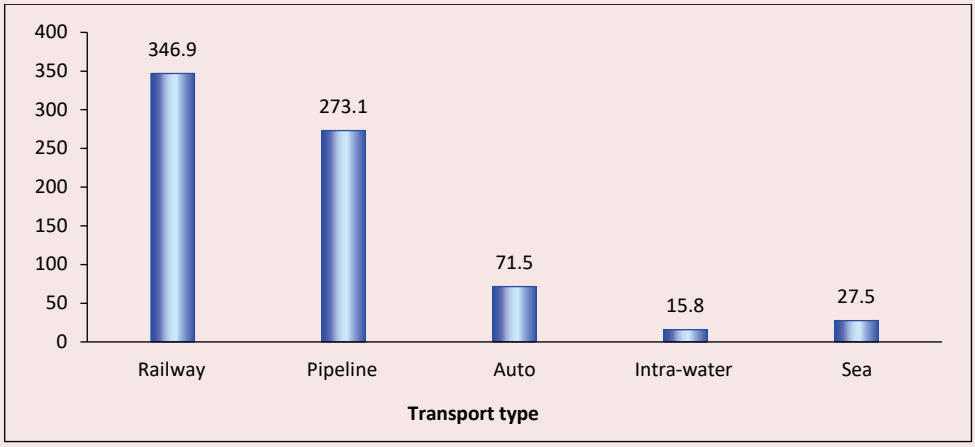


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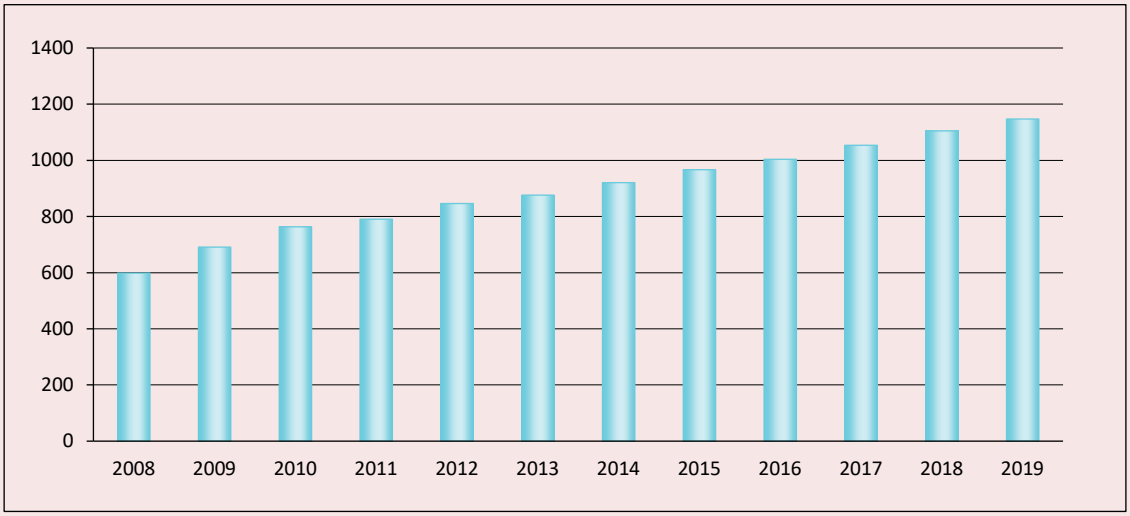
Figure 3. Capacity of Russian seaports in 2008–2019, mill. tons



Complied according to: data of the journal "Seaports". 2009–2020, information is provided by ZAO "Mortsentr-TEK".

Figure 3 shows that several program measures led to a large-scale increase in port capacity: in 2008–2019, the increase amounted to 548.8 million tons.

However, despite the positive dynamics, the level of workload at seaports remains low. According to the results of the Accounting Chamber's audit, the level of workload of Russian seaports does not exceed 76% of the design capacity[5]. On this background, the implementation of strategic priorities, aimed at increasing the capacity of seaports, may be ineffective, and therefore it is necessary to solve complex tasks related to the need to form a direct port infrastructure capable of serving

[5] Report on the results of the control event "Checking the effectiveness of the use of budget allocations aimed at the implementation of investment projects and other measures taken to increase the production capacity of seaports in 2016–2018 and the expired period of 2019".

the national economy's growing cargo turnover needs and to implement projects to ensure the development of port infrastructure, the construction of approach channels, water areas and berths. All of this requires ensuring the consistency of the national strategy for the development of Russian seaports with the strategies of private investors. So far, in 2016–2019, only 13 of the planned 36 state-owned facilities of the port infrastructure were put into operation.

The development of digitalization processes in seaports is one of the most relevant and significant trends of the last decades. Initial digital technologies were used in the port of Rotterdam back in 1993, when various unmanned means for handling and horizontal transshipment of containers began to be used. This trend also affects the formulations adopted in Russian strategic documents of various levels regulating the development of the country's port economy. The need to adopt strategic priorities for the digitalization of the port economy is mentioned in the Order of the RF President "On national goals and strategic tasks for the development of the Russian Federation until 2024" and in several strategic documents directly regulating the development of the transport sector (for example, in the departmental target program "Digital platform of the transport complex of the Russian Federation"). The analysis of the strategic documents forming the legislative and regulatory basis for the digitalization of the Russian port economy is provided in the article [27].

Digitalization of seaports is a large-scale project that requires the formation of fundamentally new strategic competitive advantages and the introduction of technologies that allow creating digital port counterparts, "smart ports", which will provide an opportunity to continuously monitor movement of ships, state of the port infrastructure and to consider changes in weather conditions, etc. Digitalization of port facilities allows automatic management of loading and unloading processes, coordination of ship traffic, analysis, and consideration of the busiest points on the port railway when choosing routes, etc. Several digital technologies, such as electronic document management, "single window" principles and mechanisms, container number recognition systems, digital security systems, etc., are already being used in Russian seaports. However, digitalization is still fragmented, and it requires further study and development.

Empirical analysis of the cargo turnover in seaports

Export cargo flows of Russia through seaports are obviously related to the macroeconomic situation. To identify relevant relationships, we will use indicators like Russia's export cargo flows through seaports, GDP, and the industrial production index, taken as a percentage of the previous year, in the period from 2006 to 2019. The growth of the industrial production index should be associated with the volume of export cargo transportation, which, in turn, directly affects the increase in the growth of the country's economic development indicator. At the same time, it is impossible not to consider the impact on economic indicators of such events as the 2008–2009 financial crisis, the sanctions policy after the entry of Crimea into the Russian Federation in 2014, the COVID-19 pandemic.

We used MS Excel, R and IDE RStudio (dynlm, plm, and splm packages) as a software. According to data, given in *Table 1*, a linear regression model is constructed.

The ***GDP*** variable is the logarithm of GDP growth at current prices, ***IPI*** is the logarithm of the increase in IPI, ***GDP(-1)*** and ***IPI(-1)*** are the corresponding lag values, and the dependent variable is the logarithm of the increase in the volume of cargo transshipment in the basins of Russia. The binary variables ***Crisis_08-09*** and ***Crimea*** are also introduced. The rows are checked for stationarity.

Table 1. Statistical data of increases for 2007–2019

Year	Cargo turnover of Russian sea ports	GDP	IPI
2007	-0.133837429	0.235176764	0.004703669
2008	0.984286338	0.241500865	-0.058052434
2009	0.091948966	-0.059830219	-0.112326044
2010	0.059629331	0.193296605	0.201567749
2011	0.018250951	0.301758856	-0.021435228
2012	0.05862584	0.130741094	-0.015238095
2013	0.040564374	0.072912495	-0.02901354
2014	0.085254237	0.082941016	0.012948207
2015	0.057160706	0.050920647	-0.014749263
2016	0.066627271	0.03337154	0.015968064
2017	0.089196676	0.070678826	0.018664047
2018	0.03853001	0.125283828	-0.00192864
2019	0.028651892	0.06194838	-0.001932367

Source: data of the Federal Statistics Service and ZAO "Mortsentr-TEK". Available at: https://www.gks.ru/accounts; the journal "Seaports" for 2006–2020. Available at: http://www.morflot.ru

The values of correlations by increases turned out to be as follows: GDP ~ IPI = 0.320; IPI ~ Cargo turnover volume = -0.255; GDP ~ Cargo turnover volume = 0.176.

The change in the GDP indicator has a positive effect on the volume of cargo transshipment in the same period, and the dependent variable with the IPI have a negative correlation. Consequently, the indicators at the observed stage change in the counterphase. It is not surprising that some factors enter the model with a negative sign.

The best model with the inclusion of binary variables was selected according to information criteria.

The volume of cargo transshipment in Russian basins = -0.2739 + 2.3446 × (GDP) − 1.75269 × × (IPI(-1)) − 1.44482 × (IPI) + 0.18027 × (Crimea) + + 0.30167 × (Crisis_08-09)

The positive values of coefficients for binary variables are explained by the fact that the growth of cargo turnover continued in the corresponding years, although there was a noticeable drop in its rates.

The final model with all significant coefficients took the form:

The volume of cargo transshipment in Russian basins = -0.04331 + 3.10847 × (GDP) − 1.58216 × × (GDP(-1)) − 2.87851 × (IPI(-1)) − 4.63506 × × (IPI)

In the current situation, considering the specifics of 2020, the coefficient of determination and the intra-sample forecast cannot be measures of the model's quality. The forecast for 2021 should take into account the forecast estimates of relevant indicators. Therefore, an out-of-election forecast was built considering not optimistic forecast values of GDP of 1–2%[6] and IPI at the level of 2.5–3%. The growth of cargo turnover in 2021, according to the model, should be 1.5–6.9%.

Researchers have been trying to understand and evaluate the relationship between economic growth and transport development for a long time. Yu.A. Shcherbanin notes that some researchers do not see the direct connection, while others think that transport development favors economic growth [28]. The works [28; 29] indicate that it is necessary to consider intra- and non-industry effects while determining the impact of transport on a region's economy, and the authors emphasize two problems: difficulties in determining the latter and aggregation of indicators. The article [30] also mentions the difficulties of assessing the contribution of seaports

[6] Projections of the CB, MED RF, IMF, OECD, IEC.

Table 2. Moran's I and P-value of Moran's test

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Index	0.026	0.166	0.077	-0.021	0.030	0.172	0.134	0.034	0.183	-0.004	0.033	-0.076

Source: author's calculation are based on data of the Federal State Statistics Service and socio-economic indicators of Russian regions. Available at: https://rosstat.gov.ru/regional_statistics

to a region's economy. Its author proposes to consider the seaport as a "stimulator of a region's economic growth". Consequently, the assessment of the relationship between regional economic growth is the following task.

To measure the economic development of neighboring regions, let us consider the logarithm of the gross regional product adjusted for purchasing power. The regions are heterogeneous in various indicators, but for natural reasons, development of a region should have a positive impact on its neighbors, thereby contributing to the integral development of the whole country. To prove this, they usually resort to calculating the Moran's I, which acts as a spatial analogue of the correlation coefficient. According to the data of the RF Federal State Statistics Service concerning the socio-economic indicators of 79 regions of Russia, an index was calculated and the Moran test was conducted to identify spatial dependencies. In this case, a normalized boundary weights matrix was used. Below are the values of the Moran's I for the first differences of the variable for each year up to 2018 *(Tab. 2)*, which turned out to be positive in most situations.

Moreover, using a randomized cross-dependence test [31], the presence of spatial dependencies was revealed, which indicates the need to take into account spatial lags when modeling and forecasting regions' economic growth. This conclusion is consistent with the assumption that the development of a region entails the development of its neighbors.

It is worth paying attention to the conclusions obtained in [32], where it is noted that the priority issue of the medium-term development of coal ports in the Far Eastern region is the creation of modern specialized terminals with reliable environmental protection. Meanwhile, ecological deterioration of adjacent territories due to the growth of coal dust and the formation of traffic congestion makes these regions unattractive.

More specific methods and tools for the development of port infrastructure are already proposed by scientists in the article by E.S. Shmeleva [33]. One of the tools that will ensure the increase of seaports' capacity should be the digitalization mentioned above, because currently a lot depends on the introduction of IT systems and their use in strategic and operational planning by personnel, as well as on improving the regulatory framework. The 2020 situation, caused by the COVID-19 epidemic, revealed the need to use digital technologies in most areas of port operation and showed who has already managed to transfer business processes to digital rails. However, in addition to digitalization, infrastructure changes, like transport links to the port and terminal, should help.

To sum up, we can confidently conclude that, despite the aforementioned problems, the development of port infrastructure can act as one of the drivers of the country's economic development, and an increase in cargo turnover should lead to a partial economic recovery.

OTSW analysis

We will conduct the OTSW-analysis (Opportunities, Threats, Strengths и Weaknesses)[7] to develop a strategy for the development of the infrastructure

[7] The abbreviation is used in accordance with the V.L. Kvint's methodology.

of Russian seaports. It will allow identifying strategic opportunities and threats, as well as strengths and weaknesses of the development of a strategizing object [34]. Strategic priorities are formulated to implement the opportunities identified in the analysis process, which are provided with resources and competitive advantages. This is what the further analysis in our work is devoted to.

1. Favorable geostrategic location.

One of the basic strategic ***opportunities*** for the development of port infrastructure in Russia is determined by an advantageous geostrategic location that ensures the intersection of international transport corridors. At the same time, the sanctions, which have been imposed by several states since 2014, entail serious threats to the development of export-import relations between Russia, the United States, and the countries of the European Union.

A strength is the long coastline, which provides access to 13 seas and three oceans, accessibility to logistics corridors, as well as convenient reorientation of cargo. The barriers established between Russia, the EU, and the US have led to the need to review economic relations between Russia and the countries of the Asia-Pacific region and to justify the priorities of this direction of cargo flows. For instance, the development of the domestic ice fleet will allow Russia to use the Northern Sea Route all year round and will provide an opportunity to make fast cargo transportation between the countries. ***A weakness*** is the fact that not all ports have a favorable location on the coastline, and it is necessary to carry out dredging of water areas, due to the presence of obstacles to the acceptance of multi-tonnage vessels, in some of them.

2. High transit potential.

The second ***opportunity*** that opens after identifying priorities is a high transit potential. However, the foreign policy situation with the EU and undeveloped ports' infrastructure, located on the main transport corridors, lead to ***threats*** that significantly reduce the potential (it is implemented by only 8–12%)[8]. At the same time, Russia's potential for the formation of transport corridors is unique on a global scale, which forms the country's ***strengths*** in the development of transit cargo transportation. However, due to the lack of modern maritime transport infrastructure facilities, significant investments are needed.

3. High potential of the Northern Sea Route.

The Northern Sea Route with a length of about 5,600 kilometers – from the Kara Gate to Providence Bay – is an example of a corridor that has several advantages for Russia, the EU, and the countries of the Asia-Pacific region. In turn, the development of the port infrastructure of the Northern Sea Route, considering its future integration into the global transport system, requires improvement of the country's transport infrastructure and advancement of customs procedures.

Usage of this potential is the third possibility. With the right approach, it will reduce transport costs and cargo delivery time, which will lead to an increase in competitiveness in the international arena. In [35], several competitive advantages of the Northern Sea Route relative to the Suez Canal were noted.

Negative climate and environmental changes are ***a threat*** to the implementation of this strategic opportunity. The change of climatic zones and environmental pollution can greatly affect the state of the ice, which does not always provide ships with a fast and unhindered passage.

A strength is the active financing of the Northern Sea Route[9], since this corridor is of particular interest from domestic and foreign companies. Usage of the potential of the NSR will allow

[8] Russia's transit potential – new solutions for developing markets. TASS. Russia. 2019. Available at: https://tass.ru/pmef-2017/articles/4291776

[9] Emelianenkov A. Ice has moved. The Northern Sea Route is waiting for cargo. *Rossiyskaya gazeta*. 2019. No. 266 (8024).

Russia to increase competitiveness and create new jobs [36]. ***A weakness*** is the undeveloped domestic construction of new icebreaker-class vessels.

4. Development of sea terminals for coal transshipment.

Another strategic ***opportunity*** is the construction of new coal terminals for coal transshipment, the growth of exports, and the high demand for existing coal terminals [37]. Russia is the world's third largest coal exporter. Its exports account for about 210 million tons, the share in world exports is 14%[10]. China is the main importer of coal, and the EU also accounts for a large volume of exports. Over the past 10 years, there has been a steady increase in the production and export of Russian coal, and the export rates have exceeded production rates.

However, in late 2018–early 2019, the demand for imported coal in the countries of the Atlantic decreased. ***A threat*** is also a decrease in demand in the EU countries, which has recently begun to reduce the size of coal generation and follow national restrictions on the volume of emissions of harmful substances.

By analyzing the internal environment, we can identify one of ***the strengths that Russia has for implementing*** this strategic opportunity. The reorientation of cargo flows to the growing markets of the Asia-Pacific region against the background of the implementation of the Eastern Landfill development program, as well as the construction of new coal terminals in the Far East in the medium-term perspective will lead to a positive result: namely, further growth in coal transportation and transshipment is expected [38]. ***A weakness*** is the lack of available production capacity in the ports. Insufficient funding for the construction of new coal terminals leads to a slowdown in the pace of coal transshipment.

5. Surplus of terminal capacities in ports of the Baltic basin.

The surplus of terminal capacities in the ports of the Baltic basin becomes a new ***opportunity*** to increase the container turnover of Russian seaports. In 2018, there was an increase in container cargo for export and import. Export growth was 9.3% and reached 5.1 million TEU, while imports – 9.4%. An indirect ***threat*** to the use of this opportunity is the reorientation of cargo flows to the Far East, which entails the greatest increase in container turnover in the ports of the Far Eastern basin. This is confirmed by the growth of imports from the countries of the Asia-Pacific region.

The analysis of the internal environment suggests that ***a strength*** is a possibility of maximum utilization of free port production capacities, which will have a positive impact on the overall economic situation in the country. ***A weakness*** is an inability to redirect available production capacities of the Baltic Basin to the ports of the Far Eastern basin due to the disagreement of the technological maps of the equipment.

6. Growth of global demand for grain.

The growth of global grain consumption is a strategic ***opportunity*** to increase the transshipment of this cargo in Russian seaports, as well as an impetus for the growth of production port capacities for grain transshipment. In Russia, since 2014, the grain harvest has been exceeding 100 million tons[11]. In 2017–2018, the Russian Federation occupied the fifth place in grain production, and the share of its exports was 13%. The main ***threat*** is a decrease in the volume of grain exports from Russia, as stated in the report prepared by the International Grains Council[12]. The reduction of grain production directly depends on weather conditions, and negative climate changes will lead to a decrease in grain reserves [39].

[10] BP Statistical Review of World Energy 2019.

[11] *Federal State Statistics Service*. Available at: https://www.gks.ru/bgd/regl/b15_11/IssWWW.exe/Stg/d02/16-15.htm

[12] International Grains Council. Available at: https://www.igc.int/en/default.aspx

A strength is that Russia, according to the federal project "Export of IA products"[13], should increase grain sales to 11.4 billion dollars by 2024, i.e., 1.5 times more than in 2017. ***A weakness*** for achieving this opportunity is a small supply of grain, with the help of which it would be possible to regulate the demand for grain crops.

Strategic priorities

The formation of strategic priorities is necessary for the further development of the industry strategy and its successful implementation. They should be secured by competitive advantages that can be divided into three types:

1) available competitive advantages;

2) competitive advantages that can be created taking into account available investment resources and time required for this;

3) lost competitive advantages with the potential for possible restoration.

The first ***opportunity*** for developing the seaport infrastructure is the favorable geostrategic location of Russia, which allows us to justify ***the strategic priority*** of *increasing port capacity and ensuring the effective development of port infrastructure*. We would like to note competitive advantages for the implementation of this priority.

1. *Available competitive advantages.* Russia is attractive for transit vessels due to its long coastline and advantageous strategic location, which allows the country to connect the EU and Asia.

2. *Competitive advantages that can be created* for implementing this priority is the development of transport infrastructure in Russia. Sole development of ports and port-side zones, including an increase in port capacity, will not have a strong impact on the effective development of port infrastructure. It is necessary that the entire transport system works properly, for which it is necessary to have a developed railway and other types of transport provided with modern technologies.

[13] The federal project "Export of IA products", dated December 14, 2018.

3. Effective development of the port infrastructure will be achieved with the help of *lost competitive advantages that are possible to restore now*. After the collapse of the USSR, most ports remained in disrepair due to the lack of resources for its restoration. However, current infrastructure development is funded annually, and the time frame allows implementing this priority. It is necessary to start with the justification of a possibility of developing an existing port or building a new one.

The strategic priority for seizing the opportunity to use the potential of the Northern Sea Route is *to ensure safe navigation, functioning of the seaport infrastructure and sea transport*. It becomes crucial since the increased interest of many countries in the Northern Sea Route requires increased security of ports and sea transport.

This strategic priority has the following competitive advantages:

1. *Available competitive advantages*. The Northern Sea Route is a Russian national transport artery, which is provided great attention. Significant funding is directed to the development of the infrastructure of the NSR, as well as ensuring the safety of navigation and the most careful attitude to the fragile ecosystem of the region.

2. *Competitive advantages that can be created* for this priority is the necessity to increase control and safety of vessels which use the SNR for transit.

3. *Lost competitive advantage* is that after the collapse of the USSR, many ports were transferred to neighboring countries, and there was a great personnel leak. Special attention has been paid to special training of navy personnel only since 2012.

The third strategic ***opportunity*** is the construction of new coal transshipment terminals. Currently, there is an increase in exports, as well as a high demand for existing coal terminals in Russia. *There is a need to adopt the next* ***strategic priority*** *– modernization and construction of new coal terminals.* Over the past few years, there has been a positive trend in the growth of coal production and

consumption: for instance, in 2018, the growth in its export volumes amounted to 10%[14].

We will consider the competitive advantages for the implementation of this strategic priority in more detail:

1. The total volume of coal transshipment in the seaports of the Russian Federation increased from 154.6 million tons in 2017 to 161.4 million tons in 2018[15]. The main drivers of growth were the export orientation of the domestic coal industry and a recent stable increase in production volumes. The main volume of exports goes to China and Mexico, the rest – to the US and the EU.

2. *There are competitive advantages that can be created* for this strategic priority. The share of coal transshipment volume in seaports in 2018 was 42%. The growth of the indicator was recorded for the first time, indicating that the production facilities are overflowing, and the existing coal terminals are fully in demand. In the period up to 2030, it is expected to build new coal transshipment terminals in the Far Eastern basin, since the main volume of exports is carried out through its ports. To create this competitive advantage, several investment projects have been accepted for implementation.

3. There are no *lost competitive advantages* in this strategic priority, since all port terminals were restored in 2012–2016.

The growth of global grain consumption is a strategic ***opportunity*** to increase the transshipment of this cargo in Russian seaports. ***A strategic priority*** *is the modernization and increase of port capacities in port terminals for transshipment and processing of grain*.

Competitive advantages for the implementation of this strategic priority are:

1. *Available competitive advantages* of the modernization and increase of port capacities are due to the high growth rates of the grain harvest in Russia. The total volume of grain transshipment has significantly increased: from 47.9 million tons in 2017 to 55.7 million tons in 2018. The growth of the indicator by 16.3% indicates that this strategic priority cannot be abandoned, since the improvement of the port infrastructure, among other things, will lead to a cumulative increase in exports.

2. The development of grain exports is much faster than the expansion of their transshipment capacities. Therefore, several investment projects have been adopted concerning the construction of new grain transshipment terminals. The main construction will take place in the Azov-Black Sea basin, where the bulk of grain cargo transshipment is carried out. This strategic priority is supported by *competitive advantages that can be created*.

3. In the context of sea basins, more than 95% of grain loading volumes are carried out through the seaports of the Azov-Black Sea basin, among which the port of Novorossiysk is the largest in terms of volumes. The main investment resources will inevitably be directed there, even though the production facilities are already outdated and need to be modernized. In this regard, this strategic priority has *competitive advantages that can be restored*.

Conclusion

The analysis of transshipment of cargo flows across the basins clearly indicates a trend of direction changes. For instance, a large-scale development of transport infrastructure has begun in the area of ports and border crossings of the Far East, due to the fact that the economic sanctions imposed on Russia by the European Union and the United States lead to the need to reorient the cargo base to other countries.

The financial and economic crisis of 2008–2009, the sanctions policy, and the COVID-19 pandemic together with growing international trade disputes increase uncertainty and negatively affect, among other things, port cargo flows. Countries

[14] Overview of the cargo transportation industry in Russia. *E&Y*. 2019. Available at: https://www.ey.com/Publication/vwLUAssets/ey-transportation-services-2019-rus/$FILE/ey-transportation-services-2019-rus.pdf

[15] Sea ports, 2019, no. 6 (178). Information is provided by ZAO "Mortsentr-TEK".

are recovering from economic crises with a wariness toward supposed benefits of free trade and globalization.

At the time of writing, the COVID-19 pandemic had a serious impact on economic activity in the world and in seaports. Moreover, there is a moderate or strong decrease in cargo volumes and ship calls at ports around the world, as well as a general decrease in the level of activity in logistics and industrial clusters in and around ports. Despite this, for Russia, the decline in cargo turnover in seaports in 2020 should be replaced by a 1.5–6.9% increase in 2021. The forecast was based on a model with a distributed lag and considering various forecast values of GDP growth and IPI. The country and its regions' economic recovery can be significantly supported by the development of seaports, because the spatial relationship of the economic development of the regions is confirmed by the Moran's I. A detailed analysis of cargo turnover in each of the basins allowed us to identify competitive advantages for strategic priorities.

A detailed analysis of cargo turnover in each of the basins made it possible to identify competitive advantages for strategic priorities.

1. The potential to increase port capacity and ensure the efficient development of port infrastructure.
2. Provision of safe navigation, functioning of the seaport infrastructure and sea transport.
3. Modernization and construction of new coal terminals.
4. Modernization and increase of port capacities in port terminals for grain transshipment and processing.

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Mortgage Availability vs. Availability of Housing. We Wanted the Best, but It Turned Out...?

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Abstract. The Russian government's decision to lower mortgage rates in the spring of 2020 was announced as a measure to support the population during the spread of coronavirus infection. However, is this decision optimal and strategically correct in terms of improving the availability of housing for Russian citizens in the future? In the context of rising real estate prices, this issue in domestic economic research is insufficiently addressed. The relevance of the research is additionally conditioned by the evaluation necessity of the "bubble" formation probability on the primary housing market due to the "double boom". In this paper, we present the study results of availability of housing dynamics for the period from 2000 to 2020. We identified the regions with the lowest and the highest availability of housing. We have studied the current state of the mortgage lending market in Russia and constructed a multiple regression factor model for residential real estate prices on the new housing market. The scientific novelty of the presented research consists in the determination of the reasons of the rash growth of real estate prices in the spring of 2020 on the Russian housing market and their forecast for the medium term period. It is recognized that in modern conditions the key factor contributing to the increase in primary housing prices is the reduction in mortgage interest rates on loans. The decision to sharply reduce the interest rate has caused an increased demand for housing and the subsequent excessive growth of prices, which ultimately did not contribute to the availability of housing. We substantiate the absence of a "bubble" and the reasons for lower prices on the Russian residential real estate market in the short term. We have implemented the forecasting of primary housing prices through a combination of traditional economic tools and neural networks. The

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persistence of significant price levels on the Russian market of new buildings in the medium term can be explained by the negative trends in the development of key influencing factors and other macroeconomic indicators characterizing the socio-economic development of the country. We have proposed managerial measures aimed at expanding the availability of housing for Russian citizens.

Key words: availability of housing, preferential mortgage lending, primary housing market, real estate price growth factors, neural network modeling.

Introduction

Contemporary Russia is characterized by a significant level of non-monetary inequality [1; 2], one of the clearest manifestations of which is the limited availability of housing. According to the Presidential Address of the Russian Federation to the Federal Assembly in April 2021, the expansion of the availability of housing remains the main task in the country's development and improving the quality of life of Russian citizens[1]. However, the satisfaction of the basic human need for housing is complicated by a number of negative aspects which are characterized not only by regional spatial heterogeneity in the volume of housing commissioning, but also, above all, by the low income level of population and a sharp increase in real estate prices, accelerated during the transition to the market. These factors have significantly increased the level of the unavailability of housing for the vast majority of population.

As of January 1, 2020, 2266.854 thousand people (or 4.1% of the total population of the Russian Federation) were registered as needing residential premises, compared to 5419.293 thousand people (10.9%) in 2000. The positive dynamics in this issue is obvious. However, the severity of the problem with the availability of housing in the Russian Federation is clearly demonstrated by the low level of availability of living space. On average, there are 26.3 sq. m. per Russian resident (according to data for 2019), with the European norm of 30–40 sq. m. and 100% comfort of housing. At the same time, there are a significant number of regions, where the availability of housing is several times less than the average Russian indicator[2]. If we take into account that not all housing in Russia is comfortable and has basic amenities in the form of running water, hot water, a bathroom, etc., then the average availability indicator in the country will decrease to 17 sq. m. [3, p. 329]. Currently, almost a third of the population of the Russian Federation (45 mil. people) lives without a full set of basic communal amenities (or without cold water, or hot water, etc.). Approximately 3 million people are still forced to live in communal apartments. 19% of Russian citizens account for less than 9 sq. m. of the total area. For comparison, the provision of comfortable housing per person in the United States is four times higher, and in France it is 2.5 times higher than in Russia. The indicators of housing commissioning in the United States and the Russian Federation differ at the level of two times (not in favor of our country). The urgency of resettling citizens (it is 3.9% in 2020) from emergency housing is still high. Moreover, mortgage loans for solving the housing issue are not available for many people. According to the estimates of DOM.RF, only 37% of families have the opportunity to service a mortgage loan[3].

[1] Presidential Address of the Russian Federation to the Federal Assembly, dated April 21, 2021. Available at: http://www.consultant.ru/document/cons_doc_LAW_382666/ (accessed: April 24, 2021).

[2] The minimum housing provision was recorded in the Republic of Tyva in 2019, where there are 14.2 sq. m. per person.

[3] The Strategy for developing the housing sector of the Russian Federation for the period through to 2025. Available at: https://xn--d1aqf.xn--p1ai/upload/2020/Strategiya-razvitiya-zhilishhnoj-sfery-Rossijskoj-Federatsii-na-period-do-2025-goda.pdf (accessed: April 25, 2021).

It is obvious that the presented data largely characterize the availability of housing in Russia at an extremely low level, despite the implementation of state programs in the housing sector and some positive changes in this direction.

A number of numerous projects and programs in the field of housing construction are designed to contribute to the formation of an available housing market in Russia: the National Project "Housing and the Urban Environment", designed for 2018–2024, the State Program "Providing Available and Comfortable Housing and Communal Services to Citizens of the Russian Federation", the State Program of preferential lending at 6.5% per annum, the Strategy for developing the housing sector of the Russian Federation for the period through to 2025, and some other documents. The main tasks of state regulation of the housing sector are to create conditions that contribute to ensuring the availability of housing by increasing the use of mortgage instruments, increasing the volume of housing construction, as well as reducing housing that is unsuitable for living, etc.

The implementation of the program of preferential mortgage lending, put into effect by the Government Decree of the Russian Federation in April 2020[4], coincided with an increase in prices both on average in Russia and in most regions. However, it is unclear, what was the trigger for the rapid price growth? What factors have most influenced the formation of prices in the Russian housing market? In this regard, it is interesting to confirm or deny the existence of a relationship between the increase in prices on the Russian housing market and a decrease in mortgage rates, as well as to explore the prospects for price fluctuations for residential real estate in the medium term. As hypotheses of the study, we consider the following:

H_1 – in the primary housing market in Russia in 2020, the determinant of the sharp increase in prices for residential real estate was a decrease in mortgage interest rates which led to the so-called "double boom";

H_2 – high level of prices for primary residential real estate will continue in the medium term including due to the unfavorable factors of the macroeconomic environment.

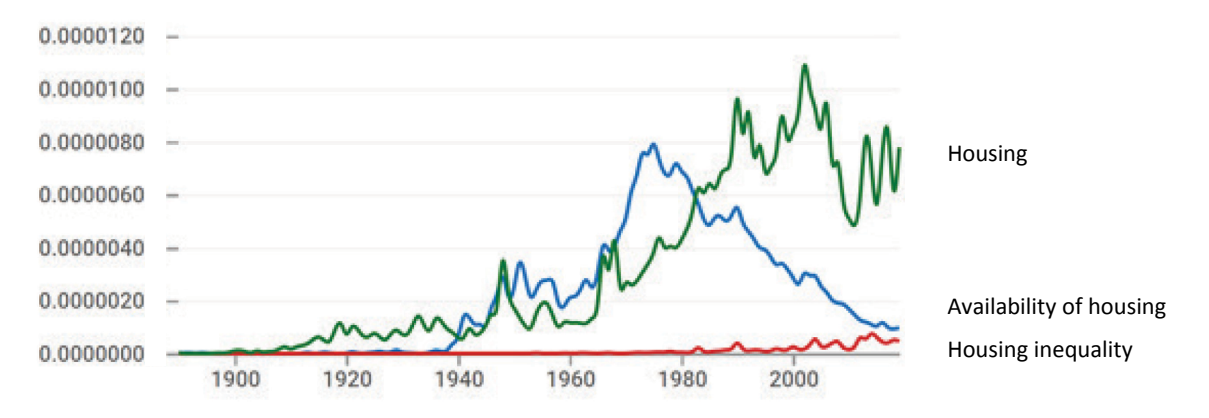
Theoretical aspects of the research

In the English-language literature, the peak of mentions of the "availability of housing" concept occurred in 1975 *(Fig. 1)*. The category of "housing" is widespread in the Russian-speaking environment which explains its more active use in the domestic economic literature, especially after the 1990s. The study of the availability of housing in Russia due to limited statistical data is just beginning to gain momentum.

Many fundamental works of foreign scientists are devoted to the study of theoretical and methodological issues of pricing and housing profitability: A. Smith [4, p. 312], D. Ricardo [5, p. 201], A. Marshall [6, p. 135], etc. The problems of the residential real estate market and implementation of housing policy at the regional level are noted in the works of Russian scientists: E.V. Alenicheva, S.V. Kuznetsov, M.G. Shamaeva, T.Y. Ovsyannikova, T.I. Kubasova, O.A. Miroshnikova, B.G. Preobrazhenskii, V.I. Zhilina, V.S. Mkhitaryan, etc. The issues of availability and satisfaction with housing in the context of non-monetary inequality are presented in the works of L.N. Ovcharova, N.N. Ryabushkin, O.V. Berveno, S.V. Mareeva, etc. The works of I.V. Lipsits, E.I. Lunin, V.M. Tarasevich, G.N. Chubakov are devoted to modeling prices in the housing market. The assessment of the factors influencing the formation of prices for residential real estate is carried out in the studies of V.D. Ardzinov,

[4] On the approval of the Rules for Compensation to credit and other organizations of lost income on housing (mortgage) loans (loans) issued to citizens of the Russian Federation in 2020: Government Decree no. 566, dated April 23, 2020. Available at: http://static.government.ru/media/files/GEvoTKxqACpwNVXpAIv6VrueBHCpywRz.pdf

Figure 1. Frequency of mentioning the concepts of "availability of housing", "housing" and "housing inequality" in the English-speaking environment, %



Source: according to the data from the Books Ngram Viewer service.

V.I. Koretskii, A.G. Kuzminskii, L.I. Mazurin, and A.M. Reznik. The problems of assessing the impact of mortgage rates on the housing market state have been studied by K.L. Astapov, I.V. Dovdienko, P.N. Kostrikin, E.B. Pokoptseva, etc.

The main macroeconomic factors that determine the formation of prices in the housing market are the level of prices for oil and other export goods, dollar exchange rate, GDP value, inflation, housing commissioning volume, population income, availability of investment areas for investing temporarily available funds, employment level, volume of housing loans issued, etc. Its location, distance to the center of the settlement, total housing area, availability of high-quality water in the area and a number of other parameters affect the price formation of a specific real estate object [7–10].

According to the IMF[5], prices for residential real estate are determined by the rent cost for rented housing, the level of population income and the increase in the volume of mortgage lending. The mortgage boom (due to a sharp increase in demand for housing due to low mortgage rates) creates prerequisites for the emergence of a "bubble" in the real estate market which is confirmed by the results of the IMF assessment according to data from 21 out of 23 world countries. The formation of inflated housing prices due to a sharp increase in the population's demand for the purchase of apartments (houses) leads to a financial crisis. According to calculations, carried out by the IMF specialists, the growth in the volume of loans issued accounts for almost half of the price fluctuations for housing in various countries of the world since 2009. The increased demand for housing due to low mortgage interest rates, creating a "double" boom (housing and mortgage), in many cases ends with a recession of the economy. At the same time, the indicators of economic development after such a crisis period are expected to recover more slowly which is more expensive in terms of lost profits.

The appearance of a "bubble" in the housing market due to the activation of credit policy was first noted by Kinledberger in a monograph in 1978. The scientist showed the role of stimulating monetary policy, as well as economic shocks (the emergence of innovative technologies and markets, changes

[5] Speech by Min Zhu, Deputy Managing Director of the IMF at the conference "Housing Markets, Financial Stability and Growth", India, 2014.

in legislation) in the process of emerging financial bubbles [11, p. 138]. Currently, a fairly large number of studies have been accumulated in the world, which link the appearance of "bubbles" in the real estate market with credit expansion [12–16]. To date, a small number of works have been noted in domestic science and practice that characterize the likelihood of a "bubble" in the Russian real estate market due to the easing of the mortgage credit policy in the spring of 2020. To a certain extent, our study is designed to fill this gap.

Materials and methods

The researchers use a fairly large arsenal of tools to study factors and develop price forecasts in the residential real estate market [17–22]. This paper presents the results of the application of traditional economic tools and neural network modeling. Working out the factor model is based on the use of multiple regression [22; 23].

As part of the study, we propose the following factors as the main factors influencing the formation of prices in the primary housing market in Russia *(Tab. 1)*.

As a result of applying the stepwise regression method, taking into account F-test and the value of the determination coefficient, there has been obtained an economic and mathematical model of factors affecting the formation of prices in the primary housing market with the following set of independent variables: $Y = 11\,707.15 - 3\,760.4X_1 - 1053.5X_2 + 803.1X_3 - 78.4X_5 + 0.5X_6$. The good quality of the constructed model is confirmed by statistically significant relationships according to the F-test (F-statistics is less than 0.5). The value of the adjusted coefficient ($R^2_{adj} = 0.95$; $R^2 = 0.98$) is the largest in comparison with other regression models.

The identified factors are of particular practical importance, as they act as points of managerial influence; it is especially relevant in modern conditions, as "the time of non-interference in the pricing policy in the housing market has passed"[6]. On the other hand, the presented model is the

Table 1. Factors of price formation in the primary housing market in the Russian Federation and their dynamics for the period from 2010 to 2020

Indicator	2010	2012	2014	2016	2018	2020
Average prices in the primary housing market, rub. (Y)	48,144	48,163	51,714	53,287	61,832	79,003
Average level of the interest rate on a residential mortgage loan, % (X_1)	13.2	12.2	12.4	12.5	9.6	7.8
Average level of the interest rate on deposits with a term of more than a year, % (X_2)	6.0	7.7	8.1	8.4	6.2	4.6
CPI, December in % compared to December of the previous year (X_3)	108.8	106.6	111.4	105.4	104.3	104.9
Producer price index for construction products, % (X_4)	109.6	108.3	104.6	106.6	106.5	102.9
Average price of Urals crude oil, US doll. per barrel (X_5)	78.2	110.5	97.6	41.9	70.0	41.7
Average per capita monetary income, rub. per month (X_6)	18,958	23,221	27,412	30,865	33,178	35,361
Average nominal exchange rate of the US dollar to the ruble for the period, rub. (X_7)	30.4	31.1	38.4	67.0	62.7	72.2
GDP at current prices, trill. rub. (X_8)	37,687,768	49,926,069	59,188,270	69,237,704	84,976,724	83,989,295
Average cost of construction is 1 sq. m. of the total area of residential premises in commissioned residential buildings in RF, rub. (X_9)	31,877	34,354	39,447	40,890	41,358	44,518
Dynamics of commissioning of residential buildings, % to the previous period (X_{10})	97.6	105.6	119.4	94.0	95.5	100.2
Source: data of Rosstat, CB RF.						

[6] Speech by Min Zhu, Deputy Managing Director of the IMF at the conference "Housing Markets, Financial Stability and Growth", India, 2014.

basis for developing forecast values of prices in the housing segment including in the framework of neural network modeling.

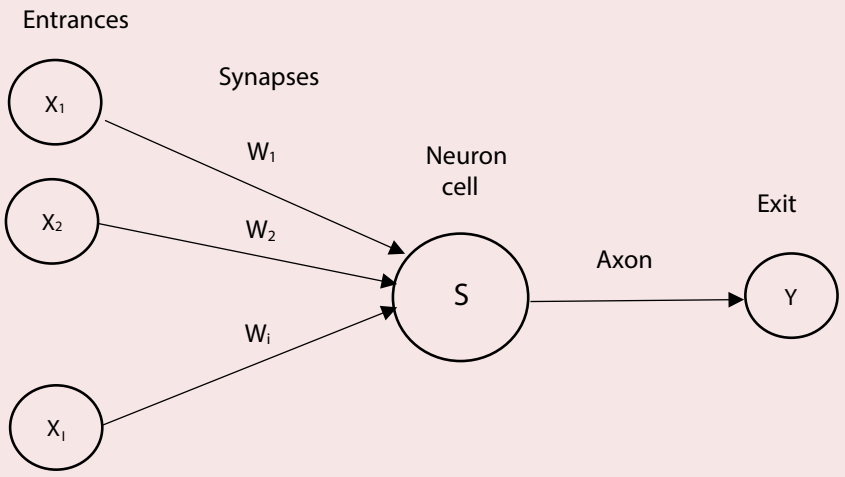
The factors of the econometric model became the basis (input data) when making a forecast using neural networks. The combination of traditional statistical tools and neural networks makes it possible to increase the accuracy of forecasts [24, p. 824], as not just a set of variables from tens or hundreds of units is loaded into the network, but a set of variables that have undergone primary statistical processing which are obviously significant factors of housing price growth. In this regard, it takes much less time and epochs (experimental calculations) to train the network.

Artificial neural networks have proven their effectiveness in forecasting macroeconomic processes including in modeling prices on the housing market [25–29]. However, unlike the classical regression forecasting scheme with a clear research algorithm and easy-to-understand stages of its implementation, neural networks are a "black box". This is an economic and mathematical modeling tool based on the principle of operation of the main biological analogues of artificial neural networks (ANN): neurons (networks of nerve cells of the brain). The formal neuron *(Fig. 2)* which has a different number of input data (variables) contains an adaptive adder, the output of which is a weighted sum of the inputs S. After comparing the adder with the threshold value of the weight w_0 and implementing the activation function of the neuron, we have a signal (Y) at the output, i.e. the output of the neuron or the output of the simulated data.

The neural network modeling algorithm includes a preliminary normalization of input data, in our case – according to the standard formula: $X_{norm} = (X - X_{min})/(X_{max} - X_{min})$. As the results of the study have proved, the most optimal structure of a neural network is a multilayer perceptron which consists of 7 inputs, 7 hidden neurons and 1 output (MLP 7-7-1). The activation function of neurons on the hidden layer is the logistic function, on the output layer, it is the sigmoid function. The average error in the forecasts of normalized values was 1.2%, with an error on the test sample of 1.9%. Neural network modeling was carried out in the Statistica program.

The information base of the study is the official information resources of the Federal State Statistics Service of Russia, statistical and analytical publications of the Central Bank of the Russian

Figure 2. Formal neuron



Source: according to [30 , p. 223].

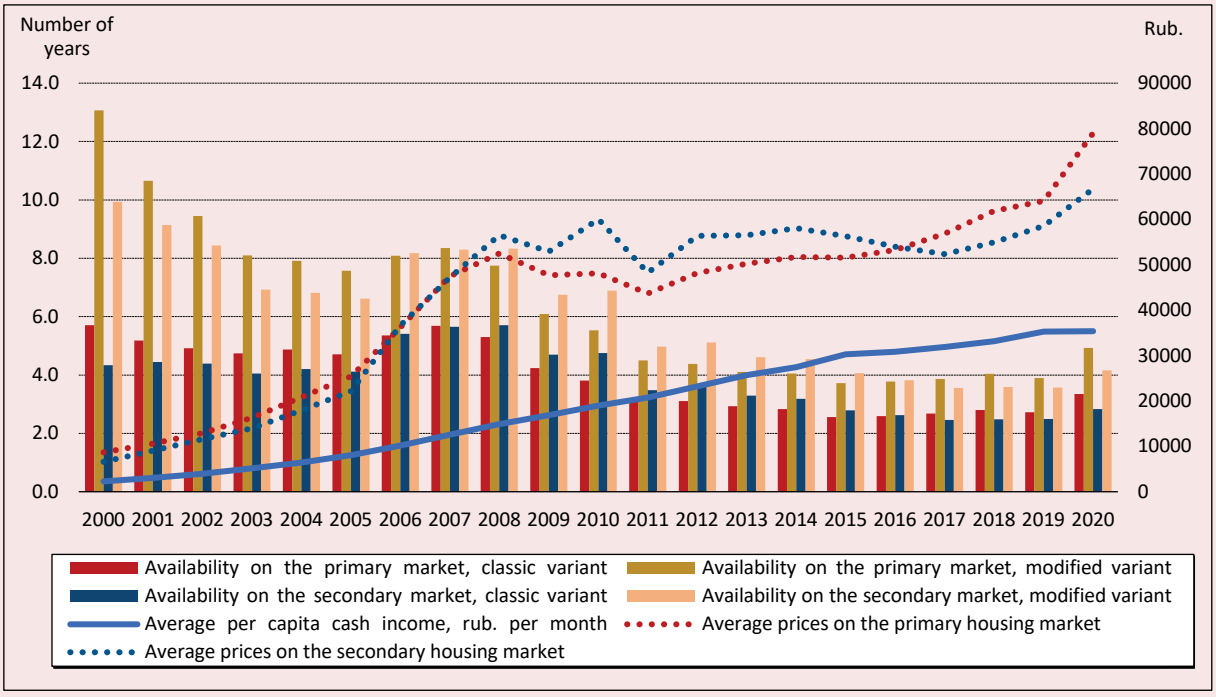
Federation, data from the Unified Information System of Housing Construction of the Ministry of Construction of Russia[7].

Discussion on the obtained results and conclusions

In Russia, the situation with the availability of housing has never been easy. According to V.V. Putin, "the housing problem is an eternal problem of Russia"[8]. This statement is especially true for low-income segments of population. Only representatives of the seventh quintile and above can afford to save money / pay a mortgage loan for the purchase of housing. According to the study [31, p. 66], the population near the poverty line, even after receiving a mortgage loan, which is almost impossible with the existing requirements for the initial payment, will not be able to use it as the time, required for payments, will exceed the average life expectancy. Nevertheless, the trends of recent years *(Fig. 3)*, developing in the area of the range of prices for residential real estate, painted an optimistic picture regarding the value of the indicator "availability of housing" at the average Russian level.

If in 2000 it would have taken about 6 years to buy a standard housing for a family of three with a total area of 54 sq. m (assuming the investment of all the annual income received), by 2019 it will be about half as much – 2.7 years. The secondary market showed a more modest

Figure 3. Availability of housing in RF according to the classical and modified version of calculations for 2000–2020



Source: according to Rosstat data.

[7] https://xn--80az8a.xn--d1aqf.xn--p1ai/ (accessed: April 02, 2021).

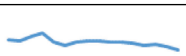
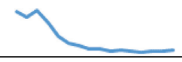
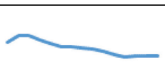
[8] Speech by Russian President V.V. Putin at a meeting of the State Council on the development of the construction complex and improvement of urban planning activities, May 17, 2016. Available at: http://www.kremlin.ru/events/president/news/51926 (accessed: April 25, 2021).

improvement in availability: at the level of 4.3 and 2.5 years, respectively. To some extent, the modified version of the calculation of the availability of housing allows taking into account the current household expenses including the amount of family expenses at the level of the established subsistence minimum for three people. According to the calculations, the availability of new buildings in 2000 at the average Russian level was about 13 years having decreased to 3.9 years by 2019. The dynamics of availability in the secondary market was 9.9 and 3.6 years, respectively.

A slight decrease in the availability of housing was noted in 2007–2008 due to a sharp increase in real estate prices which is associated with the negative consequences of the global economic crisis, a rapid decline in oil prices and an increase in the dollar exchange rate. The population invested money in the housing purchase which provoked a sharp increase in real estate prices. After 2010, prices stabilized; there was a gradual improvement in the situation with the availability of housing purchases until 2019.

Due to the increase in prices after the introduction of the program of preferential mortgage lending in 2020, a decrease in the availability of housing was noted in almost all regions. The best availability level of primary housing in the classical measurement of the indicator by the end of 2020 was observed in Dagestan, the Tyumen Oblast and the Jewish Autonomous Oblast *(Tab. 2)*. An alarming situation

Table 2. Russian regions with the highest and lowest availability of housing on the primary market*, years

Availability according to the classic calculation option				Availability according to the modified version of the calculation			
Rank	Territory	2020	Dynamics 2005 to 2020	Rank	Territory	2020	Dynamics 2005 to 2020
1	Republic of Dagestan	1.7		1	Tyumen Oblast	2.5	
2	Tyumen Oblast	1.9		2	Republic of Dagestan	2.8	
3	Jewish Autonomous Oblast	1.9		3	Lipetsk Oblast	3.2	
4	Kamchatka Krai	2.0		4	Kamchatka Krai	3.4	
5	Komi Republic	2.1		5	Republic of Adygeya	3.5	
***	***	***	***	***	***	***	***
15	Vologda Oblast	2.5		17	Vologda Oblast	4.1	
***	***	***	***	***	***	***	***
74	St. Petersburg	4.1		74	Primorsky Krai	7.2	
75	Zabaykalsky Krai	4.2		75	Irkutsk Oblast	7.3	
76	Primorsky Krai	4.5		76	Zabaykalsky Krai	8.3	
77	Moscow	4.6		77	Republic of Ingushetia**	8.8	
78	Republic of Crimea**	4.9		78	Republic of Crimea **	9.9	

* Except the Murmansk Oblast, the Magadan Oblast, the Republic of Tyva, the Chukotka Autonomous Okrug, the Nenets Autonomous Okrug, the Khanty-Mansi Autonomous Okrug – Yugra and the Yamalo-Nenets Autonomous Okrug.
** The availability dynamics is presented for 2014–2020.
Source: according to Rosstat data.

with the availability of new buildings has developed in the Crimea, Moscow and Primorsky Krai. When buying secondary housing, families in the Crimea, Ingushetia and the Zabaykalsky Krai will need the maximum number of years taking into account expenses (a modified version of the availability calculation).

As a result of implementing the State Program "Preferential Mortgage at 6.5% per Annum" in half of the entities of the Russian Federation, the growth rate of mortgage lending in 2020 exceeded the average Russian level[9]. The other regions showed not so significant, but also positive growth dynamics. A surge in the issuance of loans for 9 months of 2020 compared to the same period of the previous year was noted in fifteen Russian regions: an increase of 44% was recorded in Moscow and the Krasnoyarsk Krai, 41% – in the Republic of Tatarstan, as well as the Sverdlovsk and Nizhny Novgorod Oblasts.

The history of issuing residential housing mortgage lending (HML) in the Russian banking sector began in 1995 [32, p. 136] after the creation of a working group including representatives of the Government of the Russian Federation, the National Association for Mortgage Lending, as well as foreign consultants, and the subsequent approval of the federal target program "Own Home"[10]. The main goal of this program was to create a two-tier mortgage lending system in Russia, aimed at attracting extra-budgetary funds to improve the living conditions of those in need. This system assumed the functioning of commercial banks for issuing mortgage loans and the "Agency for Housing Mortgage Lending" (AHML), established in 1997 to refinance HML[11]. In 2018, AHML was renamed "DOM.RF" while maintaining the functions of assisting in the implementation of the state housing policy.

Currently, mortgage lending is the main source of growth in the retail loan portfolio of banking institutions. Preferential mortgages are introduced as a measure to "ensure the sanitary and epidemiological well-being of the population". Conditions of the preferential mortgage program are: citizenship of the Russian Federation, primary housing (under construction or ready for delivery), the maximum loan amount from 6 to 12 million rubles (depending on the region), the rate of 6.5% per annum for the entire loan term, an initial instalment of at least 15% of the cost of the purchased housing, the loan agreement was concluded from April 17, 2020 to July 1, 2021. The loan term is no more than 30 years. The loan is issued in the range of up to 6 million rubles (inclusive) for residential premises located on the territories of the entities of the Russian Federation, except Moscow, the Moscow Oblast, St. Petersburg and the Leningrad Oblast; it is up to 12 million rubles (inclusive) for residential premises located in the territories of Moscow, the Moscow Oblast, St. Petersburg and the Leningrad Oblast[12].

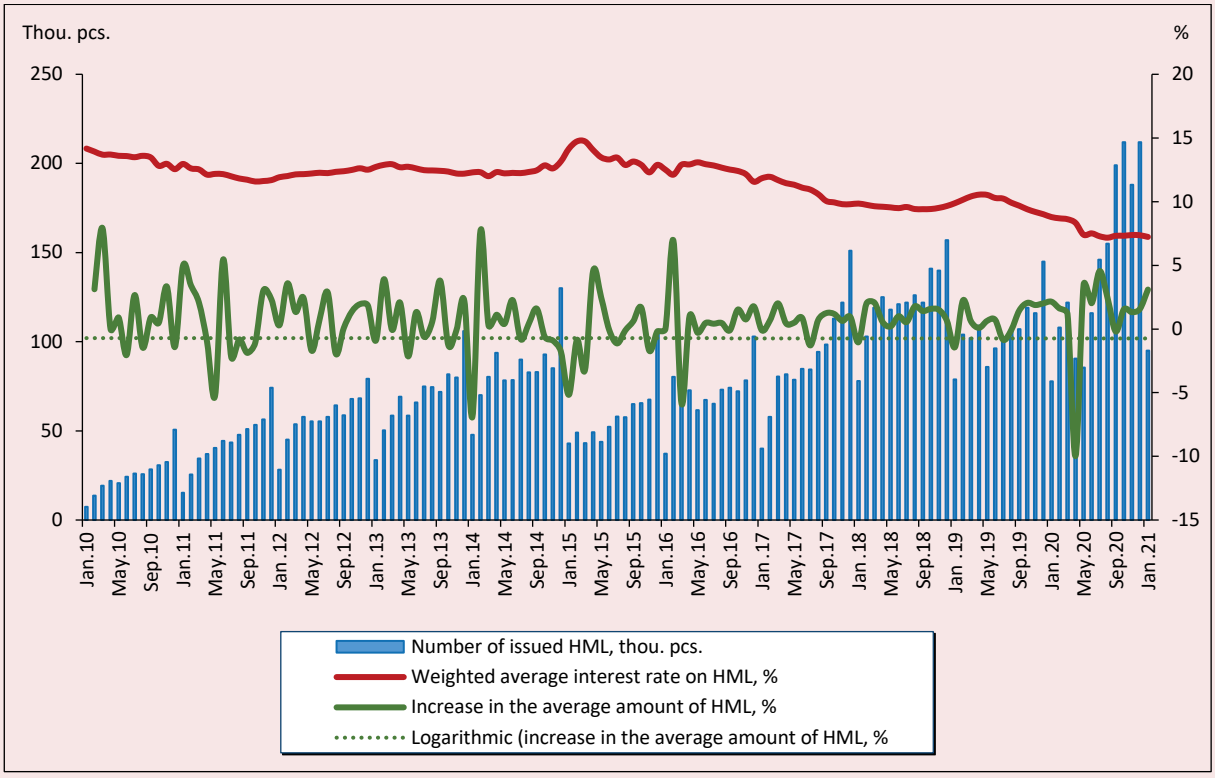
[9] Mortgage in Russia. Available at: https://ratings.ru/files/research/banks/NCR_Mortage_Nov2020.pdf (accessed: April 14, 2021).

[10] About Federal Target Program "Own House". Government Decree of RF, dated June 27, 1996, no. 753. Available at: https://base.garant.ru/2306342/ (accessed: April 11, 2021).

[11] About the Agency for Housing Mortgage Lending: Government Decree of the Russian Federation dated August 26, 1996, no. 1010. Available at: http://www.consultant.ru/document/cons_doc_LAW_99723/92d969e26a4326c5d02fa79b8f9cf4994ee5633b/ (accessed: April 11, 2021).

[12] On the approval of the rules for reimbursement to credit and other organizations of lost income on housing (mortgage) credits (loans) issued to citizens of the Russian Federation in 2020 and 2021: Government Decree of the Russian Federation, dated April 23, 2020, no. 566 (as amended on October 24, 2020, no. 1732). Available at: http://gov.garant.ru/SESSION/PILOT/main.htm (accessed: April 11, 2021).

Figure 4. Dynamics of indicators of the mortgage market in the Russian Federation



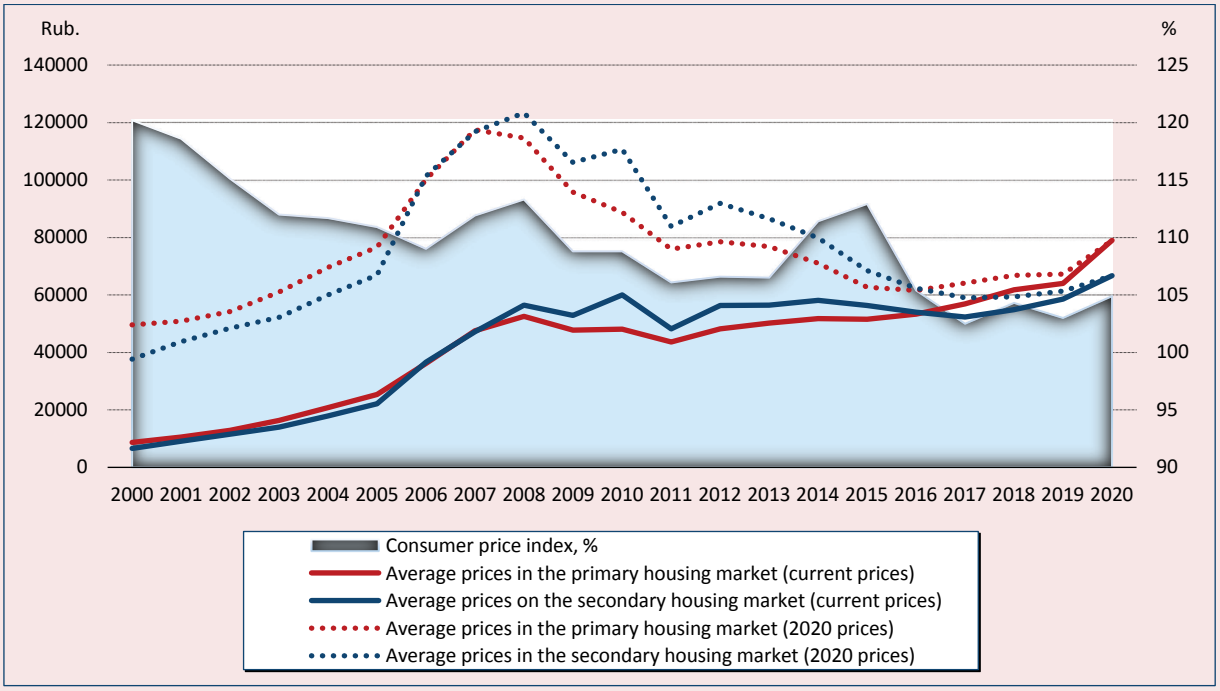
Source: according to the data of CB RF (https://cbr.ru/statistics/pdko/Mortgage/ML/) and Unified Information System of the Ministry of Construction of the Russian Federation.

The implementation of the program "Preferential mortgage at 6.5% per annum" led to a decrease in the interest rate on the primary housing market from 8.3 to 5.9% per annum, and on the secondary – from 9.3 to 8% per annum[13]. In general, in 2020, the Russian banking sector issued 1.7 million mortgage loans worth over 4.3 trillion rubles. Thus, the increase in the volume of mortgage loans in the year of introducing preferential mortgages was about 25%.

The main peak of the HML issuance occurred in the last quarter of 2020. At the same time, if in the 4th quarter of 2010, there were issued 612 thousand mortgage loans for a total of 151 billion rubles *(Fig. 4)*, then for the same period of 2020, the number of issued housing and communal services increased almost 5.4 times (1,598 bill. rub.). An increase in the average amount of a mortgage loan was almost doubled: from 1,207 rubles in 2010 to 2,476 rubles in 2020 (at comparable prices by 12%). The term of mortgage loans has also increased: from 16.3 years in 2010 to 18.4 years in 2020. These trends, along with a decrease in the area of apartments under construction, do not indicate in favor of increasing the availability of housing. If the average area of a two-room apartment in the early 2000s was about 55 sq. m., then by the end of the study period, it was about 50 sq.m. Developers during the construction of multi-apartment housing reoriented to more liquid options for sale: studios, one- and two-room apartments of a smaller area.

[13] Russian banks: financial results of 2020. Available at: https://www.finversia.ru/publication/rossiiskie-banki-finansovye-itogi-2020-goda-90341 (accessed: April 15, 2021).

Figure 5. Dynamics of average prices on the primary and secondary housing markets in current and comparable prices, RF



Source: Rosstat data.

According to experts[14], those borrowers stood to gain who issued a mortgage loan in the first 3–4 months of the state program of preferential lending, when price fluctuations in the housing market have just begun to move up and have not yet reached a peak. By the end of 2020, the average price per 1 sq. m. in the primary and secondary housing markets *(Fig. 5)* amounted to 79,003 and 66,712 rubles, respectively, exceeding the prices of the early 2000s by several times. When converted into prices in 2020, it can be seen that prices for new buildings have almost doubled in twenty years (at current prices, it is 9 times), for secondary housing – 1.6 times (or 10 times in the current estimate), with an increase in consumer prices for goods and services over the same period by about 6 times.

The increase in housing prices is noted not only in Russia, but also in other countries. However, if in the EU the price increase for 2010–2019 amounted to about 19%, in the Russian Federation in the primary market for this period, it was 33%, in the secondary market – 37%. According to experts[15], the main factors of the rise in the price of residential real estate in Russia after 2018, along with the increase in the cost of housing construction, are the introduction of escrow accounts and a tax on bank deposits which contributed to an increase in investment demand for real estate.

[14] Mortgage in Russia. Available at: https://ratings.ru/files/research/banks/NCR_Mortage_Nov2020.pdf (accessed: April 14, 2021).

[15] Expert: any decision on a preferential mortgage is doomed, available housing for Russians will become only after a "revolution" in the market. Available at: https://pulse.mail.ru/article/ekspert-lyuboe-reshenie-po-lgotnoj-ipoteke-obrecheno-dostupnym-zhile-dlya-rossiyan-stanet-tolko-posle-perevorota-na-rynke-2996310860094837967-5478015430638327764/ (accessed: January 25, 2021).

The results of the correlation analysis[16] show that one of the main factors that caused the jump in prices on the primary housing market in 2020 was a decrease in mortgage interest. The correlation between the average mortgage interest rate and the value of prices for new buildings is the maximum value at the level of r = -0.90 *(Tab. 3)*. The highest statistically significant impact on the change in the price of residential real estate was also exerted by average per capita monetary income (r = 0.82), the dollar exchange rate (r = 0.78), the dynamics of GDP (r = 0.83). Before the introduction of the preferential mortgage program, the key factors of price formation in the primary market were the volume of GDP, average per capita monetary income and the cost of construction of 1 sq. m. of housing. In addition, data are obtained indicating a slight influence of the main macroeconomic factors on prices in the secondary housing market which indirectly indicates a significant impact of the psychological component when setting prices in this market segment.

Table 3. Correlation matrix*

	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
Y	1										
X_1	-0.90	1									
X_2	-0.51	0.72	1								
X_3	0.44	0.66	0.60	1							
X_4	-0.64	0.41	-0.17	-0.01	1						
X_5	-0.64	0.39	0.03	0.21	0.46	1					
X_6	0.82	-0.69	-0.06	-0.40	-0.76	-0.73	1				
X_7	0.78	-0.60	-0.05	-0.34	-0.60	-0.91	0.93	1			
X_8	0.83	-0.76	-0.17	-0.50	-0.66	-0.68	0.98	0.91	1		
X_9	0.83	-0.70	-0.09	-0.36	-0.79	-0.73	0.98	0.91	0.95	1	
X_{10}	-0.21	0.15	0.16	0.36	-0.18	0.61	-0.18	-0.45	-0.22	-0.13	1

* It is based on data for the Russian Federation for 2010–2020.
Source: own compilation.

Table 4. Distribution of the Russian regions by the strength of the correlation between interest rates on the HML and prices on the primary housing market

Territory*	0.1–0.3 (weak)	0.3–0.7 (average)	0.7–1.0 (strong)
Central Federal District	2(+)	6(-)	10(-)
Northwestern Federal District	2(-), 1(+)	2(-)	4(-)
Southern Federal District	–	–	6(-)
North Caucasus Federal District	1(-)	3(-), 2(+)	1(-)
Privolzhsky Federal District	3(-)	7(-)	4(-)
Ural Federal District	–	4(-)	–
Siberian Federal District	–	4(-)	5(-)
Far Eastern Federal District	–	3(-)	7(-)

* Except the Murmansk Oblast, the Republic of Tyva, the Republic of Crimea, Sevastopol, the Chukotka Autonomous Okrug, the Nenets Autonomous Okrug, the Khanty-Mansi Autonomous Okrug – Yugra and the Yamalo-Nenets Autonomous Okrug.
Source: according to the data of Rosstat and CB RF.

[16] For correlation analysis and the construction of a factor model, data for the Russian Federation from 2010 to 2020 were used in a quarterly breakdown.

The most significant decrease in the mortgage interest rate had an impact on price growth in the primary segment of the housing market in 37 regions of the Russian Federation *(Tab. 4)*. At the same time, in the Southern Federal District, a strong correlation is noted in all entities, which is probably due to a good level of the availability of housing (compared to other districts), a significant level of commissioning of residential buildings and a high indicator of migration population growth. In the Central Federal District, the maximum correlation coefficient was recorded in the Tula (-0.89), Bryansk (-0.84) and Moscow (-0.84) Oblasts. The introduction of preferential mortgages did not have a statistically significant impact on prices in the Vladimir Oblast (0.02), the Komi Republic (0.15) and the Tver Oblast (0.23). The average level of positive response of the mortgage rate to price fluctuations was noted in the Republic of Ingushetia and the Kabardino-Balkar Republic, where the cost per square meter is 2–2.5 times lower than the average Russian level. By the value of the price per 1 sq. m. in terms of residential real estate, these entities are at the bottom of the regional Russian rating (76th and 82nd place, respectively).

Determining the nature of demand (investment, natural, deferred, etc.) in each particular region requires additional study of not only statistical information (often not available), but also the results of sociological surveys. However, at this stage of developing the situation in the housing market, it is absolutely necessary to prevent a new round of price growth, and therefore a "smart" and strategically verified approach is necessary. As suggested by the speaker of the Federation Council V.I. Matvienko[17], there is a need to introduce a "smart regional mortgage", aimed at taking into account the socio-economic situation in the regions including in the housing market. The extension of preferential mortgages is not on the entire territory of the Russian Federation, but only in those regions where a sharp jump in prices is not recorded, the Head of the Central Bank of the Russian Federation E. Nabiullina announced in her speech. 24 regions can apply for the continuation of the program of preferential housing lending after July 2020[18]. As the analysis showed, the list includes entities that are characterized by a low increase in housing prices with high rates of its input. Nevertheless, it is questionable whether the Volgograd Oblast is included in the list, where there is a significant increase in residential real estate prices in 2020 (21% compared to 2019), while the Lipetsk Oblast, characterized by high rates of housing construction and low price fluctuations (within 6%) during the period of the preferential mortgage, is not included in it. According to the Chairman of the Central Bank, the list of regions is subject to clarification and further discussion.

According to the characteristics of the methodological approach, described in the previous section of our study, we present the results of price forecasting in the primary housing market of the Russian Federation based on artificial neural networks *(Fig. 6)*.

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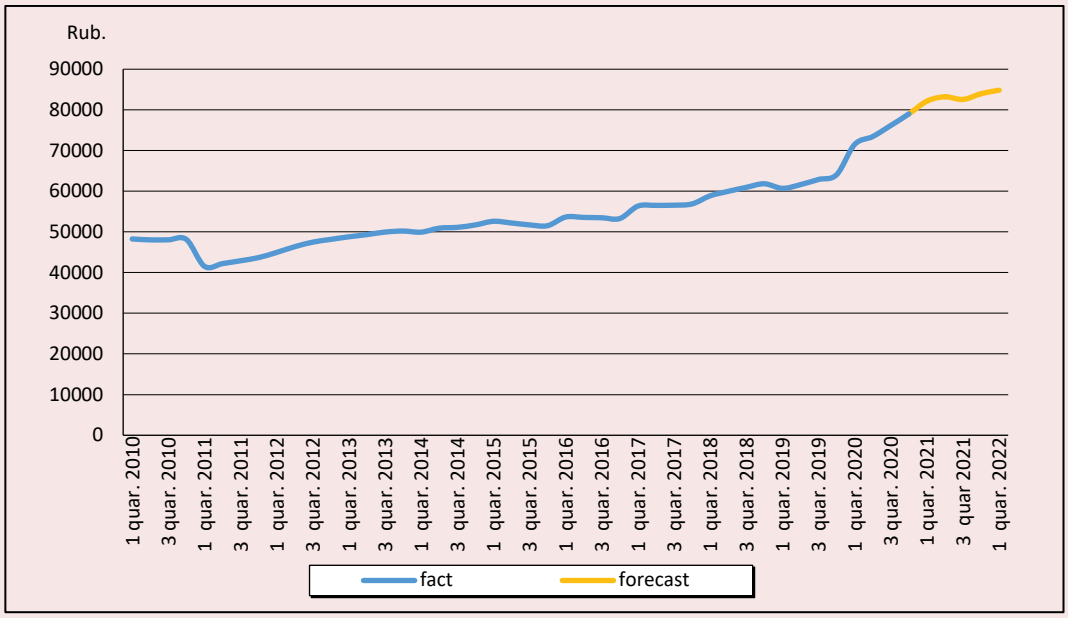
[17] Matvienlo: Mortgage terms should depend on the situation in the region. *Rossiyskaya gazeta*, April 12, 2021. Available at: rg.ru/2021/04/12/matvienko-usloviia-ipoteki-dolzhny-zaviset-ot-situacii-v-regione.html (accessed: April 23, 2021).

[18] The list of candidate regions for mortgage extension includes Bashkortostan, Udmurtia, Mordovia, Altai, Dagestan, Chechnya, Ingushetia, Stavropol Krai, Novosibirsk, Rostov, Chelyabinsk, Yaroslavl, Saratov, Volgograd, Tver, Ulyanovsk, Kirov, Ivanovo, Orenburg, Omsk, Pskov, Astrakhan, Tomsk, Kurgan Oblasts.

Source: Build who goes: the Head of the Central Bank named the regions with the prospect of extending preferential mortgages. *Izvestiya*, March 11, 2021. Available at: https://iz.ru/1135265/anna-kaledina/stroi-kto-idet-glava-tcb-nazvala-regiony-s-perspektivoi-prodleniia-lgotnoi-ipoteki? utm_source=yxnews&utm_medium=desktop (accessed: April 23, 2021).

Figure 6. Results of forecasting prices for primary housing using neural networks



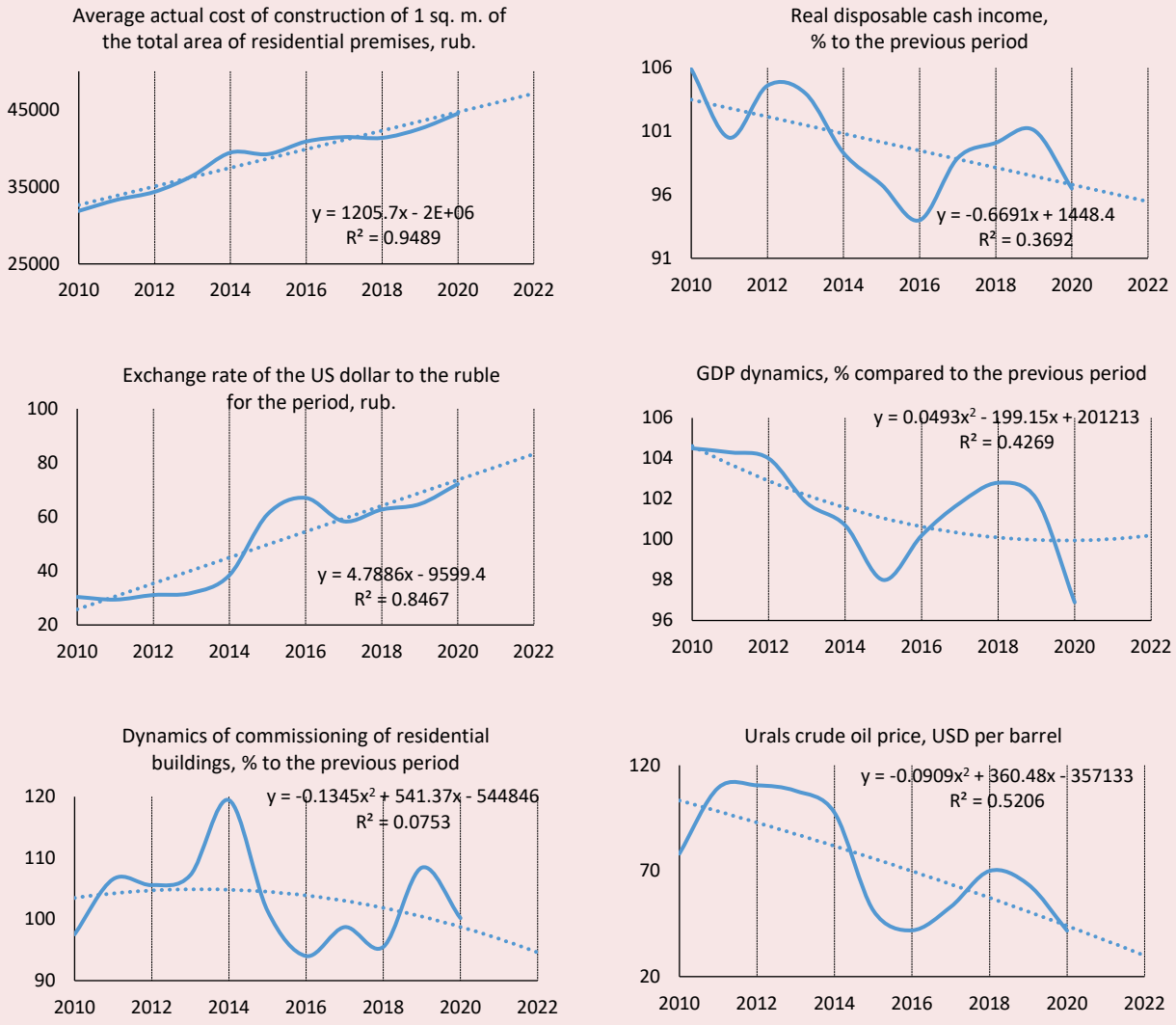
Source: own compilation.

The forecast allows concluding that high prices in the primary housing market will remain in the medium term (in the absence of additional decisions of state authorities and management) which is largely explained by the disappointing trend of retrospective and forecast values of the main macroeconomic indicators *(Fig. 7)*.

According to Rosstat data, since 2000, the average per capita monetary income of population in current prices has been increasing annually. However, the level of real disposable income of population, having begun to decline since 2013, by the end of 2020 decreased by about 10% in ruble equivalent and by 61% in dollar terms. Over the previous few years, the number of jobs has decreased by 0.5 million units. These trends do not contribute to the expansion of the availability of housing. The rise in the cost of construction work, the need for developers to open escrow accounts are also not in favor of lowering prices and are factors of "no return" to the prices of the previous seasons. Moreover, the lack of GDP growth dynamics against the background of a gradual decline in oil demand in the world (according to World Bank forecasts) creates an additional negative moment in the development of the situation in the country in the medium and long term. In other words, at the moment there are no logical prerequisites for a significant decline in prices in the housing market. We have to state that a "bubble" has not been formed in the housing market; the probability of its deflation is minimal, as prices are not subject to a significant decrease in the near future.

The obtained results do not contradict the opinion of a number of real estate market experts who express the opinion that there are signs of stagnation in the housing market in 2021. Almost half of the surveyed realtors (45%) assumed that the demand for real estate after 2020 will decrease due to rising prices. About 15% of real estate market specialists predict a decline in prices and a further recession in the market. The extension of a preferential mortgage taking into account the presence of deferred demand and a decrease in

Figure 7. Forecast trends of macroeconomic indicators in RF



Source: according to Rosstat data.

the volume of supply on the market, according to a third of respondents, will lead to an increase in housing prices from 4–5 to 20%.

Conclusion

The obtained results confirmed the hypotheses that the price jump in the market of new buildings is the result of a "double boom" due to a reduction in the interest rate on the housing market and an increase in demand for real estate. The growth of the scale of the demand market has its limits, especially in the context of increased housing prices. In this regard, the probability of blowing off the "bubble" in the residential real estate market is insignificant. Moreover, in the medium term, price fluctuations are expected to stagnate, confirmed by the results of forecasting using artificial neural networks.

Due to the lack of prospects for the growth of the budget revenue of the Russian population, with high housing prices, citizens postpone the purchase of housing for an indefinite time. As the results of calculations showed, the increase in prices led to a decrease in the availability of housing for the

classic version for six months, for the modified version – for almost a year. Given that three years according to the method of the availability of housing is almost 10 years of a mortgage [3, p. 321], it is not difficult to determine what additional period of the unavailability of housing awaits Russian citizens. Moreover, in conditions when the loan period is stretched, and the amount of the initial payment is growing, we should not talk about increasing the availability of housing through a reduction in the rate, but about increasing the degree of population creditworthiness and the appearance of a "mortgage hook" for Russians. Time will tell whether the reduction of the HML rate is a planned step of monetary policy in order to support the Russian banking sector or, as former Prime Minister of the Russian Federation V.S. Chernomyrdin said: "We wanted the best, but it turned out as always". But now we can say with confidence that the "mortgage hook" and the introduction of escrow accounts are more in the hands of bankers and only partly ordinary citizens in need of housing.

Currently, the solution to the problem of increasing the availability of housing is seen in improving the socio-economic policy in the country in terms of the effective use of natural rent, as Academician D.S. L'viv repeatedly stated back in the late 1990s. The scientist insisted on the impossibility of its concentration in the hands of a certain group of people. In his opinion [33, p. 31], natural rent should work for the benefit of the country's entire population. This will allow the main part of the received income to be directed to investments and economic development. These actions, along with the simplification of legislation and taxation of small businesses as a source of new jobs, will allow intensifying activities in terms of increasing the income of the population. It is impossible to solve the problem of the availability of housing only with the help of certain macroeconomic factors; therefore, in order to expand the availability and security of housing for Russian citizens, a targeted policy should be pursued in terms of income and wage growth.

The results of the conducted research may be in demand by federal and regional government authorities when working out programs for the development of the housing sector of territories, as well as measures within the framework of social policy aimed at increasing the availability of housing. The methodological tools used can be used by state authorities and private financial companies when conducting their own research on the residential real estate market. In the future, it is possible to study the availability of housing for various income strata of the population including using the results of sociological surveys.

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Problems of Providing Balanced Development of the Northern Region: Ecological and Economic Aspect*

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Abstract. Under current conditions, considering the national development goals of Russia through to 2030, one of the urgent tasks is to provide the development of country's regions on the principles of ecological and economic balance, which is especially important for the Russian northern territories because of their greater vulnerability and lower rate of ecosystem restoration. In this regard, the purpose of the work is to study the features and problems of ecological and economic balance in the development of the northern region, as well as to justify the tools to solve them. The object of the study is the Russian North as a region which has enormous natural resource and geostrategic potential, and occupies an important place in the territory of the North. The basis of the methodology is the of P. Victor model, which makes it possible to assess the presence or absence of the decoupling effect in the regional development.

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Subsequently, we analyze the trends for compliance with the principles of ecological and economic balance. As a result, we have found that there is no decoupling effect for all types of anthropogenic impacts in 2007™2018. Moreover, the considered trends do not meet the key principles of ecological and economic balance including the reason of the low implementation rate of environmental innovations in economic activity due to their high cost. This necessitates the need to form a mechanism of ecological and economic balance of development; it s most important element could be a regional fund to support the implementation of the best available technologies. The fund plays the role of a financial tool to stimulate the introduction of innovations in the enterprises that are greening their activities. The scientific novelty of the work is to improve the methodological tools for assessing and providing the ecological and economic balance of the regional development. The direction for further research will be a more detailed elaboration of the mechanism to provide ecological and economic balance in the development of the northern regions in the country.

Key words: ecological and economic balance, sustainable development, Russia North, decoupling, natural recourse intensity, best available technologies.

Introduction

According to studies by leading scientists, one of the limiting factors of economic growth in Russia's regions is the degradation of the natural environment and its resources – current and potential economic assets. Accordingly, one of the important problems is to ensure a certain balance between economic and natural reproduction. However, the balance of economic activity in the region and the reproduction of its natural systems is possible only if all the principles of ecological and economic balance of development are observed [1–3].

Currently, the problems of balanced ecological and economic development are among the priorities in the regional policy of most countries in the world [2]. Development problems of social, economic and ecological subsystems of regions cannot be considered separately, as they are in close interaction with each other, and transformations in one of the areas will inevitably affect the others.

The relevance of the work is also confirmed by the fact that in recent years a number of documents determining the direction of ecological and economic development of the country have been adopted. A special place among them is occupied by the Decree of the President of the Russian Federation no. 474, dated July 21, 2020 "On the national development goals of the Russian Federation for the period through to 2030", which identifies such a strategic goal as the creation of a comfortable and safe environment for life including through the improvement of environmental conditions[1].

It is important to note that mechanisms to ensure sustainable economic growth and reduce the anthropogenic impact on the environment are currently being created, but mechanisms for comprehensive, balanced ecological and economic development are lacking, and individual measures are still insufficient. For example, within the framework of the national project "Ecology" it is planned that in the sphere of processing and disposal of solid municipal waste (SMW) the proportion of imported equipment should not exceed 22%. This measure, apart from solving the "garbage" problem, is aimed at increasing the innovation activity (as only innovative technologies can provide effective processing of SMW). However, at present, mostly imported equipment is used for

[1] On the national development goals of the Russian Federation for the period through to 2030: Presidential Decree no. 474, dated July 21, 2020. Available at: http://kremlin.ru/events/president/news/63728

SMW utilization, and Russian equipment is usually used as auxiliary (conveyor belts, containers for accumulation, etc.) [4].

The imbalance of ecological and economic development is particularly acute in the northern regions which are territories with significant mineral resource potential and developed industry that has a significant anthropogenic load, as well as a very small ecological carrying capacity[2] due to natural and climatic conditions.

The imbalance of ecological and economic development in recent years has led to the fact that only in the territory of the European North of Russia (ENR) as of May 7, 2021 there were 18 objects of accumulated environmental damage[3], concentrated mainly in the Far North (Murmansk Oblast and Nenets Autonomous Okrug). More than one million people are exposed to the negative impact of such objects *(Tab. 1)*.

In addition, there is no reason to believe that all objects are included in the GRONVOS[3]; many of them simply have not been reported or the application may not meet the requirements, causing it to be rejected. The above-mentioned makes this study relevant.

The purpose of the work is to investigate the features and problems of ecological and economic balance in the development of the northern region, as well as to substantiate the tools for their solution.

The object of the study is the North of Russia as a region which occupies an important place in the territory of the North and has a huge natural resource and geostrategic potential.

The practical significance of the study consists in the possibility of using the results obtained to improve federal and regional policies aimed at ensuring a balanced ecological and economic development of the northern regions of Russia.

Theoretical aspects of the research

Ecological and economic balance (EEB) is an integral component of sustainable development. The implementation of its ideas should be carried out exactly at the regional level due to the fact that the regions are historically the most sustainable territorial entities, which are equidistant in the administrative space of the federation (center – federal okrugs – regions – municipalities (districts) – citizen) [5].

At present, not enough attention is paid directly to the problem of EEB. As a rule, it is an integral element of such concepts as *sustainable development* [5; 6], *green economy* [7], *blue economy* [8; 9], *circular economy* [10; 11]. Due to the fact that the ecological and economic balance is considered only through the prism of the above-mentioned concepts, the formulation of its definitions is also extremely scarce. This is confirmed by the analysis of domestic and foreign studies. In our opinion,

Table 1. Objects of accumulated environmental damage in the ENR territory

Subject	The number of objects of accumulated environmental damage, units	The number of the population exposed to the negative impact of objects of accumulated environmental damage, thousand people
Murmansk Oblast	16	1113.6
Nenets Autonomous Okrug	2	0.625
Source: Data of the State Register of Accumulated Environmental Damage Objects (as of May 07, 2021). Available at: http://www.mnr.gov.ru/docs/docs/svedeniya_soderzhashchiesya_v_gosudarstvennom_reestre_obektov_nakoplennogo_vreda_okruzhayushchey_sre2/		

[2] Ecological carrying capacity is an ability of the natural environment (atmosphere, water sources, soil) to perceive various anthropogenic influences (including harmful impurities) on a certain scale without changing its basic properties in an indefinitely long term.

[3] Accumulated environmental damage is damage resulting from past activities, the obligations to eliminate which have not been fulfilled or have not been fully fulfilled. The State Register of Accumulated Environmental Damage (GRONVOS) was created to record the objects that have such environmental impact.

the most precise and capacious definition of EEB was proposed by Doctor of Sciences (Economics), Professor M.F. Zamyatina: "*a balance of resource and ecological opportunities of the territory with the needs of the regional socio-economic system, which provides the reproduction of natural, human, produced capital*" [2, p. 7].

The EEB is implemented through a number of principles *(Tab. 2)*.

By its nature, the ecological and economic balance of development is expressed through the decoupling effect, a phenomenon when economic growth and the reduction of anthropogenic load indicators are observed simultaneously [12; 13; 14]. In our opinion, the difference between the EEB development and decoupling is that decoupling practically does not take into account innovation activity in the economy, but only reflects the dynamics of changes in economic growth and environmental load without specifying the cause-effect relations.

There are several types of decoupling. The most common are absolute decoupling, in which economic growth is accompanied by a decrease in resource use or anthropogenic load, and relative decoupling, in which the rate of economic growth should exceed the growth rate of resource consumption or negative impact on the environment. In addition, decoupling is distinguished by geographic scale (local, regional, national, global), as well as by the scope of the economy (sectoral or overall economic system). As a result of the review of 179 publications, carried out by T. Vadén with co-authors [8], it was found that researchers most often consider the relative decoupling at the local, regional or national level with the coverage of the whole economic system.

A broader and at the same time closest concept to the ecological and economic balance is the green economy. "A green economy is an economy that promotes human well-being and social justice, as well as significantly reduces ecological risks and disadvantages" [15, c. 9]. In our opinion, the concept of green economy is somewhat broader than the ecological and economic balance, due to the fact that it should also take into account the social aspect, and be based on the EEB principles.

However, there is still some discussion about the relationship between the green economy, ecological and economic balance, and the decoupling effect. Thus, the American scientist, Professor D. Meadows argues that there are many studies confirming that the decoupling effect does not work[4]. Professor of Peter the Great St. Petersburg

Table 2. Principles of ecological and economic balance

Principle	Content
Consistency	It is important to take into account the properties not only of each individual element, but also of the system as a whole, as a result of the interaction of the elements that make it up.
Consideration of the natural resource intensity	When implementing economic activities, it is necessary to preserve the possibility of sustainable functioning of ecosystems as an environment for life
Increasing the closure of material and energy cycles of production and consumption	More integrated use of materials and energy reduces the removal of resources from the natural environment, thus reducing the cost of raw materials and preserving natural resource potential
Innovativeness	Reducing the environmental load should be achieved through the introduction of energy- and resource-saving and efficient cleaning technologies, rather than by reducing the volume of production and closing polluting industries.
Transition to the concept of risk management	There is a need to take into account the possible adverse impact on the population and nature, not only in the short term, but also in the long-term perspective.
Source: Ed. by Zamyatina M.F. Ecological and economic balance of regional development: methodological and methodical bases: monograph. Saint-Petersburg: GUAP, 2013. P. 143, p. 20,	

[4] Vavilov S. Science is to solve problems, not open up new horizons: interview. Gazeta.ru. Available at: https://www.gazeta.ru/science/2012/05/02_a_4569465.shtml (accessed: January 30, 2021).

Polytechnic University L.L. Kamenik [16] notes that most studies of green economy development are not related to the ecological and economic balance; according to the authors, such works do not analyze the resource factor.

In fact, in many works for the assessment is used mainly natural resource intensity as the pollution density [14; 17; 18; 19]. But there are also studies that use both types of this indicator (natural resource intensity as the pollution density and as the intensity of natural resources costs). They include, for example, the study of A.O. Akulov [13], concerning the natural resource intensity of the coal industry of the Kemerovo Oblast. In our opinion, the calculation of natural resource intensity by the resource factor is appropriate only in the study of a particular industry. In the case of calculating this indicator relative to the territory (region or federal okrug), the natural resource intensity will depend to a greater extent on the available natural capital, rather than on economic activity.

Recently, interest in this effect is not fading, there are studies on various sectors of activity (transport, energy, construction, agriculture), where the ratio of ecological and economic development is estimated precisely through decoupling [8; 17–21]. For example, F. Dong, J. Li, X. Zhang, J. Zhu combined the Tapio decoupling indicator (a decoupling indicator based on an elasticity indicator) and the Kuznets curve in order to analyze the possibility of decoupling in the long term and the costs necessary to achieve it [17]. C. Gao, H. Ge, Y. Lu, W. Wang, Y. Zhang combined the Tapio decoupling indicator, calculated relative to greenhouse gas emissions, and the Cobb-Douglas production function to study the economic factors that stimulate an increase in emissions [18]. S. Neves and A. C. Marques, having calculated the decoupling indicator, using autoregressive distributed lag model, analyzed the role of alternative energy sources in the decarbonization of the transport sector in the United States [19].

A review of the most recent scientific works has established that the effect of decoupling can be used to estimate the resource costs and the corresponding economic effect. We believe, however, that this indicator only is not enough to assess the ecological and economic balance. Without additional analysis, it is impossible to understand how it was achieved: due to the implementation of eco-innovations or a simple reduction in production volumes.

The issue of ecological and economic balance is actively discussed in the international political scene. For example, Europe adopted a "European Green Deal" in 2019, which implies achieving carbon neutrality by 2050. One of the tools of green development is a border carbon tax which is not only a method of climate change regulation, but also a way to protect economic interests for European countries. As model calculations of IEF RAS show, Europe's net emissions will be 62 billion tons of CO_2 by 2050, which implies an 85% reduction in emissions compared to 1990. According to the same calculations, the net emissions in Russia will not exceed the accumulated net emissions of 50 billion tons [22].

While Europe is fighting climate change by introducing a carbon tax, Russia is primarily concerned with the absorption of greenhouse gases by plants[5]. At the climate summit on April 22–23, 2021, Russian President V.V. Putin said that development should not only be "green", but also sustainable in its entirety, i.e., it should be linked to such goals of sustainable development as fighting poverty and reducing the gap between developed and developing countries. As a response, Russia developed the Long-term Development Strategy with Low Greenhouse Gas Emissions to 2050 which provides for reduction of greenhouse gas emissions to 64% of the 1990 level (the most optimistic scenario is up to 52%).

[5] Vinnikov V. Political climate. *Zavtra*, 2021, no. 18. Available at: https://zavtra.ru/blogs/politicheskij_klimat

Thus, the EEB of regional development and mechanisms for its provision remain understudied and require further research.

Research methods

To assess the EEB, it is necessary to determine the presence (absence) of a decoupling effect, then analyze what causes this effect and to what extent. For this purpose, the model of ecological-economic "zones" will be used, the author of which, P. Victor, tested it in the case of greenhouse emissions in Canada [23]. Further, on its basis, Candidate of Sciences (Economics) T.V. Tikhonova assessed the quality of economic growth in the Komi Republic for the period 2007–2016 [24].

The basis of the model is the ratio of the growth rate of GRP and eco-intensity (natural resource intensity). P. Victor suggested using the monetary indicator of natural resource intensity, calculated as the value of the environmental load per unit of gross regional product (EI_{GRP}, formula (1)), and natural, calculated as the size of the environmental load per capita (EI_P, formula (2)):

$$EI_{GRP} = EL/GRP, \quad (1)$$

where EL is an environmental load (including removal of natural resources) and GRP is gross regional product;

$$EI_P = EL/P, \quad (2)$$

where EL is an environmental load, P is population.

The growth rate of cost and natural indicators of eco-intensity is calculated by formulas (3) and (4), respectively.

$$I_{EI\,GRP} = \frac{EI_{GRP}^{t+1}}{EI_{GRP}^{t}} \times 100\%, \quad (3)$$

where $I_{EI\,GRP}$ – growth rate of the eco-intensity cost indicator;

EI_{GRP}^{t+1} – eco-intensity cost indicator of the current period;

EI_{GRP}^{t} – eco-intensity cost indicator of the previous period;

$$I_{EI\,P} = \frac{EI_{P}^{t+1}}{EI_{P}^{t}} \times 100\%, \quad (4)$$

where $I_{EI\,P}$ – the growth rate of the natural eco-intensity indicator;

EI_P^{t+1} – the growth rate of the natural eco-intensity indicator of the current period;

EI_P^{t} – the growth rate of the natural eco-intensity indicator of the previous period.

We should also note that *only such a decoupling effect, which fully corresponds to its principles (Tab. 1)*, can be an indicator of ecological and economic balance [2].

Moreover, if we consider that the decoupling effect is a process of sustainable, long-term, forecastable and controllable misalignment of economic growth and pollution trends, then the eco-intensity growth rates should not only not exceed the annual growth rate of GRP, but also decrease (or at least not increase) relative to the previous year.

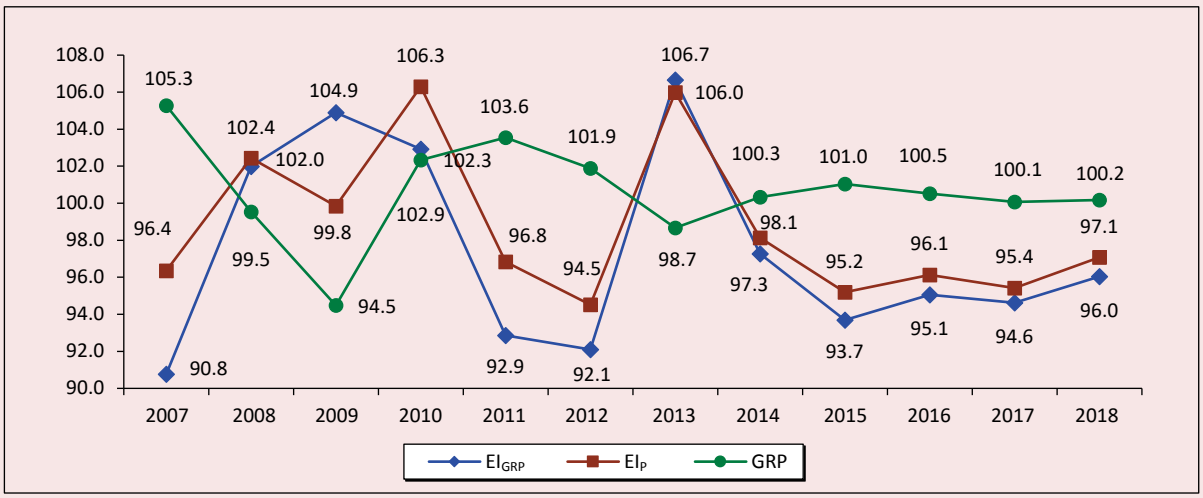
As environmental load indicators will be used the volume of total emissions of pollutants – the sum of air emissions from stationary and mobile sources taking into account their entrapping and clearing; the volume of polluted (untreated and insufficiently treated) wastewater discharge; volume of unrecycled and unused production and consumption waste – waste generation volume, adjusted to the value of their processing and use. In this work, the calculations were carried out in the period from 2007 to 2018. Subsequently, the results will be analyzed for compliance with the principles of ecological and economic balance.

Research results

The dynamics of eco-intensity changes in terms of emissions of pollutants into the atmospheric air and GRP in cost and natural are shown in *Figure 1*.

Since 2014, there has been a decoupling effect with regard to the anthropogenic load on atmospheric air and economic growth, but at this stage it

Figure 1. Dynamics of environmental intensity growth rates in terms of emissions of pollutants into the atmospheric air and GRP of the ENR, %



Source: Regions of Russia. Social and Economic indicators: stat. coll. 2006–2020

cannot be indicative of ecological and economic balance. The decoupling effect in the period from 2014 to 2018 is characteristic only of the Vologda and Arkhangelsk Oblasts (including Nenets Autonomous Okrug).

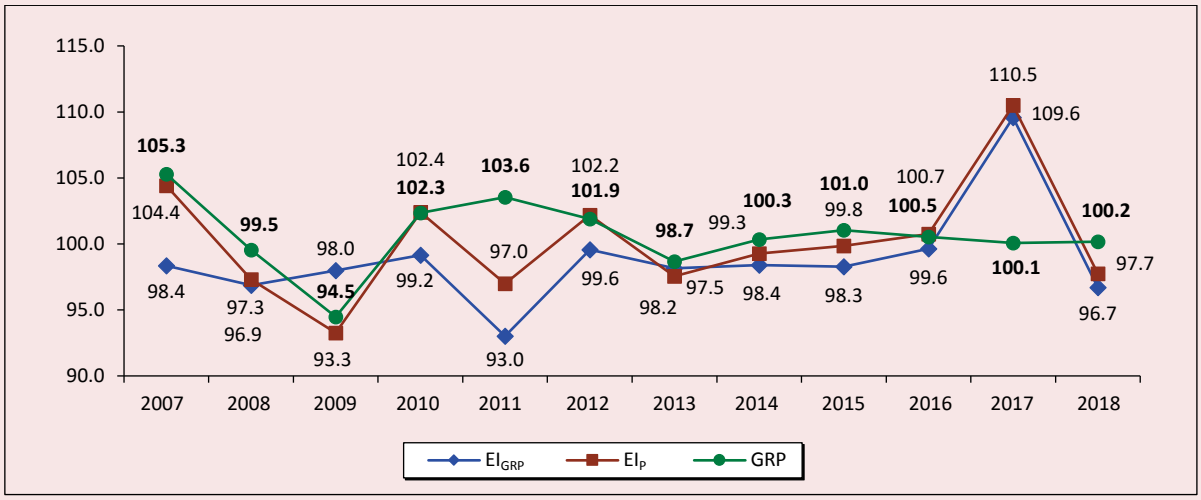
As noted earlier, the important principles of ecological and economic balance are innovation and closure of the material and energy cycles of production and consumption. Thus, regarding the introduction of innovative technologies for purification of waste pollutants it can be concluded that both innovation activity (on the introduction of the best available technologies) and closure of the material cycle are clearly insufficient *(Tab. 3)*, since modern BAT allow capturing up to 97–99% of waste pollutants[6].

Table 3. Percentage of captured pollutants from stationary sources, %

Territory	2006	2008	2010	2012	2013	2014	2015	2016	2017	2018	2018 to 2006, p. p.
European North of Russia	72.9	73.7	72.1	70.6	67.2	67.6	70.1	71.6	75.9	71.1	-1.8
Republic of Karelia	55.4	57.9	56.5	46.5	37.4	45.7	42.9	44.2	47.9	39.5	-15.9
Komi Republic	32.5	31.4	37.9	37.5	33.1	34.9	37.3	38.4	59.6	31.7	-0.8
Arkhangelsk Oblast	68.0	72.7	55.8	70.5	69.9	63.3	62.9	64.0	62.4	67.1	-0.9
incl. Nenets AO	no data	no data	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Arkhangelsk Oblast (excl. Nenets AO)	no data	no data	72.3	76.3	76.7	72.0	73.6	73.4	73.4	76.1	–
Vologda Oblast	80.4	81.7	78.9	76.8	71.4	69.4	74.2	75.1	83.3	85.4	5.0
Murmansk Oblast	87.0	85.9	88.5	86.1	85.8	86.7	86.6	88.8	84.8	71.3	-15.7
Source: Regions of Russia. Social and Economic indicators: stat. coll. 2020. P. 475.											

[6] Purification of atmospheric discharge (pollutants) in manufacturing of products (goods), as well as performing works and providing services at large enterprises: Information and technical reference book 22-2016. Available at: http://docs.cntd.ru/document/1200143294

Figure 2. Dynamics of eco-intensity growth rates by discharges of polluted wastewater into water bodies and GRP of the ENR, %



Source: Regions of Russia. Social and Economic indicators: stat. coll. 2007–2020.

As follows from Table 3, the capture of pollutants from stationary sources decreased, but at the same time the rate of eco-intensity reduction also decreased. This indicates that this effect was not achieved at the expense of innovative treatment technologies.

Looking at the dynamics of growth rates of GRP and natural resource intensity on the discharge of polluted wastewater *(Fig. 2)*, we can note the absence of the decoupling effect, as this ratio of indicators is neither stable nor manageable in the long term.

Such a ratio of GRP growth rate and eco-intensity was influenced by a number of factors (closure water consumption cycles, polluted wastewater discharge). On the territory of the ENR, the closure of water consumption cycles is growing quite slowly and is still insufficient *(Tab. 4, 5)*, as the modern best available technologies (BAT) allow providing 99.9% of treatment [25]. Returning to the EEB principles (see Tab. 1), it is worth noting that the innovativeness and closure of material and energy cycles are insufficient, and their increase is not sustainable (and in the Komi Republic, a decrease is observed).

Table 4. Percentage of recycled water in the total volume of water used, %

Territory	2006	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018 to 2006 p. p.
European North of Russia	66.5	68.1	64.8	68.8	69.7	68.9	69.2	71.4	71.6	70.9	71.2	4.7
Republic of Karelia	81.3	81.9	87.1	87.9	86.9	85.3	85.5	85.5	85.7	77.2	76.6	-4.7
Komi Republic	72.1	74.0	63.3	63.4	65.1	66.0	66.8	66.3	65.9	67.4	68.0	-4.1
Arkhangelsk Oblast	56.9	57.5	0.0	56.2	56.7	56.6	57.1	56.9	55.6	57.7	58.1	1.2
incl. Nenets AO	79.8	80.1	81.5	80.4	83.5	86.2	72.8	86.2	88.3	91.5	86.2	6.4
Arkhangelsk Oblast (excl. Nenets AO)	56.8	57.4	55.2	56.0	56.5	56.3	57.0	56.6	55.1	57.2	57.8	1.0
Vologda Oblast	84.7	84.8	86.1	87.6	89.0	88.9	89.2	91.2	92.3	94.6	94.8	10.1
Murmansk Oblast	33.9	37.6	35.0	38.3	40.2	35.4	34.7	40.1	40.1	40.2	40.7	6.8
Source: On the state of the environment in the subjects of the European North of Russia: Government reports, 2006–2018.												

Table 5. Percentage of polluted wastewater discharges in the total volume of water disposal, %

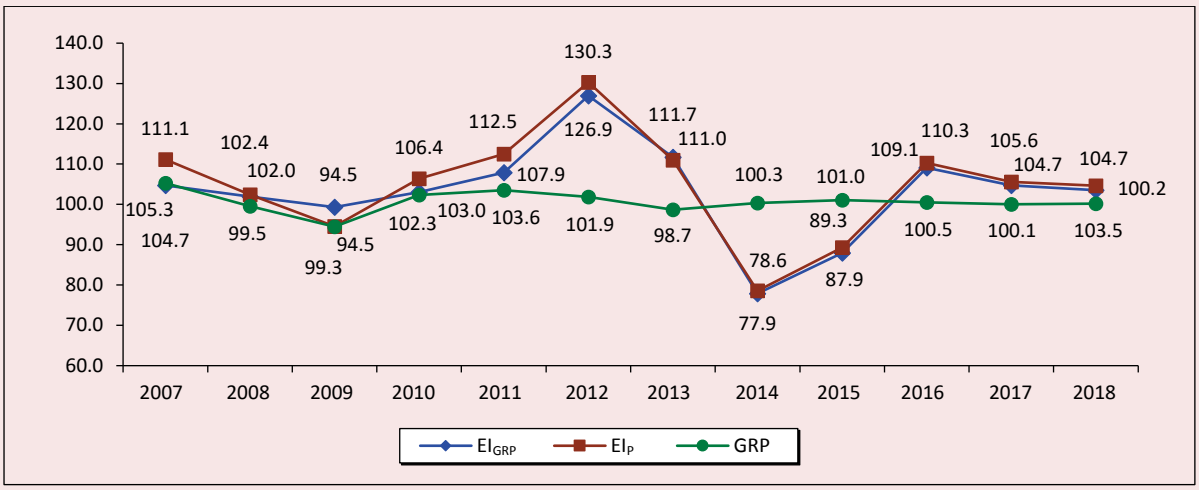
Territory	2006	2008	2010	2012	2013	2014	2015	2016	2017	2018	2018 to 2006 p. p.
European North of Russia	77.3	79.6	85.7	84.6	79.8	77.0	82.4	84.9	88.9	83.6	6.3
Republic of Karelia	85.2	84.5	92.4	85.5	87.9	87.5	82.2	92.6	88.7	71.3	-13.9
Komi Republic	23.5	22.6	25.0	26.4	24.6	25.5	27.4	25.3	59.4	62.1	38.6
Arkhangelsk Oblast	71.2	73.8	63.9	56.2	53.2	52.3	51.8	49.0	48.8	49.2	-22.0
incl. Nenets AO	92.1	92.0	13.2	5.1	4.4	0.0	0.0	15.9	13.4	15.6	-76.5
Arkhangelsk Oblast (excl. Nenets AO)	71.2	73.7	64.0	56.4	53.3	52.5	52.0	49.1	49.0	49.4	-21.8
Vologda Oblast	25.4	22.3	26.6	33.9	32.4	30.7	39.0	44.6	70.3	59.7	34.3
Murmansk Oblast	17.2	20.3	19.9	23.0	19.4	19.4	21.6	20.9	20.7	19.4	2.2
Source: On the state of the environment in the subjects of the European North of Russia: Government reports, 2006–2018.											

In the ENR from 2006 to 2018, the percentage of wastewater discharged without proper treatment has increased and amounted to about 84% of the total volume of water disposal (see Tab. 5). This forms a fairly high level of anthropogenic impact and indicates not only the failure to consider the ecosystem capacity, but also the lack of a risk-oriented approach to the environmental aspects of economic activity.

In the sphere of production and consumption waste it is also obvious that there is no decoupling effect *(Fig. 3)*. In the case of the production and consumption waste of the ENR we can state the inconsistency with most of the EEB principles. This trend is due to inefficient waste management, i.e. the situation when the volume of generated waste is growing, and the amount of waste sent for recycling is decreasing. For instance, in the ENR, waste generation has increased almost by half, while its recycling has slightly decreased.

This problem is especially acute in the Arkhangelsk Oblast, where the percentage of recycled waste does not exceed 6% of its generation *(Tab. 6)*.

Figure 3. Dynamics of eco-intensity by waste and GRP of the ENR, %



Sources: Regions of Russia. Social and Economic indicators. 2006–2020, On the state of the environment in the subjects of the European North of Russia: Government reports, 2006–2018.

Table 6. Dynamics of waste generation and recycling of the ENR

Territory	Waste	2006	2008	2010	2012	2013	2014	2015	2017	2018	2018 to 2006
European North of Russia	Generated, mil. t	323.3	354.4	324	469.3	524.4	412.8	420.5	435.6	448.7	138.8%
	Recycled, %	20.9	19.2	12.6	12.8	14	14.6	25.5	21.2	19.8	-1.1 p. p.
Republic of Karelia	Generated, mil. t	101.7	95.6	95.2	136.6	135.8	131.3	128.8	134.2	139.7	137.4%
	Recycled, %	10	0.5	10	5.3	5	5.5	37.1	13.1	9.7	-0.3 p. p.
Komi Republic	Generated, mil. t	16.7	19.1	16.9	24	6.8	7.4	8.4	5.8	5.6	33.5%
	Recycled, %	8.4	8.5	6.4	73.3	25.2	24.2	20.3	18.3	13.9	5.5 p. p.
Arkhangelsk Oblast (incl. Nenets AO)	Generated, mil. t	10.7	17.7	8.3	60.9	126.2	69.7	81.7	81.2	74.7	by 6.9 times
	Recycled, %	3.4	2.7	2.5	05	13.7	2.7	6.2	6.4	5.6	2.2 p. p.
Nenets AO	Generated, mil. t	0.6	0.1	0.1	0	0.1	0.1	0.2	0.1	0.1	16.7%
	Recycled, %	0	0	0	0	0	0.1	0	0.1	0.1	0.1 p. p.
Arkhangelsk Oblast (excl. Nenets AO)	Generated, mil. t	10.1	17.6	8.1	60.9	126.1	69.6	81.5	81	74.6	by 7.4 times
	Recycled, %	33.8	15.4	30.3	0.9	10.9	3.8	7.5	7.8	7.3	-26.5 p. p.
Vologda Oblast	Generated, mil. t	18.2	18.3	16.6	10.5	14.7	9.1	15	14.9	15.7	86.3%
	Recycled, %	68.7	65.8	75.7	79.6	61.1	78.6	68.1	73.5	67.3	-1.4 p. p.
Murmansk Oblast	Generated, mil. t	22.7	25.2	15.3	26.3	42.1	41.5	41.6	56.2	58.4	by 2.6 times
	Recycled, %	22.7	25.2	8.2	11.1	17.5	21.2	22.3	28.1	27.4	4.7 p. p.

Source: On the state of the environment in the subjects of the European North of Russia: Government reports, 2006–2018.

Here, the largest waste volume is generated by mining enterprises. In addition, for almost the entire period, more than 90% of all the production and consumption waste is not recycled and neutralized, regardless of the amount of their generation (that is, the growth of waste disposal is due to both an increase in their generation and insufficient use and disposal).

In 2013, there was a sharp decrease in the share of utilized production and consumption waste in the Komi Republic (from 73.3 to 25.2%), associated with a decrease in the share of used production and consumption waste in the mining industry from 73.92 to 1.85%[7].

Thus, the development of the ENR subjects can be characterized as unbalanced in ecological and economic terms which confirms the absence of a decoupling effect in the period from 2007 to 2018. In some cases (emissions of pollutants into the atmospheric air since 2014), it did not comply with the principles of ecological and economic balance. The most serious imbalance of environmental and economic development is manifested in the sphere of production and consumption waste management. More positive trends are noted regarding the environmental intensity of wastewater discharges and emissions of pollutants into the atmospheric air.

In the course of the study, we have noted the low innovative activity of the region's enterprises. According to the rating of innovative development of the Russian subjects, compiled by the Higher School of Economics, the subjects of the ENR rank in its second half. The methodology for calculating the index of innovation activity has not changed from 2008 to 2017 *(Tab. 7)*.

[7] On the state of the environment in the Komi Republic: Government report. 2012. P. 93; On the state of the environment in the Komi Republic: Government report. 2013. P. 99.

Table 7. The innovative development level of the regions

Year	Innovative development level	Republic of Karelia	Komi Republic	Arkhangelsk Oblast	Nenets AO	Vologda Oblast	Murmansk Oblast
2008	Index value	0.27	0.34	0.21	0.17	0.33	0.37
	Rank	59	28–29	74	82	37	20
2010	Index value	0.34	0.36	0.26	0.18	0.36	0.39
	Rank	51	40–41	76–77	82	38	27–28
2012	Index value	0.28	0.37	0.32	0.24	0.31	0.36
	Rank	71	34	58	76	60	40
2013	Index value	0.28	0.36	0.35	0.19	0.32	0.35
	Rank	68	36	38	79	54	43
2014	Index value	0.31	0.34	0.29	0.20	0.31	0.35
	Rank	54	41	63	80	55	37
2015	Index value	0.30	0.29	0.29	0.17	0.34	0.35
	Rank	55	58	59	84	36	30
2017	Index value	0.29	0.30	0.33	0.16	0.33	0.35
	Rank	60	57	45	84	41	36

Source: Rating of innovative development of Russian regions: Information and analytical materials of the National Research University HSE from 2010 to 2019.

In 2017, the ranking of almost all the subjects of the ENR (except for the Arkhangelsk Oblast) decreased significantly. The index values in most of the subjects also have not increased, therefore, we can conclude that the level of innovative development of the ENR cannot provide the "greening" of the economy corresponding to the modern world requirements.

The ratio of the organizations engaged in technological innovation, in most subjects of the ENR (except for the Murmansk Oblast) decreased. For example, in the Republic of Karelia in 2012 it was 9.8%, and in 2017 it was 4.8%, in the Arkhangelsk Oblast in 2012 – 7.2%, in 2017 – already 3.9%, in the Vologda Oblast in 2012 – 6.1%, in 2017 – 5.0%. Only in the Murmansk Oblast from 2012 to 2017 this indicator increased by 0.2 p.p., amounting to 6.8%[8].

At the same time, we should note that such negative trends are observed with increasing expenditures on technological innovation, as well as an increase in investment in fixed capital aimed at the rational use of natural resources and environmental protection *(Tab. 8, 9)*.

Table 8. Costs of technological innovation, mil. rub. *

Region	2006	2008	2009	2010	2011	2013	2014	2015	2017	2018
European North of Russia	13246.2	28574.9	20862.3	16201.4	51276.7	21168.1	14725.0	5645.5	4998.8	18627.8
Republic of Karelia	1700.0	7354.6	2679.8	3938.3	1627.6	263.1	93.3	161.9	613.6	767.0
Komi Republic	397.0	1724.9	1260.4	1904.8	26308.5	2394.8	2573	1118.7	2404.2	7929.2
Arkhangelsk Oblast	819.5	3368.9	2330.3	1019	5471.3	12122.7	4961.8	1982.8	1139.8	3534.8
Including Nenets AO	0.0	0.2	523.9	2.8	9.5	31.4	22.6	39.2	3.8	0.6
Vologda Oblast	4153.5	6043.4	7758.1	4675.5	16459.4	3742.7	3814.5	758.1	381.5	367.0
Murmansk Oblast	5176.2	10083.1	6833.7	4663.8	1409.9	2644.8	3282.4	1624	459.7	6029.8

* In comparable prices of 2018.
Source: Regions of Russia. Social and Economic indicators: stat. coll. 2007–2018.

[8] EMISS. Available at: https://fedstat.ru/indicator/43685

Table 9. Investment in fixed capital aimed at environmental protection, mil. rub.

Subject of the ENR	2007	2008	2010	2011	2012	2014	2015	2016	2017	2018
Republic of Karelia	311.3	0.0	833.5	885.8	136.6	192.5	123.9	161.5	123.7	55.9
Komi Republic	326.7	802.0	2016.3	853.7	6342.7	12465.6	13502.2	13357.3	5885.1	9609.1
Arkhangelsk Oblast,	1352.8	2016.0	745.7	1311.9	435.3	816.9	952.4	1135.1	4019.9	1084.2
incl. Nenets Autonomous Okrug	466.7	1015.7	165.6	217.2	0.0	319.0	386.9	435.2	1481.6	311.7
Vologda Oblast	1605.2	1591.0	377.1	2826.9	2579.4	2470.0	879.5	881.8	1629.0	753.6
Murmansk Oblast	73.7	356.7	586.9	523.2	322.6	1105.1	2163.9	490.7	1017.5	12100.9
Source: EMISS.										

If in the ENR as a whole the costs of technological innovation increased, in some subjects significantly decreased (in the Vologda Oblast, it was 11 times, in the Republic of Karelia – 2.2 times).

The main innovations to ensure the EEB are the best available technologies (BAT) which are understood as "technologies for the manufacturing of products (goods), works, services determined on the basis of modern scientific and technological advances and the best combination of criteria for achieving environmental protection goals, subject to the technical possibility of their application"[9].

For their implementation, there was launched the national project "Ecology" which, at the level of the Russian Federation subjects, is implemented through regional projects. However, not all of them are implemented on the territory of the ENR *(Tab. 10)*.

Table 10. Implementation of regional projects in the ENR subjects

Regional Project	Republic of Karelia	Komi Republic	Arkhangelsk Oblast	Vologda Oblast	Murmansk Oblast
Clean Country	–	+	+	+	+
Integrated system for municipal waste management	+	+	+	+	–
Infrastructure for handling especially hazardous waste	–	–	–	–	–
Clean Air	–	–	–	+	–
Clean Water	+	+	+	+	–
Improvement of the Volga river	–	–	–	+	–
Preservation of Lake Baikal	–	–	–	–	–
Preservation of unique water objects	+	+	–	+	+
Conservation of biological diversity and ecological tourism development	+	+	–	–	+
Forests Preservation	+	+	+	+	+
Implementation of the best available technologies	–	–	–	–	–
Source: data from the official websites of regional governments. Available at: http://gov.karelia.ru/natsionalnye-proekty/1457/; http://project.rkomi.ru/system/attachments/uploads/000/155/850/original/06.12.2018_%D0%9F%D1%80%D0%BE%D1%82%D0%BE%D0%BA%D0%BE%D0%BB_%E2%84%967-%D0%9F%D0%A1.pdf; https://dvinaland.ru/gov/national_projects/eco/; https://mpr.gov-murman.ru/activities/implementation_national_projects/					

[9] Best available technologies. Rosstandart. Available at: https://www.gost.ru/portal/gost/home/activity/NDT

The fact that projects to preserve Lake Baikal and to improve the Volga River (except for the Vologda Oblast) are not implemented in the ENR regions is understandable and caused by natural and geographic reasons. However, there are questions concerning the fact that such important projects as "Infrastructure for handling especially hazardous waste" are not implemented (especially for the Arctic regions of the ENR (Murmansk Oblast, Nenets Autonomous Okrug) with significant accumulated environmental damage, the problem of which is quite acute), and also the project "Implementation of the best available technologies", contributing to greening of the economy of regions and modernization of existing industries, given the lack of decoupling effect on the main types of anthropogenic waste. Thus, the implementation of BAT at the enterprises is not included in the environmental national project on the territory of the ENR.

One of the most important technical factors limiting the effective implementation and functioning of BAT at Russian enterprises is the absence of specific marker substances and technological indicators in a number of information and technological reference books (in 16 of 51). This applies to such areas as pulp and paper production, chemical industry, mining industry, agriculture (animal husbandry), and waste management[10].

Among the main economic factors hindering the growth of innovative activity, including the implementation of BAT, are the lack of enterprises' own funds and the high cost of innovation, economic risks, difficulties in obtaining borrowed funds and excessive government regulation[11].

On average in Russia the indicators of implementation of BAT are significantly inferior to the global average. For example, if in Russia the percentage of implemented BAT in the manufacturing industry is 25%, the world average is 55–60%; in the housing and utilities sector it is 12 and 40% respectively. Approximately the same ratio is observed in the energy sector (10% in Russia and 60% of the world average) and the oil and gas sector (20 and 40%)[12].

Considering the main problems of implementation of BAT, we can conclude that at the moment, without additional assistance, the subjects of the ENR are not ready to implement such technologies.

Thus, the main problems in ensuring a balanced ecological and economic development of the region are:

– lack of a risk-oriented approach which manifests itself in the accumulated damage to the environment and failure to take into account the possible additional costs of its elimination;

– insufficient closure of material and energy cycles, as evidenced by the low share of production and consumption waste processing, the share of water used in closed water supply and the share of captured pollutants from stationary sources;

– low innovative activity: technological innovations are implemented at less than 10% of enterprises; the ENR subjects rank only in the second half of the rating "Level of innovative development"; in addition, a significant limitation for the introduction of innovation is their high cost;

– failure to take into account ecological capacity, which is confirmed by ignoring the northern ecological peculiarities of economic activity and, accordingly, is one of the important causes of accumulated damage to the environment;

[10] Technological standards, technological indicators and marker substances. *Journal of Industrial Ecology (Russia)*. Available at: https://news.ecoindustry.ru/2019/09/tehnologicheskie-normativy/

[11] Innovative activity of companies: Russian Union of Industrialists and Entrepreneurs survey. Available at: https://www.rspp.ru/activity/analytics/innovatsionnaya-deyatelnost-kompaniy-rezultaty-oprosa-rspp/

[12] Implementation of the best available technologies: Federal project. Available at: https://vyvoz.org/blog/federalnyy-proekt-vnedrenie-nailuchshih-dostupnyh-tehnologiy/#Объективные-потребности-во-внедрении-наилучших-доступных-технологий

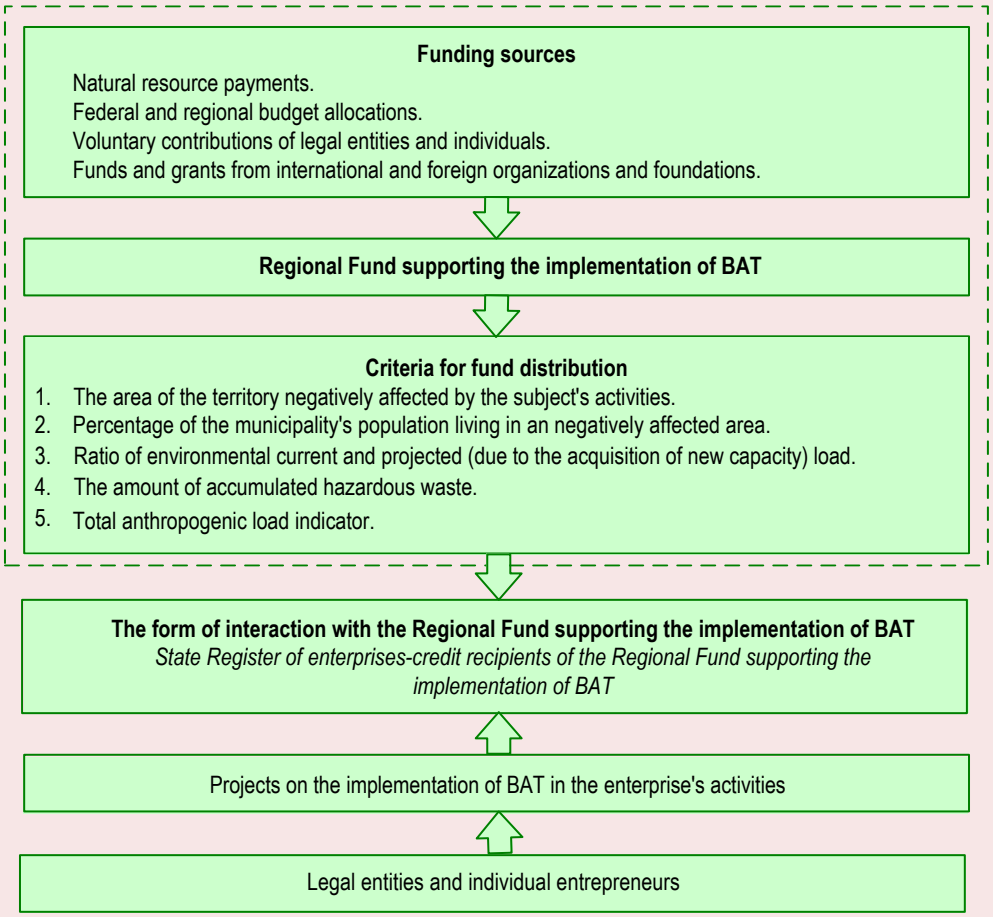
– lack of implementation important state projects on the territory of the region (for example, "Implementation of the best available technologies" and "Infrastructure for handling especially hazardous waste").

The results allow concluding that it is necessary to form a mechanism to ensure the ecological and economic balance in the development of the northern regions of the country. Its most important financial and organizational element can be the stimulation of innovations for greening of economic activity, especially BAT.

For this purpose, in our opinion, it is necessary to create a system of funds to support the implementation of BAT at economic entities operating at the level of the RF subject. The scheme of their operation mechanism is shown in *Figure 4*.

The purpose of such a fund is to financially support implementation of BAT at industrial enterprises. The management of the enterprise makes a project on implementation of BAT in its activities, where it indicates the information about the location, the size of the sanitary protection zone, the adjacent residential area, the anthropogenic impact on the environment, the best available technology to be purchased, as well as the potential effect of it.

Figure 4. Functioning scheme of the fund supporting the implementation of BAT



Source: own compilation.

Table 11. Criteria for prioritizing projects for granting funds from the fund

1. Percentage of the municipality's population living in an adversely impacted area (j = 0.2)		
Value		**Point**
There is no population in the area		0
Less than 1%		1
1–20%		2
20–40%		3
40–50%		4
More than 50%		5
2. The area of the municipality's territory negatively affected by the enterprise's activities (j = 0.2)		
For facilities located within settlements, ha	**For facilities located outside settlements, ha**	**Point**
Less than 0,5	Less than 1	0
1–5	1–10	1
5–15	10–20	2
15–30	20–50	3
30–50	50–100	4
More than 50	More than 100	5
3. Ratio of environmental current and projected load (due to the acquisition of new capacity) (j = 0.2)		
Expected reduction in the environmental load		**Point**
Reduction of less than 5%		0
Reduction of 5–10%		1
Reduction of 10–20%		2
Reduction of 20–30%		3
Reduction of 30–50%		4
Reduction of more than 50%		5
4. Contribution of the negative impact on the environment of the region (j = 0.2)		
Value		**Point**
Less than 1%		0
1–5%		1
5–10%		2
10–20%		3
20–30%		4
More than 30%		5
5. The value of the Total anthropogenic load indicator (TALI) (j = 0.2)*		
Value		**Point**
0–1		0
1–2		1
2–4		2
4–6		3
6–8		4
More than 8		5
* The total anthropogenic load indicator (TALI) shows the level of the environment pollution at a particular time, calculated on the basis of data on pollution of atmospheric air, water bodies, soil, noise pollution.		
Source: own compilation.		

The criteria for prioritization of projects for the provision of funds from the fund to support the implementation of BAT are presented in *Table 11*. The methodological approach to their allocation is based, among other things, on the criteria for the selection of projects in the field of waste management and elimination of accumulated environmental damage existing in the Russian practice[13].

The total point is calculated by the formula:

$$I = \sum_{i=1}^{5} a_i \times j_i , \quad (5)$$

where I – total point by project priority;

a_i – point by criterion value i;

j_i – criterion weight i;

i – ordinal number of the criterion i.

The weight of the criterion (j_i) is determined similarly to the weights of the criteria for the selection of projects in the field of waste management and elimination of accumulated environmental damage.

The maximum value of I is 5, the minimum is 0. Accordingly, the higher the value of I, the higher the priority of the project for funding. Every 6 months, the Fund monitors the purposeful spending of the provided funds and the compliance of the received environmental effect with the declared one.

This tool is quite universal and can be applied not only to the northern regions. However, taking into account the peculiarities of prioritization and its territorial binding to the region, its functioning will be aimed at solving the most acute environmental and economic problems, which, in turn, are most pronounced in the North.

Russia has already had the experience of a system of such funds operating at the federal, regional and local levels. The scheme of receiving funds into the system of such funds was as follows: funds were accumulated on the accounts of funds of the subjects of the Russian Federation, and from them were distributed to federal and local funds every quarter. I.P. Blokov, E.S. Navasardova, E.V. Il'icheva pointed out the need to return to the practice of such funds. [26; 27; 28].

However, prior to the creation of such a fund, several important issues relating directly to BAT must be resolved. First, the information and technological reference books of BAT should be finalized, since one third of them do not contain technological indicators and/or the list of marker substances. Secondly, to ensure a significantly lower value of technological indicators in information and technological reference books compared to the established standards. This is due to the fact that paragraph 3 of article 16.3 of the Federal Law "On Environmental Protection" no. 7-FZ, dated January 10, 2002 provides for a reduction coefficient "0" for payments for negative environmental impact at an anthropogenic load corresponding to technological indicators after the introduction of BAT, thus making the effect of the "polluter pays" principle selective.

Conclusion

The study revealed the absence of the decoupling effect in the territory of the European North of Russia in 2007–2018 which confirms the imbalance of the regional ecological and economic development. The main reason for the ecological and economic imbalance is weak innovation activity of industrial enterprises including in the field of environmental protection measures due to the lack of closure of material and energy cycles and inconsistency with the principles of risk-oriented approach. The enterprises themselves attribute it to the high cost of implementing innovations in production.

[13] On approval of the criteria and term for categorization of facilities with accumulated environmental damage subject to liquidation as a priority: Order of the Ministry of Natural Resources and Environment of the Russian Federation no. 435, dated August 4, 2017. Available at: https://normativ.kontur.ru/document?moduleId=1&documentId=304047.

To solve the mentioned problem, the work substantiates the creation of a regional fund to support the implementation of BAT, the mechanism of functioning of which is aimed at supporting the enterprises that have the greatest negative impact on the most vulnerable territory. However, before this it is necessary to finalize information and technological reference books of BAT, as well as to ensure the implementation of the "polluter pays" principle.

In the course of this work, the question of quantitative parameters for assessing EEB has repeatedly arisen, which is currently highly debatable. However, in our opinion, it is advisable to judge the balance of regional development mainly by the existing medium- and long-term trends. At the same time, the ecological and economic balance can be characterized by the simultaneous fulfillment of the following conditions: steady growth of GRP and increase in the volume of shipped products; reduction of eco-intensity in value and volume terms; increase in the number of organizations implementing ecological innovations. In more detail the problem of determining the quantitative parameters of the region's balanced development, as well as the mechanism of its provision will be considered at the next stage of the study.

The presented work contributes to the development of applied and theoretical science which is to improve the methodological tools for assessing the EEB of regional development.

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Developing Territorial Differentiation Processes of Agricultural Production in the Non-Black Earth Region and Their Current Trends

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Abstact. In the Russian Non-Black Earth Region, an unacceptable contrast remains between the level of socio-economic development of cities and the presence of "desolation zones" in rural areas. In turn, rural areas of the regions are excessively differentiated and polarized. In some areas, innovative agricultural production is developing, and the number of rural residents is growing, in others, commodity production is declining, depopulation is increasing, and social desertification and space compression are taking place there. Socio-economic phenomena in rural areas depend on the directions and rates of dynamics of agricultural production. Hence, the main idea, presented in the article, is the consideration of differentiation process of agricultural production as the primary basis for the heterogeneity formation of rural areas. The purpose of the study is to identify the level and features of the formation of territorial differentiation of agricultural production in the Non-Black Earth Region during the planned (1974–

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1990) and market (1991–2019) economies, and to determine ways to reduce its excessive redundancy. At the same time, the authors analyze territorial differentiation from two sides: as a process and as a result of this process. Methodologically, the paper considers the development heterogeneity from the standpoint of the "center – periphery" concept and differential rent theory. The work uses the method of multi-criteria stratification of the final rank scales. The ranking is carried out according to the Board rule, the countries are determined on ordinal scales using tertiles, quartiles, and quintiles. The article calculates the coefficients of Gini and funds. As a result, the authors have determined a sharp increase in interregional differentiation and polarization in the production of agricultural goods in 1991–2019. According to the dynamics of agricultural production in 1974–1990, there have been identified five types of regions, the rating positions of which have been transformed in six directions in the subsequent period. In conclusion, the authors have determined the aggregate level of interregional differentiation. The study identifies three groups and nine subgroups of regions, and defines the differences between them. The paper establishes current trends of the differentiation process in the production of agricultural goods, and proposes ways to reduce excessive differentiation and polarization of the regions.

Key words: heterogeneity, rural areas, region, type, group, area, growth rates, program.

Introduction

Russia's Non-Black Earth Region is a vast territory with an area covering 2,411.2 thousand km^2 north of the Central Black Earth Region up to the coast of the Arctic Ocean and from the Baltic Sea in the west to the Ural Mountains in the east. In 1974–1990, the Region was implementing a large-scale comprehensive program for the development of agriculture (hereinafter referred to as the Program)[1]; this resulted in the formation of the production potential and significant economic and social development in the rural areas.

With the transition to a market economy, the production potential in Russia's Non-Black Earth Region was affected to a much greater extent than in the rest of Russia. Territorial differentiation increased, which has led to the polarization of agricultural production and rural territories there. Along with the areas where agricultural production is developing intensively and the number of rural residents is increasing, Russia's Non-Black Earth Region has rural territories with depopulation and general depression. Academician A.V. Petrikov and other researchers note that peripheral rural territories of the Non-Black Earth Region, and especially its northwestern and central economic regions, are facing social desertification [1; 2]. We agree with T.G. Nefedova, who defines the ongoing processes as "fragmentation of rural space", "compression of the peripheral rural space", and highlights "black holes" in the supporting framework of collective agriculture in the Non-Black Earth Region [3; 4]. Other publications [5; 6] also note the "compression of space" phenomenon in the rural Non-Black Earth Region and its border territories. A number of authors distinguish areas and zones of desolation in the rural areas [7]. In the rural Non-Black Earth Region, the number of residents who leave the Region for seasonal work (the so-called *otkhodnichestvo* – a mass phenomenon, which disappeared more than 100 years ago and is now being revived), is increasing [8].

At the same time, a huge scientific, technological, industrial and human potential of Russia is concentrated in the Non-Black Earth Region. The Region comprises 32 RF constituent entities, it accounts for 42.2% of Russia's population and

[1] On measures for the further development of agriculture in the Non-Black Earth Region of the RSFSR: Resolution of the Central Committee of the CPSU, the Council of Ministers of the USSR of March 20, 1974 no. 206. Available at: http://www.consultant.ru/ (accessed: May 12, 2021).

about 50% of its GRP. The Non-Black Earth Region largely determines the socio-economic development and defense capability of Russia, being a *de facto* geostrategic territory in the system of spatial development. The contrast between the socio-economic potential of the Non-Black Earth Region and the fact that its rural territories have "desolation zones" that largely determine the redundancy of territorial heterogeneity – all this requires finding out the reasons for interregional differences and distinguishing the types of regions formed in the process of differentiation.

Hence, the goals of our present study are to identify the level and features of territorial differentiation of agricultural production in the Non-Black Earth Region under the planned (1974–1990) and market (1991–2019) economies, and to determine ways to reduce its excessive redundancy.

Research objectives:

– to give a general assessment of trends in the process of changing the extent of heterogeneity of rural areas in the production of agricultural products;

– to study the process of regions' differentiation using data on the increase in agricultural production during the implementation of the Program and after 1990, to establish the types of dynamics and structural shifts;

– to determine the total level of differentiation (as a process and result) of agricultural production in the regions, formed by 2015–2019;

– to identify modern trends in the process of differentiation of rural territories of regions in agricultural production;

– to substantiate ways to reduce excessive differentiation and polarization in the rural territories.

Theoretical aspects of the study

The agricultural sector in the Non-Black Earth Region is *a priori* heterogeneous due to zonal contrasts in the spatial distribution of agro-climatic and soil resources that make up the natural basis of production. Along with zoning, the process of differentiation of agricultural production is significantly influenced by azonal factors, primarily the presence of large cities and urban agglomerations, which are markets for agricultural products and centers of concentration of resources and services for the village. The dominance of centripetal forces in the "center–periphery" agglomeration process leads to the formation of inequality in the development of agricultural production and rural areas, primarily between the near, middle and far periphery. This phenomenon has been considered for quite a long time: J. Friedman – 1966 [9]; O.V. Gritsai, G.A. Ioffe, A.I. Treivish – 1991 [10]. According to the followers of J. Friedman, the driving force behind the reproduction of the "center–periphery" relationship system is the "continuing qualitative transformation of the core due to the production, introduction and diffusion of innovations", which should then spread toward the periphery, providing it with an impetus for development [10, p. 15].

In Russian conditions, such a mechanism manifests itself unilaterally – mainly in the migration of the rural population and labor resources from peripheral areas to cities (centers) and to the near periphery, where investments are concen-trated [11, p. 226]. In turn, the feedback – the spread of innovations from the center to the periphery – is extremely weak, with all the ensuing consequences for the development of rural areas.

Unlike other researchers, we consider the theoretical structure "center – periphery" as a special case of the theory of differential rent. Zonal and azonal factors together determine territorial heterogeneity in the costs of agricultural production, and through it – the amount of differential income per unit of land. Under a planned economy, investments were distributed centrally and relatively evenly among rural territories of the regions. In market conditions, as a rule, investments are concentrated where the greatest income can be obtained from investments in agricultural production. In this case,

the impact of market forces increases territorial heterogeneity. The state, in one way or another (programs, subsidies, subventions, etc.), influencing the development of agricultural production, levels off or strengthens the territorial heterogeneity predetermined by objective factors.

With this in mind, we understand territorial differentiation in two senses: 1) as a process that contributes to the division of socio-economic space into rural territories that are heterogeneous in a comparable set of characteristics; 2) as a result of this process, expressed in the heterogeneity of rural territories. In the second sense, the terms "territorial differentiation" and "territorial heterogeneity" are used as synonyms.

In the first case, the attributes of territorial differentiation are groups, types and classes of regions that are internally relatively homogeneous in terms of the growth rate of agricultural production, and in the second case – in terms of the current level of agricultural production.

Materials and methods

The methods for studying territorial heterogeneity are universal and are used for various socio-economic phenomena and processes. These are methods of multidimensional and variational statistics, multidimensional scaling, ranking, and methods for assessing the differentiation of people's income (Gini index, the ratio of the average income of the richest 10% to the poorest 10% (R/P 10% ratio), the Lorentz curve).

Multidimensional statistics methods (factor and cluster analysis) look attractive, but, along with positive results [12], they can produce abstract conclusions, which are quite difficult to interpret. Thus, in the typology of territories within the Non-Black Earth Region, the Leningrad Oblast with a highly developed agricultural sector was included in the same cluster as the Kostroma, Smolensk, Pskov oblasts and a number of other regions that have signs of depression [13].

The unevenness of the distribution of a particular phenomenon across territorial units is most often studied using indicators of variation (the scope of variation, the average linear and mean square deviation, variance and coefficient of variation) [14–18]. The differentiation of the EU member states by the level of socio-economic development was determined using the methods of variational statistics, the construction of a general synthetic indicator on their basis, and subsequent ranking [19].

Ranking methods (the k-means algorithm and its modifications; ranking by influence, according to the Borda count; Pareto partitioning, etc.) have become quite widespread [20; 21]. At the same time, B.G. Mirkin and M.A. Orlov approach the solution to the problem under consideration from the position of multicriteria stratification, when one conducts both ranking and partitioning simultaneously and defines a "vertical" hierarchical structure – ranking, and a "horizontal" hierarchical structure – layers of more or less homogeneous objects" [21].

E.S. Gubanova and V.S. Kleshch, when comparing the techniques for assessing territorial heterogeneity, have come to the conclusion that there is no technique that would have obvious advantages [18, p. 32]. Among the advantages of the methods identified by these authors, for our case, the most important are the following: "determining the territory relative to other territories", "visibility and ease of interpretation of the results" and the minimum "level of complexity of calculations". It is noted that the quality of the study can be improved with the help of two different methods.

In connection with the above, we used the multicriteria stratification technique as the basis [21] and checked whether we could use the following two methods at the *ranking stage*:

1. Ranking according to the Borda count [20], where for each object x_i the ranks $r_j(x_i)$ are set for all the indices j, and the final rank r for the object x_i is determined by the sum of individual ranks:

$$r(x_i) = \sum_{j=1}^{m} r_j(x_i). \quad (1)$$

2. Ranking by an integral indicator determined on the basis of the index $\overline{\lambda^r}$ that takes into account variational characteristics of the objects [16]:

$$\overline{\lambda^r} = \sqrt{\frac{\sum_{i=1}^{n}(\lambda_i^r)^2}{n}}, \overline{\lambda^r} \in [0;1], \quad (2)$$

where $\overline{\lambda^r}$ is the private rating of the region *r* in terms of *i*, $\lambda_i^r = \frac{x_i^r - x_i^{min}}{x_i^{max} - x_i^{min}}, \lambda_i^r \in [0;1]$;

x_i^r is the value of the *i*-th indicator in the region *r*;

x_i^{max}, x_i^{min} are the maximum and minimum values of the *i*-th indicator in the considered set of regions in the corresponding period;

n is the number of regions [16, pp. 115–116].

In the course of verification, we have revealed that the results of both techniques are close to each other. There is a high and very high correlation between the indicators of the final rank scales obtained by using these techniques. The following Spearman's correlation coefficients were obtained:

a) according to the growth rates of average annual agricultural production during the period when the Program was implemented (0.72), in 1991–2019 (0.83);

b) according to the average annual volumes of agricultural production in 1971–1975 and 1986–1990 (1.0), 2015–2019 (0.94);

c) according to the average annual volumes of agricultural production per 100 hectares of farmland for all periods (0.99).

Having considered the results we obtained after comparing the techniques, and taking into account such advantages of ranking as "the minimum level of complexity of calculations" and "visibility and ease of interpretation of the results", we chose to use the method according to the Borda count as the basis for our study.

At the *stratification stage*, the horizontal strata of regions were distinguished on the final rank scales, depending on the tasks being solved by dividing them by tertiles (Q_1, Q_2) into three equal parts, by quartiles (Q_1, Q_2, Q_3) into four equal parts, by quintiles (Q_1, Q_2, Q_3, Q_4) into five equal parts. The obtained strata were analyzed, while special attention was paid to the composition of the regions in the upper and lower strata, which are characterized by the greatest deviation from the average values.

In the study of territorial differentiation as a process, the indicators were the growth rates of production of the main types of agricultural products separately for the *period of implementation of the Program* (1974–1990) and the *period of a market economy* (1991–2019).

Territorial heterogeneity in statics was determined by the volume of production of the main types of agricultural products in natural terms and calculated per 100 hectares of farmland (arable land) at the end of these periods. To exclude the influence of random (weather, epizootic, etc.) factors, the growth rates were determined based on the average annual data for the final five years (1986–1990) relative to the period preceding the start of the active implementation of the Program (1971–1975) and in 2015–2019 relative to 1986–1990. The study was conducted using statistical data from the Central Statistical Administration and the State Statistics Committee of the RSFSR, and also the Federal Sate Statistics Service of Russia (Rosstat)[2].

Major research findings and their discussion

General assessment of trends in the change of territorial heterogeneity in the volume of agricultural production. The ranking scales of the regions were constructed according to the production volumes of each main type of product in the direction from *min* to *max*, then the RF constituent entities were

[2] *National economy of the RSFSR in 1975: statistics yearbook*. Moscow: Statistika, 1976. 519 p.; *National economy of the RSFSR in 1990: statistics yearbook*. Moscow: Respublikanskii redaktsionno-izdatel'skii tsentr, 1991. 592 p.; Bulletins on the state of agriculture. Available at: https://rosstat.gov.ru/folder/11110/document/13277 (accessed: May 12, 2021).

Table 1. Coefficients of concentration and polarization of agricultural production in the territories of the Non-Black Earth Region, on average for the year

K	Period	Product						
		Grain	Potatoes	Vegetable	Flax fiber	Milk	Meat	Eggs
K_g	1971–1975	0.374	0.318	0.445	0.713	0.262	0.269	0.356
	1986–1990	0.415	0.325	0.439	0.697	0.267	0.260	0.384
	2015–2019	0.596	0.438	0.392	0.741	0.378	0.436	0.529
K_f	1971–1975	18.3	8.0	12.6	33.3	4.7	5.0	6.7
	1986–1990	30.3	7.6	12.3	26.2	4.8	4.4	6.8
	2015–2019	237.4	15.9	11.6	519.5	11.6	24.7	44.1
Source: Statistics Yearbooks "National Economy of the RSFSR" 1975, 1990; Rosstat.								

stratified by the groups of 20%. Trends in changes in the level of heterogeneity were established using the Gini coefficients (that reflect the territorial concentration of production, and R/P 10% ratios (K_f) that show its interregional polarization *(Tab. 1)*.

The results of the calculations allowed us to draw a number of conclusions:

– at the stage of implementation of the Program, the level of territorial concentration of production (with the exception of grain and, partly, eggs) increased slightly, and even decreased for vegetables, flax fiber and meat, which was facilitated by the planned distribution of public procurement for products in Russia's regions;

– a significant increase in the territorial concentration of production of all types of products (except vegetables) occurred after 1990, when market mechanisms began to operate in the agricultural sector;

– the transition and subsequent stages of development of the market economy has caused polarization of regions in terms of production of all items (except vegetables);

– the highest level of concentration of production volumes in regions of the fifth 20% group is noted in the production of flax fiber (85.4% of the total), grain (61.1%) and eggs (58.6%).

The current state of territorial heterogeneity of the agricultural sector in the Non-Black Earth Region was formed mainly after Russia's transition to a market economy. At the same time, the processes taking place during the implementation of the Program had a significant impact on the formation of the types of regions and structural shifts in the placement of agricultural production.

Differentiation of regions by the rate of growth of agricultural products during the implementation of the Program. When addressing this task, we ranked the territories of the Non-Black Earth Region according to the growth rates from *max* to *min;* and for their stratification, we divided the final rank scale by quartiles into the parts of 25%. At the same time, the calculations did not take into account flax fiber, the production of which was localized in a limited number of regions. The group of northern territories (the Murmansk and Arkhangelsk oblasts and Komi ASSR) forming a single area had the highest growth rates (on a scale higher than Q_1) *(Tab. 2)*.

This also includes the Moscow, Leningrad and Sverdlovsk oblasts with centers in cities with a million-plus population, as well as the Tula Oblasst, which is directly adjacent to the capital region, and the Kaliningrad Oblast, which occupies a separate position. This group of regions is characterized by the highest growth rates. The second 25% group of regions includes the republics of the Volga Region (Chuvash, Udmurt, Mari and Mordovian ASSR) with increased growth rates, forming a single area. We define the remaining regions of the second 25% group and all regions of the third 25% group as territories with average growth rates of agricultural production volumes.

The most homogeneous was the group of regions on a scale below Q_3 with the lowest growth rates for most types of agricultural products and their aggregate as a whole *(Tab. 3)*.

Table 2. The results of ranking the territories of the Non-Black Earth Region by the growth rate of agricultural production during the period of the Program implementation (from max to min)

Territory	Individual rank for the type of products						Sum of ranks	Final rank
	grain	potatoes	vegetables	milk	meat	eggs		
Murmansk Oblast	29	13	1	1	1	1	46	1
Komi ASSR	27	6	5	11	2	3	54	2
Arkhangelsk Oblast	11	7	8	21	6	2	55	3
Moscow oblast	21	2	14	4	9	6	56	4
Kaliningrad Oblast	4	1	6	18	20	8	57	5
Tula Oblast	3	3	18	15	12	7	58	6
Leningrad Oblast	25	16	10	2	3	4	60	7
Q_1 Sverdlovsk Oblast	*19*	*11*	*7*	*5*	*10*	*9*	*61*	8
Chuvash ASSR	15	4	9	3	13	18	62	9
Udmurt ASSR	6	5	12	8	15	17	63	10
Mari ASSR	10	8	11	7	11	28	75	11
Perm Oblast	16	19	4	19	14	5	77	12
Orel Oblast	1	17	2	14	22	25	81	13
Mordovian ASSR	14	10	3	9	24	22	82	14
Q_2 Karelian ASSR	*28*	*15*	*15*	*6*	*8*	*11*	83	15
Kaluga Oblast	2	12	16	23	17	14	84	16
Vladimir Oblast	12	22	24	12	5	10	85	17
Bryansk Oblast	7	9	17	20	25	12	90	18
Ivanovo Oblast	13	24	20	17	4	13	91	19
Gorky Oblast	8	23	21	10	18	15	95	20
Ryazan Oblast	9	14	13	13	26	21	96	21
Q_3 Kirov Oblast	*5*	*18*	*22*	*16*	*16*	*23*	*100*	22
Vologda Oblast	20	21	19	22	7	20	109	23
Kostroma Oblast	17	20	29	24	19	19	128	24
Yaroslavl Oblast	23	26	25	26	23	16	139	25
Smolensk Oblast	18	27	23	25	28	24	145	26
Novgorod Oblast	26	25	28	27	21	26	153	27
Kalinin Oblast	22	28	26	29	27	27	159	28
Pskov Oblast	24	29	27	28	29	29	166	29
Source: Statistics Yearbooks “National Economy of the RSFSR” 1975, 1990.								

Table 3. The growth rates of agricultural production during the implementation of the Program in the group of territories within the Non-Black Earth Region with the worst indicators, %

Territory	Product						
	Grain	Flax fiber	Potatoes	Vegetables	Milk	Meat	Eggs
Vologda Oblast	-26.5	-44.5	-40.3	-16.9	-1.8	64.1	51.2
Kostroma Oblast	-14.6	-20.4	-36.5	-53.6	-7.3	28.9	53.2
Yaroslavl Oblast	-32.6	-48.6	-47.7	-35.3	-14.4	20	57.3
Smolensk Oblast	-19.7	-35.3	-48.1	-26.6	-13.2	2.9	27.7
Novgorod Oblast	-41.9	-62.3	-47.7	-53.2	-14.5	27.8	20.1
Kalinin Oblast	-30.7	-35.9	-48.7	-43.2	-20.7	5	14.7
Pskov Oblast	-37.3	-68.3	-55.7	-49.9	-16.6	-5.7	-10
Non-Black Earth Region as a whole	-0.8	-40.2	-29.9	-13.4	7.8	36	76
Source: Statistics Yearbooks “National Economy of the RSFSR” 1975, 1990.							

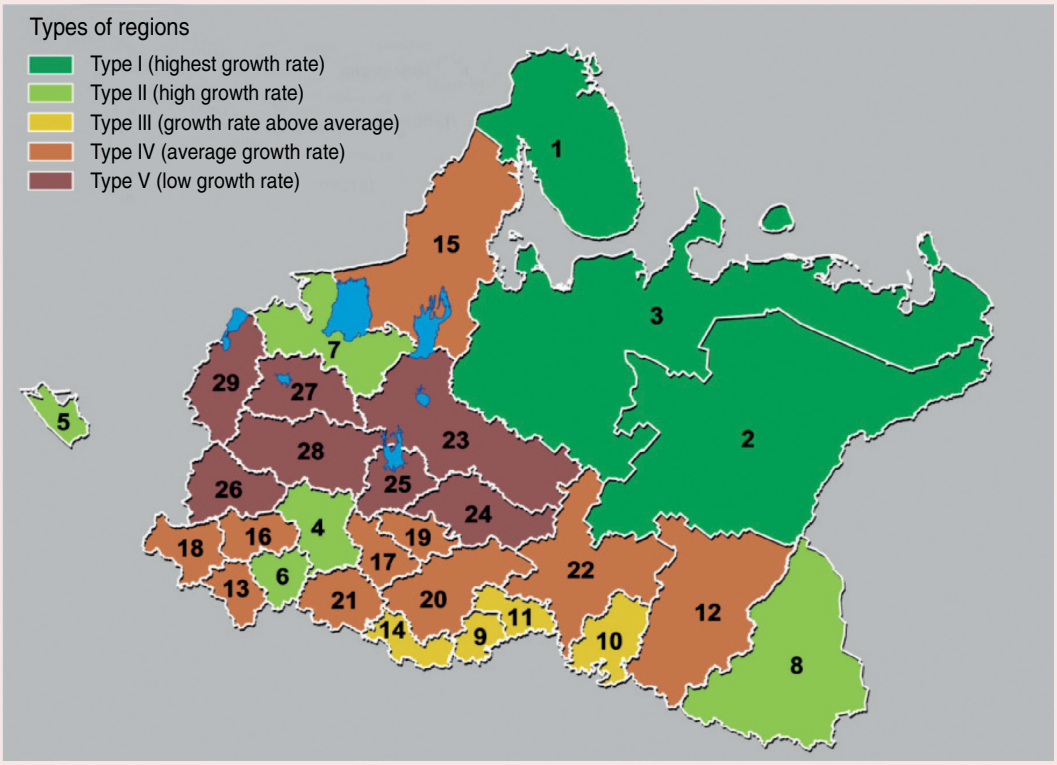
It includes seven regions of the central and north-western territories within the Non-Black Earth Region; they form a continuous strip that encircles the Moscow Oblast from the north-east, north and north-west and then adjoins the Leningrad Oblast from the south and east. The growth rates of agricultural production in these territories were lower than the average for the Non-Black Earth Region; as for the Pskov Oblast, they were negative on all the positions there.

Thus, when assessing structural changes in the Non-Black Earth Region during the implementation of the Program, we consider five types of territories according to the growth rates of agricultural production, based on their place in the final ranking scale (see Tab. 2): Type I – regions with the highest growth rates (three regions); Type II – regions with high growth rates (five regions); type III – regions with above-average growth rates (4 regions); type IV – regions with average growth rates (10 regions); Type V – regions with the lowest growth rates (7 regions) *(Fig. 1)*.

Our calculations have shown that the growth rates of agricultural production over the years of the Program implementation for these types of regions are highly differentiated *(Fig. 2)*.

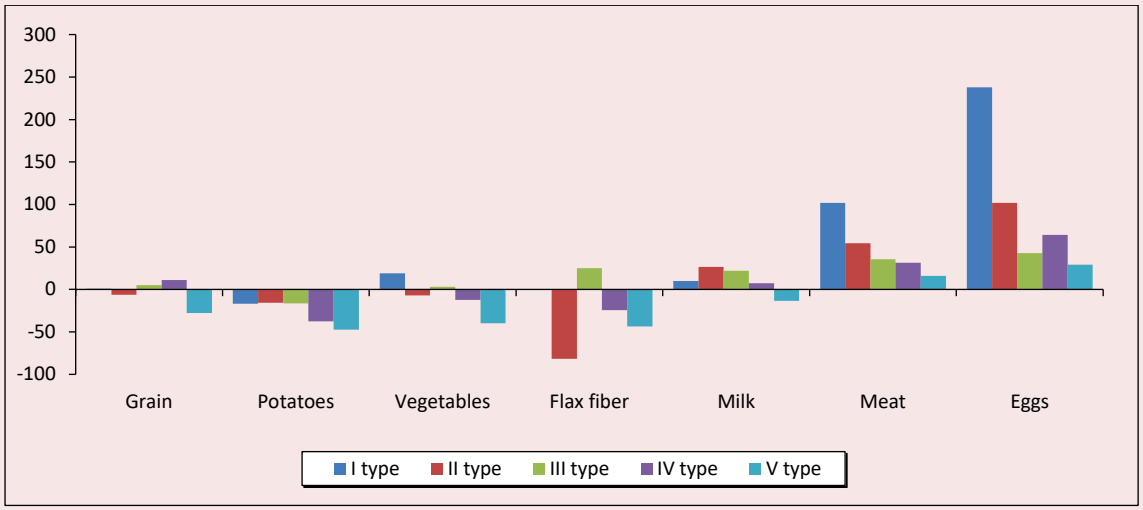
Based on the analysis of the extent of differentiation of regions by the rate of production growth, we determined the structural shifts that occurred during the implementation of the Program. For type I regions, a noticeable positive structural shift was noted in the production of meat and eggs, an insignificant shift – in the production of milk, a zero shift – in the production of grain and a negative shift – in the production of flax fiber *(Fig. 3)*.

Figure 1. Types of territories within the Non-Black Earth Region according to the growth rates of agricultural products during the implementation of the Program



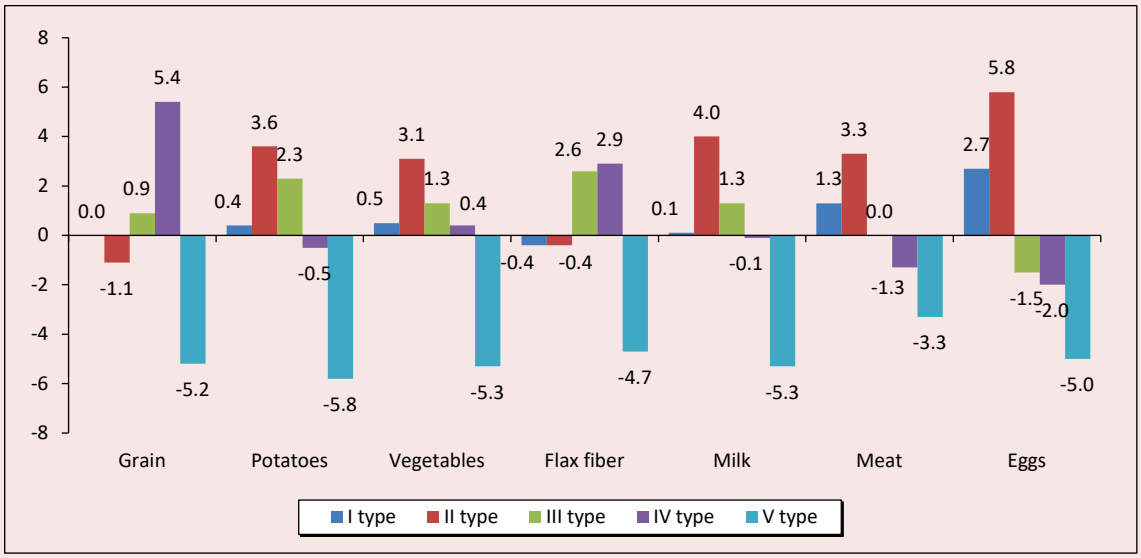
The figures show the place of the territories in the final ranking scale.
Source: data from Tab. 2.

Figure 2. Growth rates of agricultural production volumes by types of territories within the Non-Black Earth Region for the period of the Program implementation, %



Source: Rosstat.

Figure 3. Structural shifts in the production of agricultural products by types of territories within the Non-Black Earth Region for the period of implementation of the Program, p.p.



Source: Rosstat.

Type II regions were characterized by a positive structural shift in all types of agricultural products, except grain and flax fiber. The situation with grain and flax fiber is due to the orientation of rural territories of these regions toward the development of suburban agriculture – the production of low-transportable vegetable and dairy products, which led to the redistribution of sown areas in favor of fodder production. Type III regions had a positive structural shift in all types of products, except meat and eggs. In the production of meat, the increase was zero, in the production of eggs – negative. Type IV regions were characterized by noticeable positive shifts in the production of grain and flax fiber,

insignificant positive shifts – in the production of vegetables, and negative shifts – in the production of other types of products. Type V regions had a negative shift for all types of products.

The structural changes led to the fact that by the end of the Program implementation period, over 45% of all vegetable and egg production in the Non-Black Earth Region was concentrated in type II regions *(Fig. 4)*.

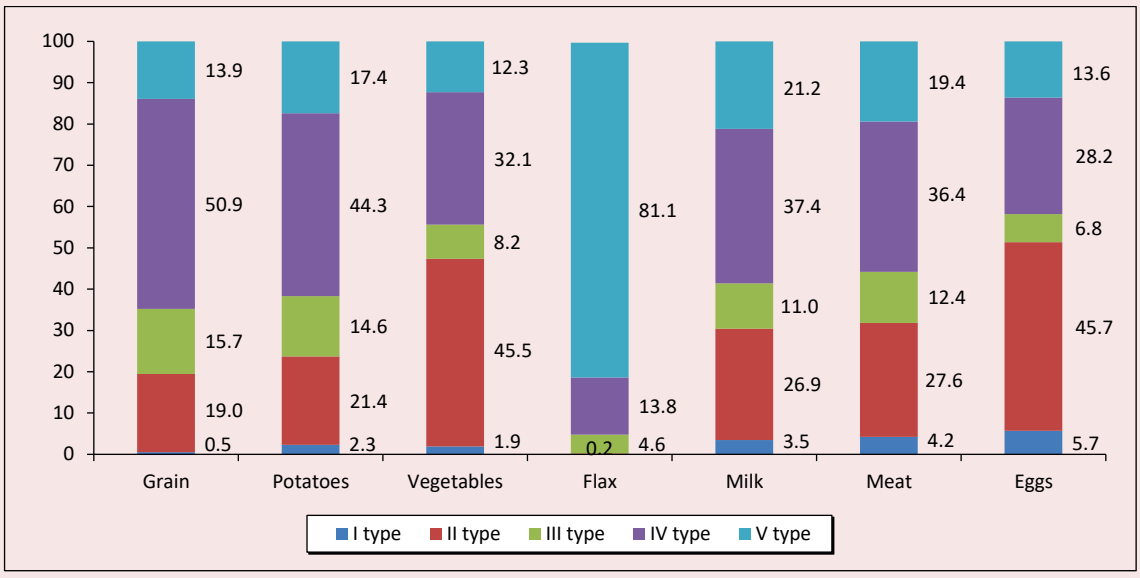
In type IV regions, grain production was concentrated by more than 50%, and for potatoes, milk and meat, these regions dominated relative to regions of other types. Against the background of a general decline in flax production, more than 80% of flax fiber volume was produced in type V regions.

Finally, the volume of production of all types of agricultural products in type I regions, despite the high growth rates and noticeable positive structural shifts, turned out to be insignificant relative to regions of other types.

Differentiation of regions according to the growth rates of agricultural production under a market economy. Ranking the regions according to the growth rates of production of certain types of agricultural products in 1991–2019, determining the final ranks according to the Borda count, and comparing them with similar final ranks for the period of the Program implementation allowed us to distinguish the types of regions according to the shift in their rating positions after 1990 *(Fig. 5)*.

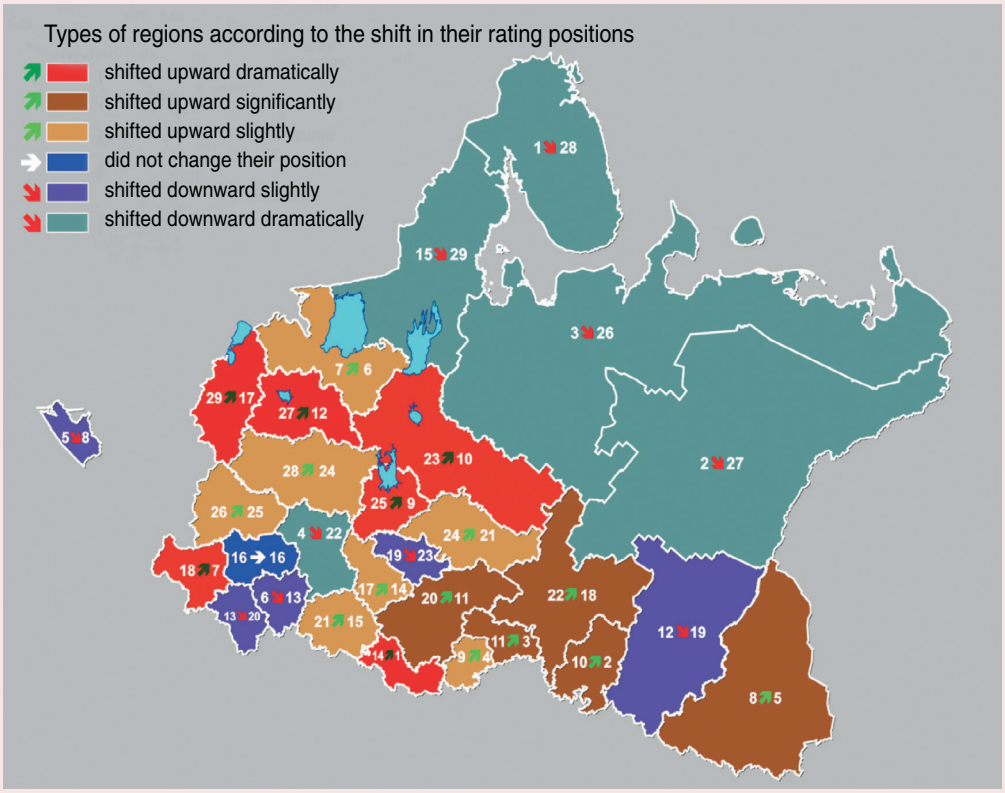
First of all, it is noticeable that the Moscow Oblast and three northern RF constituent entities that had the best ratings during the implementation of the Program, as well as the Republic of Karelia, which occupied the median position on the final rating scale, were among the regions that lowered their rating positions dramatically. All the northern regions turned out to be below the Q_3 quartile, at the very bottom of the final ranking scale. The Tver and Smolensk oblasts, which slightly improved their positions, could not get out of the fourth 25% group of regions; the Ivanovo Oblast also moved to this group. At the same time, the Kostroma Oblast left this group, as did the Vologda, Yaroslavl, Novgorod, and Pskov oblasts, which improved their rating position dramatically. However, we should note that

Figure 4. Proportion of the types of territories within the Non-Black Earth Region in the production of the main types of agricultural products in 1986–1990 in average annual terms, %



Source: Rosstat.

Figure 5. Types of territories within the Non-Black Earth Region according to the shift in the final rating positions in terms of the increase in agricultural production in 1991–2019 relative to the period of implementation of the Program



Source: data from Tab. 2 and the results of the territories' ranking.

the Kostroma and Pskov oblasts have risen up the scale only due to the growth rates in the production of eggs and pig meat at large farms.

A slight increase in the rating allowed the Chuvash Republic to strengthen its position in the first 25% group of regions, in which the Sverdlovsk Oblast retained its positions. The Udmurt Republic, the Republic of Mari-El and the Bryansk Oblast also moved here – they significantly improved their position, as well as the Republic of Mordovia. The Leningrad Oblast, which slightly lowered its rating positions, retained its place in the group of regions above the Q_1 quartile.

Thus, the composition of the first 25% group has changed significantly. Along with the Sverdlovsk and Leningrad oblasts, which retained their places, the republics within the Volga Region moved here as well, taking the first four rating positions; the Bryansk Oblast joined the first 25% group, too.

The aggregate level of differentiation (as a process and as a result) of regions by the level of development of agricultural production formed by 2015–2019. The ranking of the sum of the final ranks was carried out according to: a) the growth rate of agricultural production; b) the average annual production of agricultural products in 2015–2019; c) the average annual production of agricultural products in 2015–2019 per 100 hectares of farmland (arable land).

In this case, the integral rank absorbed the values of three final ranks, each of which was calculated on the basis of seven positions. At the same time, the rating position of the regions according to 21 initial indicators was taken into account in total. Considering the wide coverage of the initial indicators, the stratification of regions on the basis of an ordered scale of integral ranks was carried out with the allocation of three strata using tertiles (Q_1, Q_2; *Tab. 4*).

Table 4. Stratification of territories within the Non-Black Earth Region by average annual volumes of agricultural production and their growth rates in 2015–2019

Territory	Final rank				integral rank
	according to the growth rate of production volumes	by production volumes	by production volumes per 1 00 hectares of land area	sum of ranks	
I group – regions with the highest rating indicators					
Leningrad Oblast	6	4	1	11	1-2
Sverdlovsk Oblast	5	1	5	11	1-2
Udmurt Republic	2	3	9	14	3
Republic of Mordovia	1	7	8	16	4
Republic of Mari El	3	12	2	17	5
Chuvash Republic	4	11	3	18	6
Bryansk Oblast	7	5	7	19	7
Nizhny Novgorod Oblast	11	2	13	26	8
Moscow oblast	22	6	4	32	9
Kaliningrad Oblast	8	20	6	34	10
II group – regions with average rating indicators					
Yaroslavl Oblast	9	14	12	35	11
Tula Oblast	13	9	15	37	12
Vladimir Oblast	14	16	10	40	13
Ryazan Oblast	15	10	20	45	14
Novgorod Oblast	12	21	14	47	15-16
Vologda Oblast	10	19	18	47	15-16
Perm Oblast	19	8	24	51	17
Kaluga Oblast	16	17	19	52	18
Kirov Oblast	18	13	27	58	19
Oryol Oblast	20	15	26	61	20
III group – regions with low rating indicators					
Komi Republic	27	27	11	65	21-22
Pskov Oblast	17	23	25	65	21-22
Kostroma Oblast	21	24	23	68	23
Ivanovo Oblast	23	25	21	69	24
Tver Oblast	24	18	28	70	25
Murmansk Oblast	28	29	16	73	26
Republic of Karelia	29	28	17	74	27-28
Arkhangelsk Oblast	26	26	22	74	27-28
Smolensk Oblast	25	22	29	76	29
Source: Rosstat.					

Consequently, the differentiation of territories by agricultural production in the Non-Black Earth Region after 1990 was formed *due to the differences in the reduction of production* rather than the unevenness of growth rates. The groups of regions highlighted above fundamentally differ from each other in terms of the growth rate of production volumes. For most types of agricultural products, we note a pattern: the rate of reduction in production volumes increases in the direction from the first group to the third. The pattern is disrupted only in relation to meat and eggs due to the appearance of large pig breeding complexes and poultry farms against the background of a general decline in the production of other types of products. Thus, the initial level of regional differentiation in 1990 and the uneven growth rates of production volumes in the future predetermined the state of its heterogeneity that developed by 2015–2019 *(Tab. 5)*.

With a few exceptions (grain, flax fiber), each of the three indicators has maximum values in the first group of regions, average values in the second and

Table 5. Differentiation of average annual agricultural production volumes by groups of territories of the Non-Black Earth Region in 2015–2019, %

Product	Share of groups of territories in the volume of production for the Non-Black Earth Region			Ratio to the average indicator for the Non-Black Earth Region					
				production volume per territory			production volume per 100 hectares of land area		
	I group	II group	III group	I group	II group	III group	I group	II group	III group
Grain	44.0	52.0	4.0	127.6	150.7	13.0	115.9	117.7	22.5
Potatoes	58.5	31.1	10.4	169.5	90.3	33.6	154.2	70.5	57.8
Vegetables	60.4	29.9	9.7	175.1	86.8	31.1	159.1	68.2	54.2
Flax fiber	37.8	24.3	37.9	107.4	71.6	119.3	96.2	53.4	213.8
Milk	51.3	36.8	11.9	148.6	106.8	38.5	279.8	87.4	56.7
Meat	61.1	24.2	14.7	177.1	70.2	47.5	332.9	58.0	69.8
Eggs	54.1	36.0	9.9	156.9	104.5	31.8	142.7	81.6	54.8
Source: Rosstat.									

minimum values in the third. In the first group of regions, more than 50% of milk, eggs and potatoes, more than 60% of vegetables and meat is produced, and production volumes per region are higher, respectively, by 49, 57, 69, 75 and 77% than the average for the Non-Black Earth Region. In terms of production volumes per 100 hectares of land area, the first group of regions exceeds the average indicators for the Non-Black Earth Region for milk by 180%, for meat – by 233%.

Thus, the stratification of territories of the Non-Black Earth Region on the basis of the methodology adopted above made it possible to identify their significant differentiation that had developed by 2015–2019. The study also shows that these groups are internally insufficiently homogeneous, and therefore *subgroups* are allocated in each of them, in most cases taking into account the neighborhood of regions and the formation of areals.

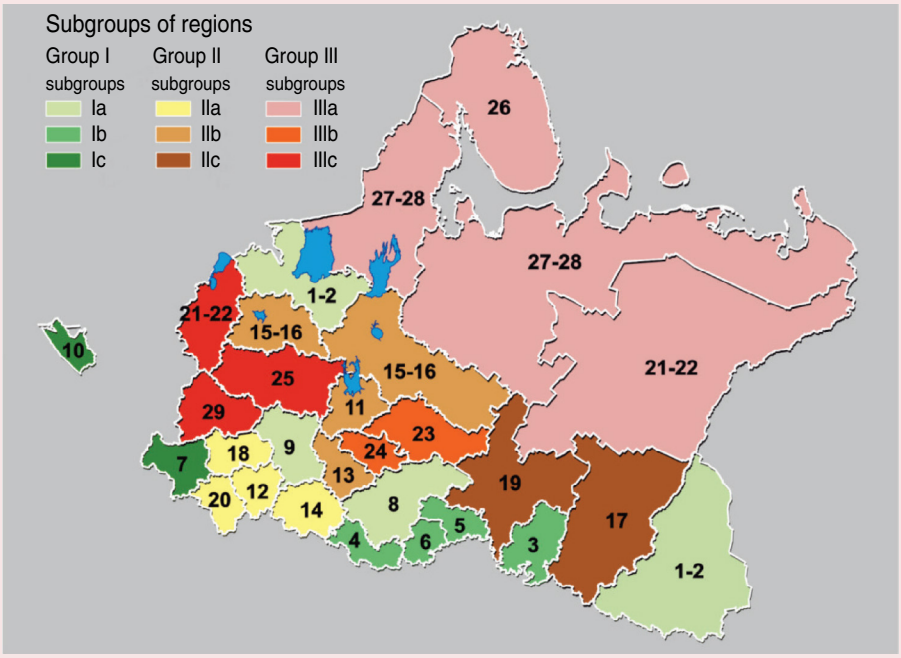
The first group of regions with the highest rating indicators includes four regions whose centers are millionaire cities *(subgroup I_a)*, and four compactly located republics of the Volga Region *(subgroup I_b) (Fig. 6)*.

A separate subgroup *(I_c)* includes the Bryansk and Kaliningrad oblasts, which stand out among other regions not only in group I, but also in the Non-Black Earth Region as a whole. The Bryansk Oblast is characterized by high rates of agricultural production dynamics, and the Kaliningrad Oblast is characterized by special natural and socio-economic conditions. Subgroup I_a is characterized by the highest concentration of production of vegetables, milk, meat and eggs, somewhat less – potatoes; subgroup I_b is characterized by a noticeable concentration of vegetables, milk and meat; subgroup I_c has a high concentration of potatoes and a slightly lower concentration of flax fiber, meat and grain *(Tab. 6)*.

The second group of regions with average rating indicators is divided into three subgroups: II_a – the Tula, Ryazan, Kaluga and Oryol oblasts located to the south and southwest of the capital region; II_b – the Vladimir, Yaroslavl, Vologda and Novgorod oblasts that form a single area of regions, most of which after 1990 dramatically improved their rating positions in terms of growth rates of agricultural production and left the group of depressed territories; II_c – the Kirov and Perm oblasts, united within one areal in the east of the Non-Black Earth Region.

Subgroup II_a is distinguished by the highest concentration of grain production, considerable volume of production of potatoes, absence of flax fiber production; and for other types of products, the indicators per region are 15–40% lower than the average for the Non-Black Earth Region. Subgroup II_b is characterized by a noticeable concentration of flax fiber and egg production, has milk production indicators close to the average

Figure 6. Subgroups of territories within the Non-Black Earth Region by indicators of integral ranks reflecting the state of differentiation of agricultural production in 2015–2019



Numbers indicate the place of the territories in the integral rank scale.
Source: data from Tab. 4.

Table 6. The ratio of the average annual production of agricultural products per territory to the average for the Non-Black Earth Region in 2015–2019, %

Product	I group of territories			II group of territories			III group of territories		
	I_a	I_b	I_c	II_a	II_b	II_c	III_a	III_b	III_c
Grain	108.1	120.6	180.3	313.1	23.3	80.7	0.1	15.9	28.3
Potatoes	200.3	113.9	219.2	129.3	61.1	70.4	15.7	31.5	58.7
Vegetables	274.8	115.7	94.1	85.2	78.5	106.5	14.2	40.0	47.8
Flax fiber	87.5	100.0	187.5	0.0	187.5	0.0	0.0	12.5	375.0
Milk	198.6	136.8	72.1	81.9	97.7	174.9	20.3	40.4	61.4
Meat	196.2	154.7	184.0	79.7	64.4	62.8	9.0	18.4	118.0
Eggs	245.1	123.1	48.2	60.7	131.9	137.2	7.8	92.1	23.5
Source: Rosstat.									

values for the Non-Black Earth Region, and one of the lowest indicators in grain production. Subgroup II_c is characterized by a noticeable concentration of milk and egg production, and an insignificant concentration of vegetables production.

The regions of the third group have low rating indicators: *subgroup* III_a – the northern territories, which have sharply reduced the growth rates of agricultural production; *subgroup* III_b – the Ivanovo and Kostroma oblasts, united in one areal to the east of the capital region; *subgroup* III_c – the Pskov, Smolensk, Tver oblasts, forming an areal in the west of the Non-Black Earth Region.

The regions of subgroup III_a do not produce grain and flax fiber and have the lowest production volumes of meat and eggs; here the indicators for the production of potatoes, vegetables and milk are 80–85% lower. In subgroup III_b, whose

regions have traditionally grown flax, the level of concentration of flax fiber production is minimal. The indicators for egg production are as close as possible to the average value per one region within the Non-Black Earth Region, and the indicators for the production of vegetables and milk are 60% lower, for the production of potatoes – almost 70% lower. The regions in subgroup III_c are distinguished by a high concentration of flax fiber production, noticeable concentration of meat production, low concentration of grain and eggs production. The level of production of potatoes, vegetables and milk per region is 40–50% lower than the average for the Non-Black Earth Region.

Modern trends in the process of differentiation in the production of agricultural products. The downward trends in the production of agricultural products in the Non-Black Earth Region slowed down in 2012–2013, and then, due to the implementation of the import substitution strategy, they changed their direction to the opposite. At the same time, these processes are going on in different directions and at different rates, being quite clearly differentiated by subgroups of territories *(Tab. 7)*.

We can forecast that if the growth rates of production volumes remain the same, then in the coming future their growth will continue in subgroups I_a, I_b, I_c (except for milk), I_a, I_b, (except for flax). In subgroups II_c and III_c, an upward trend is observed for half of the products, and for the rest there is a downward trend, in subgroup III_b – an upward trend for grain and egg, and in subgroup *IIIa* – a downward trend for all products. For potatoes, vegetables and milk, negative growth rates are observed in four out of the nine subgroups of territories, for meat –in three subgroups, for eggs and flax fiber – in two subgroups, for grain – in one subgroup.

The increase in regional differentiation in the future will occur due to higher growth rates of grain and meat production in subgroups I_b, I_c, II_a, III_c, potatoes and vegetables – in subgroups I_c, II_a, flax fiber – in subgroups I_b, I_c, milk – in subgroups II_a, II_b, II_c, eggs – in subgroups II_b, II_c, as well as due to the decline in production of potatoes and vegetables in subgroups II_c, III_a, III_b, III_c, milk – in subgroups III_a, III_b, III_c, meat – in subgroups II_c, III_a, III_b.

Ways to reduce excessive differentiation and polarization. We can identify two main directions for solving this problem by stimulating agricultural production in the territories within subgroups II_c, III_a, III_b, III_c: a) a differentiated approach within the current measures of state support for agriculture; b) a program approach to mobilize local potential.

Currently, at the level of the federal center, attempts are being made to take additional measures to support RF constituent entities, the territories of which are regarded as unfavorable for agricultural production. In accordance with the rules for the implementation of WTO regional assistance

Table 7. Average annual growth rates of agricultural production by subgroups of territories within the Non-Black Earth Region in 2013–2019, %

Subgroup of territories	Grain	Potatoes	Vegetables	Flax	Milk	Meat	Eggs
I_a	5.9	1.8	0.2	3.3	1.3	2.8	0.5
I_b	10.8	0.3	0.4	22.4	0.5	12.5	1.4
I_c	22.6	6.4	4.6	40.2	-0.6	19.9	1.0
II_a	9.4	2.3	2.8	---	2.7	8.4	1.5
II_b	6.8	0.8	0.1	-0.7	2.2	4.3	3.8
II_c	5.5	-5.1	-3.5	---	3.4	-1.1	3.7
III_a	-11.3	-6.7	-5.5	----	-0.6	-7.5	-7.4
III_b	3.8	-2.8	-5.4	-12.9	-1.0	-3.5	1.5
III_c	12.4	-0.1	-2.6	0.9	-3.7	25.4	2.0

Source: Rosstat.

programs, the Russian Government adopted a number of resolutions[3]. In 2017, the list of RF constituent entities with territories unfavorable for agricultural production within the Non-Black Earth Region included the republics of Karelia and Komi, the Arkhangelsk, Bryansk, Ivanovo oblasts, Perm Krai, and Nenets Autonomous Okrug. In 2021, the list was supplemented by the Republic of Mordovia, the Vladimir, Leningrad, Murmansk and Novgorod oblasts; the Bryansk and Ivanovo oblasts were excluded from it.

At the same time, if the inclusion of the republics of Karelia and Komi, the Arkhangelsk, Murmansk oblasts (subgroup III_a), the Ivanovo Oblast (subgroup III_b), Perm Krai (subgroup II_c) in this list is justified, then the presence of the Republic of Mordovia, the Bryansk and Leningrad oblasts in the list looks very unexpected. Therefore, it was quite fair to exclude the Bryansk Oblast from the list in 2021, and the exclusion of the Ivanovo Oblast was absolutely inexplicable. The inclusion of the Vladimir and Novgorod oblasts (subgroup II_b) in the list can be assessed as acceptable.

Based on the results of the study, the Government of the Russian Federation is proposed to include the Pskov, Smolensk, and Tver oblasts (subgroup III_c), where the production potential has been deteriorating over the past 40–50 years, in the list of territories with unfavorable conditions for agricultural production. The increased rates of meat production and related grain production in recent years have not affected the rural territories of the regions as a whole, but are observed only in some areas. It is necessary to return the Ivanovo Oblast to the list and include the Kostroma Oblast in the list: together, these two regions make up subgroup III_b. The list should be supplemented with the Kirov Oblast, which, along with Perm Krai, is part of subgroup II_c.

A differentiated approach within the existing measures of state support for agriculture for the regions in subgroups II_c, III_a, III_b, III_c will promote the development of agricultural production within the current level, but will not provide them with a breakthrough in development. In fact, this requires special targeted comprehensive programs adopted at the federal level and aimed at the development of agricultural production and rural areas in: a) the republics of Karelia and Komi, the Arkhangelsk and Murmansk oblasts; b) the Pskov, Smolensk and Tver oblasts; c) the Ivanovo and Kostroma oblasts; d) Perm Krai and the Kirov Oblast. The programs should focus on investing in the mobilization of local resource, human, social and entrepreneurial potential in order to overcome the depressive state in agricultural production and development in rural territories of these regions.

It is advisable that the Decree of the President of Russia should include these rural territories in the list of priority areas for settlement by compatriots living abroad within the framework of the program to assist voluntary resettlement[4] and also expand the "Far Eastern Hectare" program[5] for them, as has already been done for the territories of the Arctic zone, by making appropriate amendments to Federal Law 119-FZ of May 2, 2016. It would be advisable to extend the provisions of the Concept for development of the border territories of RF

[3] On approval of the list of RF constituent entities, the territories of which are considered unfavorable for the production of agricultural products: Resolution of the Government of the Russian Federation no. 104-r dated January 26, 2017. Available at: https://www.garant.ru/products/ipo/prime/doc/71498770/ (accessed: June 5, 2021); On amendments to the list, approved by the Resolution of the Government of the Russian Federation no. 104-r dated January 26, 2017: Resolution of the Government of the Russian Federation no. 10-r dated January 12, 2021. Available at: https://www.garant.ru/products/ipo/prime/doc/400091910/ (accessed: June 5, 2021).

[4] On measures to facilitate the voluntary resettlement of compatriots living abroad to the Russian Federation: Decree of the President of the Russian Federation no. 637 dated June 22, 2006. Available at: http://www.kremlin.ru/acts/bank/23937 (accessed: June 7, 2021).

[5] On the specifics of providing citizens with land plots that are state or municipal property and located on the territories of constituent entities of the Russian Federation that are part of the Far Eastern Federal District, and on amendments to certain legislative acts of the Russian Federation: Federal Law no. 119-FZ dated May 2, 2016. Available at: http://www.consultant.ru/document/cons_doc_LAW_197427/ (accessed: June 7, 2021).

constituent entities that are part of the Far Eastern Federal District so that the provisions were valid for the Republic of Karelia, the Murmansk, Pskov and Smolensk oblasts[6]. The solution to this issue is within the competence of the Government of the Russian Federation. There are also other program mechanisms for boosting agricultural production and rural development in the territories within the Non-Black Earth Region, where downward trends in agricultural production continue to dominate.

In turn, the regions of subgroups I_a, I_b, I_c, II_a, II_b in their majority have now become attractive for agribusiness; this fact, no doubt, will remain in the future. Here it is necessary to support and improve those legal, organizational and economic mechanisms for the development of agricultural production that have already shown themselves positively in practice.

Conclusion

Theoretical and applied results of the research

The research we have conducted makes a certain contribution to the theory of rural development in terms of dividing the factors, which contribute to the formation of heterogeneity of rural territories, into zonal and azonal; the research also highlights the special role of the differential rent mechanism in the formation of heterogeneity of rural territories; we investigated the theoretical construction "center–periphery" as a special case of the theory of differential rent (unlike other researchers); we looked into the essence of the territorial differentiation of rural areas in two meanings – as a process and as a result of this process, expressed by the heterogeneity of rural territories.

The most significant contribution to the practice of applied research consists in the proposed methodological constructions that help identify types, groups, areas of regions with homogeneous features of rural territories, establish modern trends in the development of the differentiation process and determine ways to reduce its redundancy. All this, ultimately, allows us to give practical recommendations to federal authorities on the application of a differentiated approach to the development of rural areas.

Specific conclusions based on the findings of the research

Agricultural production, being a system-forming activity in rural areas, is the main attribute of the village as a social institution and provides rural residents with employment and income.

Agricultural production in the Non-Black Earth Region will remain heterogeneous in the future as well; its territorial differentiation will be influenced by the trends discussed above and by the continuing trend of population and production concentration in the zone of influence of urban agglomerations, large and medium-sized cities.

The rural territories of the Non-Black Earth Region, which occupy high rating positions according to the integral indicator of the development of agricultural production, are the most favorable in socio-demographic terms and very attractive for migrants; all this ensures the overall growth of the rural population. By 2020, compared to 1989, the number of rural population in the Republic of Udmurtia, the Tula, Sverdlovsk and Moscow oblasts increased by 4–6%, in the Leningrad Oblast – by almost 10%, and in the Kaliningrad Oblast – by 22.9%, with a total reduction in the amount of rural population in the Non-Black Earth Region by 17.6%.

During the same period, in the regions of group III with low rating indicators, the rural population decreased by 30–40% or more, which led to the liquidation of 60–70% of municipalities of the first level. According to the latest population census, in most regions of this group, more than 20% of rural settlements had no inhabitants, and in the territories with the highest rating indicators (group I), there were less than 6% of such settlements.

[6] The Concept for development of the border territories of the constituent entities the Russian Federation that are part of the Far Eastern Federal District: Resolution of the Government of the Russian Federation no. 2193-r dated October 28, 2015. Available at: https://www.garant.ru/products/ipo/prime/doc/71139078/ (accessed: June 7, 2021).

The interrelation and mutual influence of the development of agricultural production and changes in socio-demographic processes in rural areas can aggravate interregional differentiation in the Non-Black Earth Region, lead to even greater social desertification in the RF constituent entities that we have classified as group III. In the current situation, it is problematic to reduce the excessive differentiation of rural territories only through measures to develop agricultural production in this group. Therefore, in order to reduce the excessive differentiation and polarization of rural areas, it is necessary to develop non-agricultural activities in this group. This could be facilitated by the transition to an endogenous and further to a neo-endogenous paradigm of rural development, which are successfully formed and implemented in the EU countries [23; 24; 25]. These paradigms are based on the knowledge economy, the use of local resource potential of territories, promotion of human and social capital, development of information technologies and widespread use of web networks.

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Lifelong Learning in Russia as a Mechanism for the Reproduction of Human Potential: Gender Aspect

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Abstract. The article presents a study of the peculiarities of the involvement of Russian men and women in lifelong learning. The analysis of both Russian and foreign studies allowed putting forward the hypothesis that women and men may have different approaches to the construction of a lifelong learning educational path. The purpose of this study is to assess the parameters of women's and men's involvement in lifelong learning, including the goals and sources of funding, in order to identify similarities and gender asymmetry of lifelong learning path in Russia. The data of the sample survey of population involvement in lifelong learning, conducted by Rosstat in 2020, show that women and men's age profiles are similar, but their levels of involvement in different types of lifelong learning are not the same: men participate more actively in non-formal education, and women – in self-education. The current segregation of additional studies

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for qualification and field generally reflects the existing sectoral and occupational segregation in employment. At the same time, both women and men rarely associate their additional training with the expanded career opportunities, which may indicate the absence of a full-fledged system of vertical professional mobility based on the human potential growth. Our calculations show that employers more often invite men than women to take additional education and, accordingly, women more often than men pay for it themselves. Women with young children experience particular difficulties in participating in non-formal education and more often than others have to pay for themselves. This, in our view, contributes to the formation of gender inequality of opportunities for participation in lifelong learning, which makes it important to consider the gender factor in state programs of lifelong learning development in order to maximize its contribution to the human potential reproduction.

Key words: human potential, gender mainstreaming, lifelong learning, labor market, self-education, vocational training, family responsibilities.

Introduction

Currently, the problem of human potential (HP) reproduction is becoming particularly relevant, acting as the most important factor in the economic development of any country, and increasing its international competitiveness [1]. Education is traditionally considered as the most important mechanism of HP reproduction. Nowadays, there is a consensus in the world about the need for education during the life, or lifelong learning (LL). Modern realities of economic and social life require constant updating of knowledge [2]. The development and maintenance of lifelong skills through various educational activities in recent years have become crucial for maintaining employment opportunities. In the future, this trend will only grow including by increasing the length of working life and increasing the competition of economic environment.

At the same time, when considering lifelong learning, it is impossible to limit oneself to analyzing its impact on a professional career; it is worth taking into account its broader impact, both personal and social. Lifelong learning allows meeting a wide range of individual human needs for knowledge necessary not only for professional activity, but also for organizing interaction with society including on the basis of new social and information technologies [3]. In this regard, it is important the question of the availability and results of the LL process, as well as the creation of incentives and opportunities for citizens to actively participate in it[1].

Lifelong learning has a long tradition in Russia. Its beginning was laid back in the USSR [4; 5; 6]. Russians traditionally treat education, including professional education, with great reverence. A fairly short period of the 1990s, when the prestige of education, primarily higher technical, was low, was replaced by time, a characteristic feature of which was the desire of population to provide their children with a high level of vocational education. However, researchers note a rather low participation level in the LL, in particular, depending on age – Russians mostly finish their education at a young age [7]. This indicates that the Russian society has not yet fully formed the need for citizens to participate in the educational process during their lifetime, and therefore it is important to study in detail the main parameters of continuing education in Russia including in the gender context, for the formation of educational policy.

[1] Chubarova T.V. Lifelong learning. In: *Knowledge management in modern economy: Study Aid*. Ed. by Mil'ner B.Z. Moscow: Ekonomika, 2009, pp. 184–202.

Approaches to gender problems of lifelong learning: literature review

Quite a lot of works in Russia and abroad have been devoted to general problems of the LL development [8–14], but there are obviously fewer studies on the gender aspects of this problem, especially in Russia [15]. In general, ensuring gender equality in education is considered as the key to gender equality in all spheres of society [16].

We should note that there is a paradoxical situation in the research. The gender factor is given a lot of attention in international documents, where it is considered as one of the most important in the LL system[2].The studies show that such an approach affects the success and dynamics of the LL development determined by the criterion of the involvement level of both men and women, in addition, it positively affects the gender situation in society as a whole including employment and the accumulation of human potential by representatives of different genders. Moreover, the emphasis is usually placed on the connection of lifelong learning with employment, its consideration in the context of labor market problems [17].

At the same time, a number of studies indicate insufficient attention to the gender factor of lifelong learning; we have noted that the LL analysis mainly concerns individual educational trajectories, while gender aspects are associated with social constructs [18].

The article also considers the issues concerning the consideration of the peculiarities of the status of women and men in the education process and the actual "gender training". In particular, L. Stolyarchuk identifies such problems of taking into account the gender factor in the lifelong learning development as "the insufficiency of state documents and programs for developing gender education; society's unwillingness to perceive gender problems as really relevant; the frequent restriction of gender issues to a female topic..." [19, p. 36].

Studies that reveal the problems of social justice in lifelong learning are primarily focused on issues of equality of opportunities for access to the system [20]. At the same time, as a rule, we are referring not to formal restrictions that prevent women from participating in public relations, but to informal practices that have developed in society [21]. Researchers often refer to gender stereotypes, their impact on women's careers and earnings, the choice of educational and career paths, which then affects the situation on the labor market, contributes to the formation of horizontal and vertical segregation [22]. Among the reasons limiting women's participation in the family, the paper notes the presence of family responsibilities, and the need to take care of other members of the household, especially children. We have emphasized that such work is not valued in society, as estimates of economic activity do not take into account unpaid work in the household, although it contributes to training and development of human resources [23].

In Russia, the situation with women's participation in education is quite specific. Unlike women in many countries of the world, Russians traditionally have access and tend to a high level of formal professional education. The researchers note that more and more Russian women are seeking higher professional education, while more men are limited to its secondary or primary level. At the same time, a higher education level is not reflected in the growth of women's competitiveness in the labor market[3].

It is worth noting that lifelong learning regulation in Russia is carried out within the framework of the general legislative field of the education system. The basis for the LL system

[2] Adult learning and gender. EAEA background paper, July 2020. Available at: https://eaea.org/wp-content/uploads/2020/08/ALE-and-Gender-EAEA-background-paper-July-2020_final.pdf (accessed: April 25, 2021).

[3] *Gender Problems in Contemporary Russia (According to Official Statistics)*. Moscow: Aleks, 2006. 224 p.

development became the Federal Law "On Education in the Russian Federation", dated December 29, 2012, no. 273-FZ. Article 10 of the law stipulates the following provision: "The education system creates conditions for continuing education through the implementation of basic educational programs and various additional educational programs, providing the opportunity to simultaneously master several educational programs, as well as taking into account existing education, qualifications, practical experience in obtaining education". In general, the legislative regulation of lifelong learning in Russia is based on international experience including UNESCO development.

A significant disadvantage of the proposed strategies for developing lifelong learning is their gender neutrality. At the same time, the analysis of existing studies, both Russian and foreign, allows formulating a hypothesis that the opportunities for women and men to participate in the educational system are not the same, they have different approaches to building educational trajectories.

The purpose and novelty of the research

The purpose of the study is to assess the parameters of the participation of women and men in various forms of lifelong learning in Russia, primarily from the point of view of purposes and sources of funding, and on the basis of the analysis to formulate proposals for taking into account the gender factor in stimulating the LL development in the interests of ensuring human potential reproduction.

The novelty of the work is that on the basis of empirical data, for the first time, we have analyzed the gender aspects of lifelong learning state in Russia, and have shown the influence of the gender factor on its main parameters (primarily purposes and sources of funding) and results. This allows identifying the specifics of the educational trajectories of women and men aimed at the human potential development.

The results in the article can be used in the further working out of state programs for developing lifelong learning in Russia: taking into account gender characteristics will make it possible to increase their effectiveness.

Research methodology and empirical data

The work considers lifelong learning in Russia from the point of view of a gender approach. Gender is understood as "a set of behaviors and positions that are usually associated with male and female persons in any given society"[4]. In society, it is not so much the biological or physical differences between men and women that are important, but their socio-economic status, access to resources and opportunities for their use. The gender approach implies taking into account the position of both genders in the analysis of social phenomena and, accordingly, the development of special measures to ensure equality between men and women.

As an empirical basis, the work uses data from a Sample observation of the population's participation in lifelong learning (hereinafter referred to as a Sample observation or Observation) conducted by Rosstat in all entities of the Russian Federation in 2020[5]. During the Observation, there were interviewed more than 231 thousand respondents aged 15 years and older. The persons who participated in lifelong learning were those who participated in one of its forms for 12 months. The results of the Observation are extended to the total population aged 15 years and older.

Sociological studies in the field of lifelong learning have been conducted before, but they were of a local nature [24].

[4] *Theory and Methodology of Gender Studies: Course of Lectures.* Ed. by Voronina O.A. Moscow: MTsGI-MVShSEN-MFF, 2001. P.15.

[5] Hereinafter in the text, the sources of tables and figures are Rosstat data. Results of the selective federal statistical observation of the population's participation in continuing education in 2020 Available at: https://gks.ru/free_doc/new_site/population/trud/inobr2020/index.html

The first Observation round was carried out in 2016. The obtained data are analyzed in studies [25; 26]. However, their comparison with the results of the 2020 survey is difficult due to the partial incompatibility of the classifications of education types.

The paper uses methods of logical analysis and mathematical statistics to analyze statistical data.

In the work, we have used the classification of the LL forms adopted by Rosstat during the Observation which, in turn, corresponds to the UNESCO international classification of education: training in basic educational programs (formal implies obtaining knowledge in educational organizations), training in additional educational programs or vocational training programs (non-formal includes various types of mainly additional training including at the workplace) and self-education (informal is independent non-institutionalized activity for the acquisition of new knowledge, skills and abilities related to education)[6].

It is worth taking into account that part of the population can be included in several forms of lifelong learning at the same time, so the sum of the shares of the population participating in one or another form of lifelong learning may be greater than the share of the population participating in the LL.

It is important to keep in mind that in the Russian Federation, primary general, basic general and secondary general education are mandatory. The national legislation guarantees the accessibility and free of charge of primary and secondary vocational education, as well as on a competitive basis – the free of charge of higher education received for the first time.

Gender trajectories of lifelong learning in Russia

In Russia, by world standards, the number and share of adult population taking part in lifelong learning is quite significant. In 2020, 51.5 million people, or 42.7% of the total population aged 15 years and older, were employed in one or another type of education in general ***(Tab. 1)***.

The observation showed that men and women are involved in lifelong learning in different ways, and the scale and level of their participation have different directions of asymmetry. On the one hand, the total number of women studying significantly (by 3.5 mil. people) exceeds the corresponding number of men which is a consequence of the more active participation of working age women in educational process.

Table 1. Participation extent and level in various LL forms of women and men aged 15 years and older*

Type of lifelong learning	Population	
	Male	Female
Participated in LL, total, thou. people	24 023.9	27 520.8
% of population 15 +	43.9	41.7
including:		
Formal education, thou. people	5 805.8	5 890.4
% of population 15 +	10.6	8.9
Non-formal education, thou. people	13 662.4	13 246.1
% of population 15 +	24.9	20.1
Self-education, thou. people	14 030.0	19 438.5
% of population 15 +	25.6	29.4
* Male and female can simultaneously participate in several forms of lifelong learning, so the number of participants in LL is less than the total number of participants in different forms of LL, respectively, and participation level of men and women in LL is less than the sum of the private levels of their participation in different forms of lifelong learning.		

[6] International Standard Classification of Education ISCED 2011. UNESCO Institute of Statistics, 2013. Available at: http://uis.unesco.org/sites/default/files/documents/isced-2011-ru.pdf (accessed: July 12, 2021).

However, on the other hand, on the whole, women's involvement in education (as the share of students among all women of the considered age), on the contrary, is slightly lower than the share of men studying (41.7% vs. 43.9).

This situation is the result of a significant excess of the number of women over the number of men. The imbalance is especially noticeable in the elderly, when the interest in learning among population of both genders is minimized. The age participation profile in the LL shows that in almost all age intervals, women's participation level in lifelong learning is higher than that of men. The only exceptions are the youngest (15–17 y.o.), that is, mainly schoolchildren, who have the highest level (99%), and the oldest (70 years and older) – with the lowest level (10%) ***(Fig. 1)***.

Among the important differences between the educational activity of women and men, it is necessary to note its intensity. Calculations have shown that at all ages, women are much more likely to combine two or three types of lifelong learning. However, this result is achieved mainly due to more frequent self-education by women of all ages. Only in one age range (24–29 years) in terms of the intensity of participation in the LL, women are inferior to men. Most likely, this is due to the fact that a significant number of young women face the need to combine work and study with care and upbringing of young children ***(Fig. 2)***.

The parental status, or rather the age of the youngest child, has a very significant impact on women's involvement level in the lifelong learning. However, two clarifications are needed here. Firstly, such a parameter as the "age of the youngest child" has an obvious positive correlation with the age of the mother herself. Secondly, we should assume that this factor also has a certain influence on men's involvement in lifelong learning. However, gender stereotypes deeply rooted in the public consciousness about the distribution of family and household responsibilities in Russian families, primarily for care and upbringing of children, including minors, did not allow the developers of

Figure 1. Age profile of participation level in lifelong learning of women and men aged 15 years and older (proportion of students among all women and men of the corresponding age), %

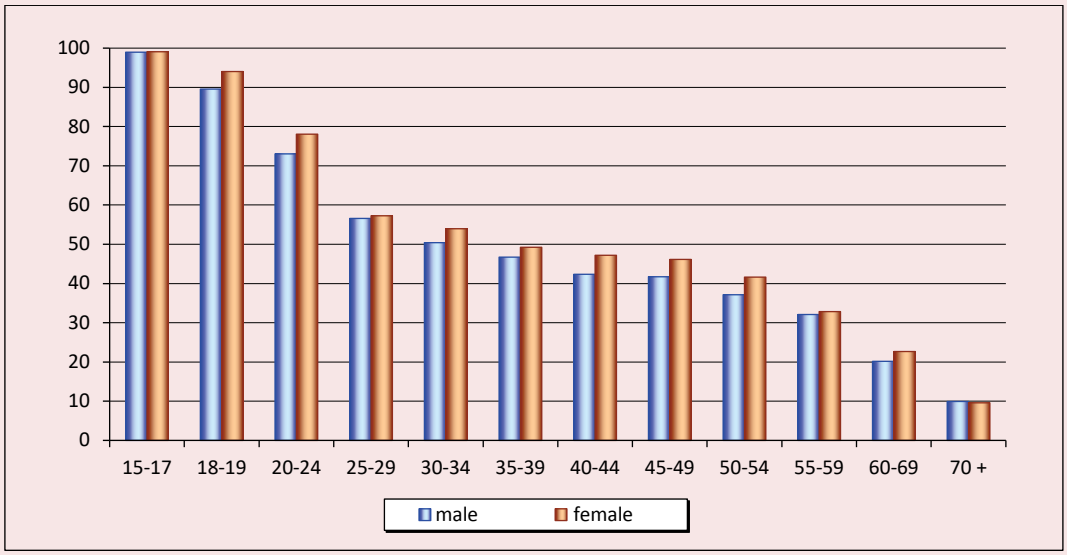
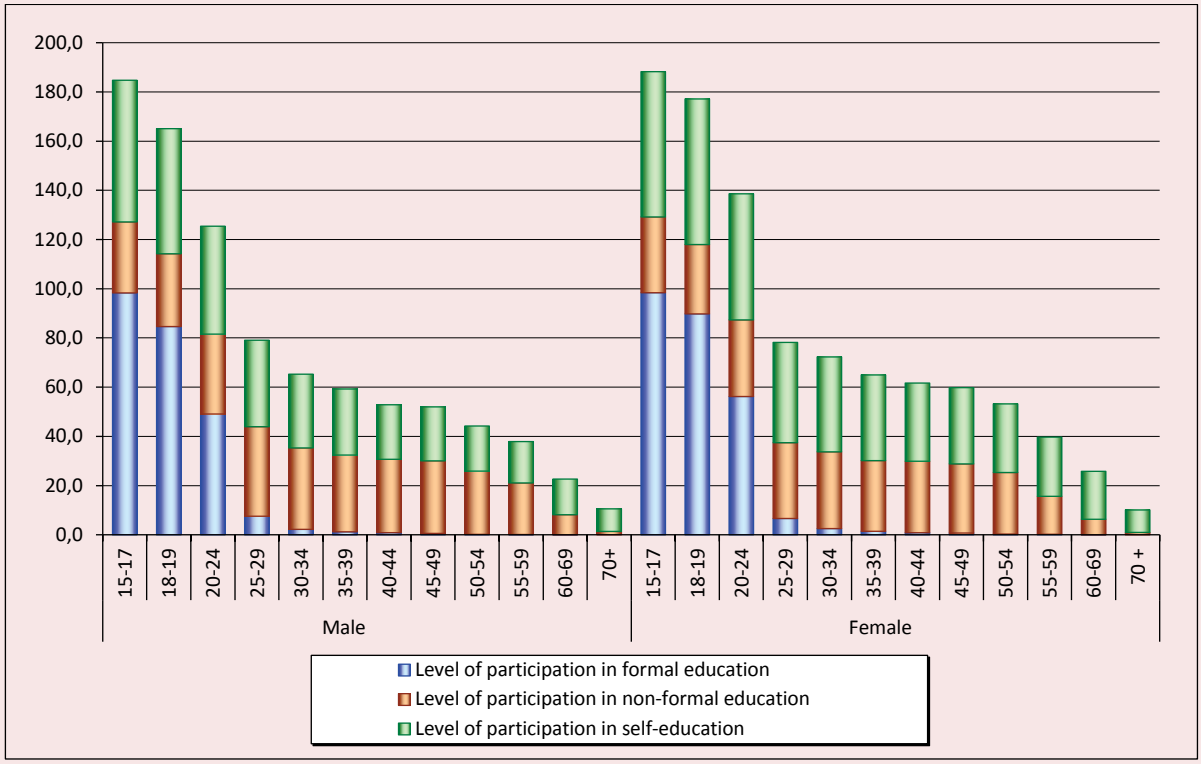


Figure 2. Total participation level of women and men aged 15 years and older in different forms of lifelong learning, %



the Observation to introduce the necessary indicators that would make it possible to test this assumption.

The Observation results indicate a negative impact of a woman having a child under the age of 2 years on her involvement in lifelong learning. Such women, despite the fact that a significant part of them are at young ages, have the participation level in the LL significantly lower (45.5%) than in the entire population of women with children under the age of 18 (49.3%) (*Tab. 2).*

Table 2. Participation level in the LL of women with children under the age of 18 y.o., by the age of the youngest child, %

	Total	among them, according to the participation forms		
		Formal education	Non-formal education	Self-education
Women with children under 18 y.o., total	49.3	2.6	27.3	34.6
including by the age of the youngest child:				
0–2 y.o.	45.5	4.9	15.7	35.1
3–6 y.o.	54.2	3.7	30.8	38.4
7–10 y.o.	51.6	2.4	30.1	35.5
11–14 y.o.	48.2	1.0	29.8	32.7
15–17 y.o.	45.9	0.8	28.4	31.0

Formal education is the basic, but the smallest education form in terms of adult participation (9.7% of respondents). This is due to the fact that obtaining general and formal vocational education traditionally falls on a very short period of life for both women and men (mainly 15–17 years). At older ages, the participation rate gradually decreases, more slowly for women, faster for men, but practically disappearing for both by the age of 30. In absolute numbers, more women are covered by this education form (58.9 mil. women and 58.1 mil. men).

The fact that the Russian population receives formal education mainly in the youth age is reflected in the involvement level of women with children in it. According to Table 2, women with the youngest children have the highest level of such involvement (4.9%), while women with 15–17 y.o. have only 0.8%. However, even the relatively high level of involvement shown by women with young children is almost twice lower than the level calculated for the entire population of the surveyed women. This indicates that the majority of Russians prefer to have children after receiving a formal education.

Non-formal education, which can be considered as the basis of additional education, covers only 22.3% of respondents. In general, women are significantly inferior to men in terms of the scale and level of participation in this type of lifelong learning. At the time of the survey, 13.2 million women (20.1% of all women aged 15 years and older) and 13.7 million men (24.9%; see Tab. 1) took part in it.

Non-formal education accompanies both women and men almost all of their adult life, but it is especially intensive in middle and pre-retirement ages. In all ages, except for the youngest (15–17 y.o.), the share of non-formal education among men is higher than among women ***(Fig. 3)***. The maximum differences occur at the age of 25–29, when female educational activity significantly decreases (30.8% vs. 36.4% for men), and pre-retirement years (at 55–59 y.o., male participation rate is 21.0%, female is 15.4%; see Fig. 2).

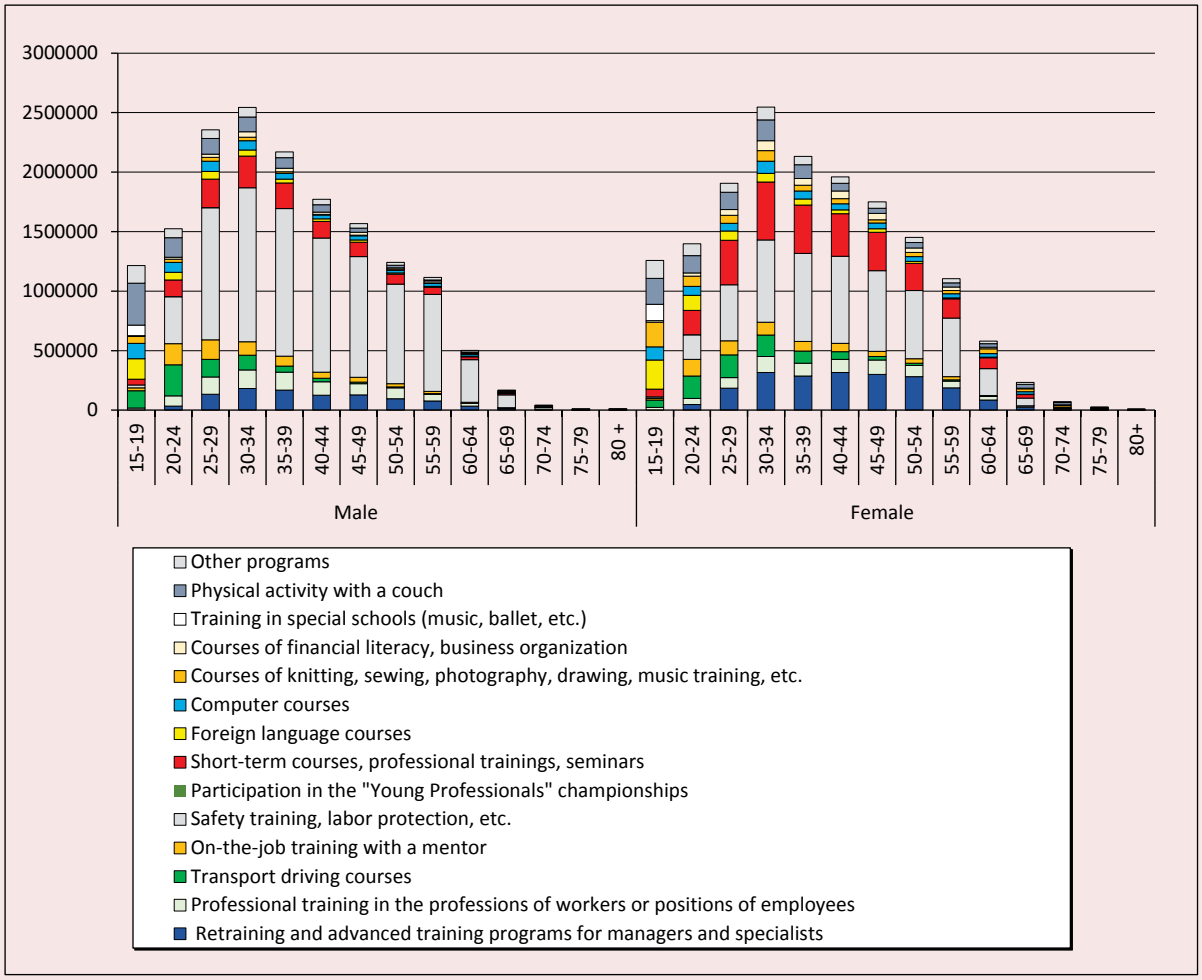
The most likely explanation for the formation of a significant gender gap in participation level in non-formal education in the group of 25–29 years is the appearance of children in many women at this age. Indeed, as calculations show, the presence of a woman with a child up to 2 y.o. almost halves the probability of her participation in non-formal education. Older children do not have such a fundamental influence (see Tab. 2).

The Observation revealed a significant segregation by non-formal education specialties: although there are no exclusively or predominantly "female" or "male" non-formal education programs, the respondents' participation in most of them has a significant gender asymmetry.

The most feminized programs were "training in knitting, sewing, photography, video shooting, drawing, music, dancing, singing, etc." (the number of women exceeded the number of men by 3.8 times), "training in professional retraining programs,advanced training for managers and specialists" and "training in financial and budget literacy courses, on the study of management issues, business organization" (2.2 times), "training in short-term courses, professional trainings, seminars, conferences, master classes" (2.1 times), "training in specialized schools (Olympic reserve, music, ballet school, etc.)" (1.6 times).

The most masculine programs were "training in safety, labor protection, fire safety, safe handling of weapons" (the number of men exceeds the number of women by 0.5 times), participation in the "young professionals" championships (0.6 times), mastering professional skills in the workplace under the guidance of mentors, training in vocational training programs for the professions of workers or positions of employees (0.9 times).

Figure 3. Age profile of distribution of the number of men and women in non-formal education specialties, thou. people



It seems that such segregation by non-formal training specialties generally reflects the existing sectoral and professional segregation in the field of employment. A certain optimism is inspired by the high women proportion among those studying in programs for managers and specialists, as well as in courses of financial and budgetary literacy, management, business organization, as in the future it may contribute to their gradual overcoming of the "glass ceiling".

The Observation allows revealing gender differences regarding the *purposes* of obtaining non-formal education, its *initiators*, as well as *payment methods*.

The structure of the pusposes pursued by women and men in obtaining non-formal education is generally very similar. Respondents of both genders most often call the purpose of obtaining it "new knowledge" (33.9 and 33.5% of all students, respectively). It is noteworthy that it is in the first place among students of all ages. In the second place, by a large margin, both women and men (18.6 and 18.2%) have a desire to achieve high work results through training. For the youngest respondents, as well as for the oldest ones, this goal turned out to be irrelevant. In the third place is the option "other", and in men with a large margin (21.6 vs. 16.9% for women). Such a high value of the indicator show the

need to improve the survey methodology in order to more accurately take into account the purposes of obtaining non-formal education.

Relatively popular goals of training are also improving the cultural level and the opportunity to acquire new contacts which women strive for more often than men (9.9 and 7.1%, as well as 6.4 and 4.2%, respectively).

"Employment, new job", "salary increase" and "career promotion" turned out to be the most unpopular purposes for obtaining additional education for representatives of both genders (the share of each of them in the total structure is less than 6%). It is worth noting that all three of the above purposes are at least somewhat popular only among young people of both genders, their value decreases significantly with age. In our opinion, this indicates that the current system of additional vocational education does not correlate well with the needs of labor market, and in the field of employment, a system of vertical professional mobility based on human potential growth has not yet developed.

The parenteral status among women only slightly transforms the hierarchy of purposes for obtaining non-formal education, and even then this applies mainly to women with children up to 3 y.o. *(Tab. 3)*. New knowledge is important for them (32.4%), but they are less concerned about high work results, but raising the cultural level and finding new contacts become more significant. Young mothers are almost twice as often as women in general, the purpose of their participation in non-formal education is called "employment, a new job" which underlines the relevance of the program of the State Employment Service for retraining, advanced training of persons on parental leave up to 3 y.o.

As children grow up, the importance of new contacts, increasing the cultural level, as well as employment for a new job as reasons for obtaining non-formal education decreases quite significantly, for example, for employment almost twice, from 8.6 to 4.3%. At the same time, the importance of achieving high work results increases significantly – from 12.8% for women with children up to 3 y.o. to 20.6% for women with children up to 18 y.o.

Thus, women's participation in non-formal education is more related to personal, non-working interests (54.4% of the surveyed women), while men's participation is related to work, professional interest (52.1%). This indicates a lower desire of women to undergo training in order to build a career and indicates, if not self-discrimination in official growth (lack of self-confidence in building a career), then at least insufficient efforts in breaking the "glass ceiling" or disappointment, the assumption that such efforts are useless, lack of internal motivation to build a career.

Table 3. Purpose of participation of men and women in non-formal education, %

Purpose	Population, total		Women of 15 years and older with children		
	male	female	up to 3 y.o.	preschoolers	up to 18 y.o.
Employment, new job	4.9	4.2	8.6	6.5	4.3
Salary increase	4.7	4.8	4.5	5.6	5.4
Career promotion	5.9	5.4	4.2	5.8	6.2
High work results	18.2	18.6	12.8	17.7	20.6
New knowledge	33.5	33.9	32.9	33.9	34.1
New contacts	4.2	6.4	7.9	6.11	5.1
Increasing culture level	7.1	9.9	13.1	9.36	8.0
Other	21.6	16.9	15.9	15.00	16.2
Total	100.0	100.0	100.0	100.0	100.0

Table 4. Initiators of the latest non-formal education for women and men, %

	Population		Women of 15 years and older with children		
	male	female	up to 3 y.o.	preschoolers	up to 18 y.o.
On one's own initiative	23.8	35.7	54.5	39.7	32.0
On the initiative of the family, parents	3.5	3.6	1.8	1.3	1.2
On the employer's offer	70.2	58.5	38.8	56.0	64.6
Other	2.5	2.3	4.9	3.0	2.2
Total	100.0	100.0	100.0	100.0	100.0

If the differences between the purposes for which women and men receive non-formal education are generally small, then the lists of education *initiators* differ significantly. As can be seen from *Table 4*, women are more likely than men to study by showing personal initiative (35.7% vs. 23.8). At the same time, men are obviously much more likely to receive offers to continue their education from an organization or employers (70.4% for men vs. 58.5% for women). Families and parents equally rarely initiate additional training for both men and women; it is obvious that there is no gender discrimination in this issue.

As we have shown above, respondents of both genders do not always undergo additional training in order to build their career. However, the data on the initiators of such training indicate the important role that employers play in creating a "glass ceiling" for women.

The structure of initiators of training for women with children differs depending on the age of the children. The majority of women with children up to 3 y.o. (54.5%) study on their own initiative, respectively, a minority received this opportunity from an employer. The older the children, the more this ratio changes. Among women with children up to 18 y.o., the participation level in programs, offered by the employer, almost doubles.

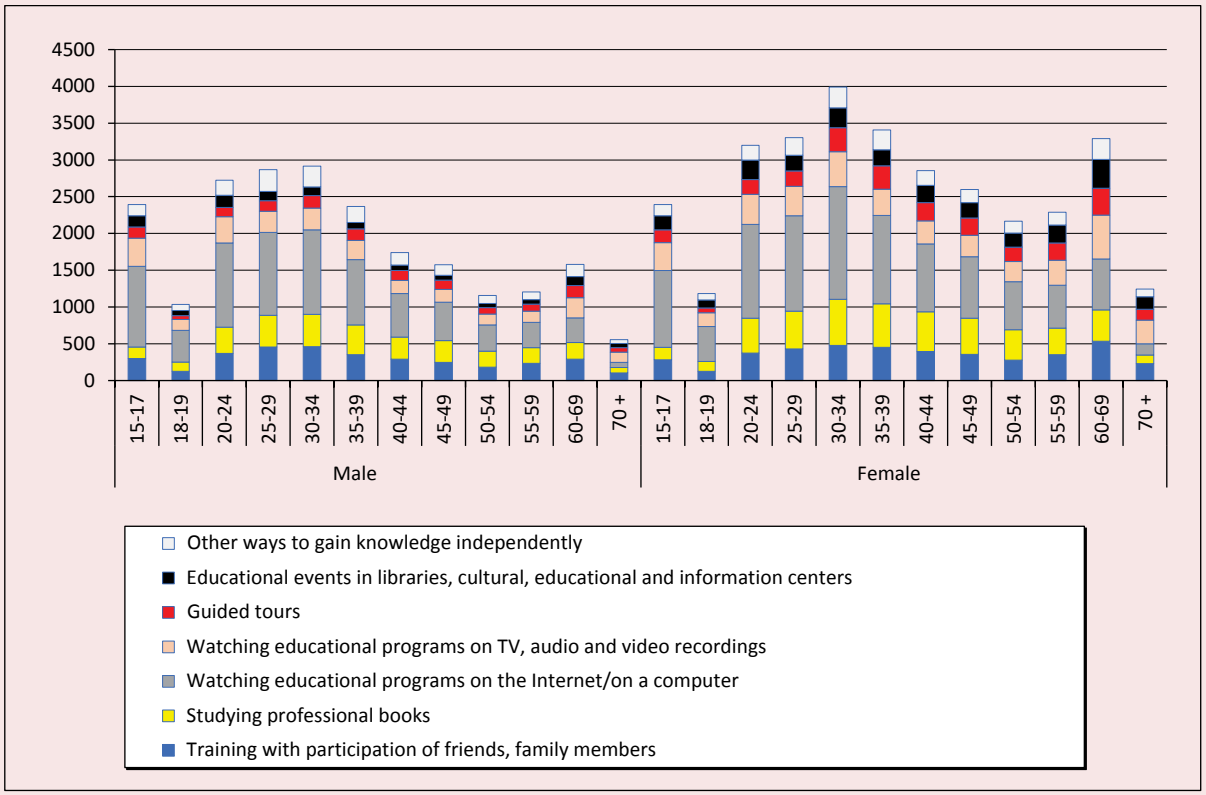
The sources of *payment for non-formal education* for women and men generally correlate with its initiators. Women, more often than men, who study on their own initiative, respectively, are more likely to pay for training themselves, and men are more likely to study at the invitation and at the employers' expense ***(Tab. 5)***.

The survey has showed a rather modest participation of the state employment agency (SEA) in the financing of non-formal education, although it is somewhat more relative to women – the state paid for the education of 0.6% of men and 1.3% of women. Even among women with children under 3 years of age who are beneficiaries of specialized educational programs of the SEA, the share of those who study at the expense of this service is only 1%. Moreover, among women with children up to 3 y.o., the article reveals the largest proportion of those who independently (or with the help of their family) pay for their education. However, the older the children, the more often their mothers' education is paid for by employers.

Table 5. Ways for women and men to pay for their last non-formal education, %

Payment method	Population		Women of 15 years and older with children		
	male	female	up to 3 y.o.	preschoolers	up to 18 y.o.
Completely by oneself (family)	21.7	32.0	48.9	35.6	28.4
Employer	61.0	49.8	33.3	46.9	55.3
Employment Service, other State organizations	0.7	1.3	1.0	1.1	0.9
Several sources	0.6	0.8	0.7	0.8	0.8
Payment for learning is not provided	13.7	13.6	11.3	12.4	12.2
Another source	2.3	2.4	4.9	3.1	2.4

Figure 4. The age profile of the distribution of men and women by forms and methods of independent knowledge acquisition, thou. people.



Self-education of women and men

Self-education is the most widespread form of public participation in the LL system. According to the Observation data, in 2020, 14.0 million men and 19.5 million women were engaged in self-education, which was 25.6% of all men and 29.4% of all women aged 15 years and older (see Tab. 1).

At the same time, self-education is a form of education characterized by the most significant gender differences in the parameters of population's participation in it.

In general, the age profiles of activity in self-education in women and men are similar. The youngest respondents, regardless of gender, show maximum interest in this training type. With aging, the activity gradually decreases, but remains significant even in older ages. At the same time, in all ages, except for the oldest, the proportion of women engaged in self-education is significantly higher than among men. The greatest difference occurs at the age of 40 years and older, when the share of women engaged in self-education exceeds the corresponding share among men by 1.4–1.5 times (see Fig. 2).

Gender differences in the specialization of self-education are huge, especially in two positions: self-education on healthy lifestyle issues (11% of women over 15 years old are interested in this problem, only 4.9% of men are interested in this problem) and mastering the skills of applied needlework and artistic creativity: playing musical instruments, singing, drawing, dancing, etc. (3.9% of women and 1% of men). In addition, women are slightly ahead of men in classes to improve financial and budgetary literacy, literacy in the field of housing and communal services, public services, etc. (4.7 and

3.1%, respectively). Men have a certain advantage in obtaining knowledge or skills on the use of new household technical means (mobile phone, "smart" house, etc.): 6.1% vs. 4.3% for women.

The analysis of the participation forms in self-education gives an interesting gender cross-section. In general, these forms can be combined into two groups: the Internet, TV and reading, on the one hand, and live communication, on the other. Men mostly watch educational programs on the Internet or on a computer (14% of respondents), with the help of TV or audio recordings (5.1%), read professional books and magazines (5.9%). 6.2% use live communication with friends, colleagues, and family members to master new knowledge, 2.7% use visiting museums with a guide, 2.1% use libraries, cultural centers, and lecture halls. Thus, the Internet is the most popular source of information for self-education, although to varying degrees for people of different generations (45.1% of respondents aged 15–17 y.o. use it for self-education, and only 1.7% is 70+) ***(Fig. 4)***.

Women use the Internet even more actively (16.1%), read professional magazines (7.4%), watch TV and listen to audio recordings (6.6%). At the same time, they are almost twice as likely as men to personally attend various educational events. In addition, we should note that women use a computer and master professional magazines more evenly across all ages and more intensively than men.

The high participation level in self-education, together with the purposes of obtaining non-formal education discussed above, indicates that women are more inclined to self-development which is not always associated with professional employment.

In general, the participation level of women with children up to 18 y.o. in self-education is slightly higher than the average for the sample of women (34.6%), especially with children aged 3–6 y.o. (38.4%), and in comparison with other types of lifelong learning. In our opinion, this indicates that there are not enough favorable conditions for women with children, especially young ones, to participate in lifelong learning.

Conclusion

Rosstat study proves that both absolute and relative indicators show a fairly significant involvement of Russian women and men in lifelong learning, but the strategies for obtaining it have significant gender similarities and differences.

In both cases, age has a significant impact on obtaining lifelong learning, and in women and men, the age profiles of participation in the LL are similar, although the participation levels in different types of lifelong learning do not coincide.

The Observation has confirmed the fact that formal education ends at a young age, regardless of gender. At the same time, men are more actively involved in non-formal education; women are more actively involved in self-education. In addition, women are more often involved in different types of lifelong learning.

In general, there are no purely "female" or "male" areas of training in the framework of non-formal education and self-education, and the existing segregation in the specialties of such training reflects the existing sectoral and professional segregation in the field of employment. It is worth noting that there are a high proportion of women among those studying in programs for managers and specialists, in courses of financial and budgetary literacy, management, business organization which can become a factor in reducing vertical (job) segregation.

At the same time, an analysis of the survey results on the purposes of obtaining non-formal education, its initiators, as well as ways of paying for training have showed that participants of non-formal education of both genders rarely associate their training with expanding career opportunities. This indicates that the country has not yet developed a full-fledged system of vertical professional mobility based on human potential growth.

It is also a matter of concern that men are more likely to receive an invitation from employers to undergo additional training than women, respectively, women are more likely to bear the burden of paying for it themselves.

Women with children, especially young ones, in comparison with men and with the entire female population, experiencing obvious difficulties in participating in non-formal education, are more often than others force to pay for their needs for new knowledge themselves, to satisfy them through more intensive use of self-education opportunities which primarily indicates insufficient favorable conditions for women with children to participate in lifelong learning.

Thus, there is a formation risk of gender inequality in developing lifelong learning. In the traditional educational paradigm, according to which professional knowledge was obtained by a person in a specialized educational institution before entering the field of employment or at the initial stage of a professional career, with the subsequent use of this or somewhat updated knowledge before retirement age, female education level has exceeded male education level in all age groups acting as a competitive female advantage in the labor market. To a large extent, this situation has become possible due to the fact that young men and women receive basic professions in the first years of adult life, when most of them are not yet burdened with family responsibilities and the traditional gender division of labor does not affect their educational opportunities. However, the highest rates of technological development, the accelerating rates of obsolescence of knowledge, obtained in professional educational institutions, are increasingly demanding the formation of lifelong learning system in Russia; its main semantic load is going beyond formal education, namely, getting at the ages coinciding with the time of the family formation, birth and upbringing of children. In the context of the widespread gender division of labor, this situation calls into question the real implementation of the equality of opportunities for non-formal education and self-education for women and men and requires the adoption of state measures to support women in overcoming these barriers and the opportunity to receive lifelong learning.

Thus, we can conclude that for developing lifelong learning in the context of human potential reproduction, it is necessary to identify two activity areas, namely: ensuring greater connection with labor market and combining family and work, and creating conditions that promote a more comfortable combination of training within the framework of lifelong learning, work and family responsibilities.

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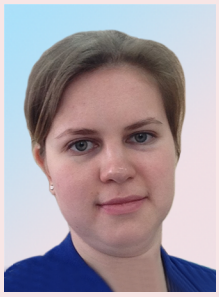
Social Portrait of a Resident of the Arctic in the Conditions of Industrial Development of the Territory (Case Study of Yakutia and Taimyr)*



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Abstract. The way of life of the indigenous and incoming population of the Arctic zone of the Russian Federation requires a detailed study, since it is in these areas that the exploration and extraction of minerals for the purpose of territorial industrial development has been actively carried out in recent decades. The article reveals the social portrait of residents of Russia's Arctic regions, who are immediate participants in the changes taking place in the territories of their residence and associated with the implementation of large-scale mining projects. We conducted the empirical part of the study in 2017–2020 in the Republic of Sakha (Yakutia), where placer gold and diamonds are currently explored and mined, and in the Taimyr Dolgano-Nenets Municipal District of Krasnoyarsk Krai. The object of the study was the economic behavior of local residents of the Arctic regions; the subject was their attitude toward the activities of mining companies. As a result of a sociological survey in the form of questionnaires (cluster sample, 859 people, age selection from 18 years and older), informal conversations with local residents, we gave their socio-demographic characteristics, presented their attitude toward traditional trades and crafts and toward the industrial development of Russia's Arctic regions. The practical significance of the study consists in analyzing modern characteristics of an Arctic resident; this analysis can be of use to various stakeholders involved in the implementation of state programs for the development of Russia's Arctic territories. The study of the problems and needs of indigenous peoples of the Arctic zone of Russia allows avoiding resource conflicts between state structures, industrial companies and the local population.

Key words: social portrait of the population, economic sociology, industrial development of the territory, environment, socio-economic well-being, Arctic region, indigenous peoples, extractive companies.

Introduction

The Executive Order of the President of the Russian Federation "On the national development goals of the Russian Federation through to 2030" (2021) defines directions of the country's breakthrough development, the main of which are related to the increase in its population, as well as the improvement in the standards and quality of life of its citizens. This document outlines the national development goals of the Russian Federation for the future concerning the preservation of the population, ensuring health, promoting human well-being, creating a comfortable and safe living environment, reducing the poverty of Russians, and restoring the disturbed ecological state of the environment[1].

The state program "Socio-economic development of the Arctic zone of the Russian Federation"[2] (2021) provides for two subprograms: "Creating conditions for attracting private investment and creating new jobs in the Arctic zone of the Russian Federation" and "Creating conditions for sustainable socio-economic development of the Arctic zone of the Russian Federation". It is important that the state program is aimed at promoting the sustainable development of indigenous small-numbered peoples living in this territory by creating new jobs while improving working conditions, as well as providing support for traditional economic activities, which, ultimately, will have a positive impact on the level and quality of life of the local population.

[1] On approval of the State program of the Russian Federation "Socio-economic development of the Arctic zone of the Russian Federation": Executive Order of the President of the Russian Federation "On National development Goals of the Russian Federation through to 2030", dated July 21, 2020. Available at: http://www.kremlin.ru/events/president/news/63728 (accessed: May 31, 2021).

[2] On the approval of the State program of the Russian Federation "Socio-economic development of the Arctic Zone of the Russian Federation": Government Decree of the Russian Federation no. 484, dated March 30, 2021. Available at: http://publication.pravo.gov.ru/Document/View/0001202104020037 (accessed: May 31, 2021).

The Decree "On the strategy for the development of the Arctic Zone of the Russian Federation and ensuring national security for the period through to 2035" (2020) provides for a set of measures for the socio-economic development of this territory including the implementation of major investment projects for the exploration of mineral deposits and their extraction, as well as the development of transport communications infrastructure and social facilities[3]. The Arctic territories have significant reserves of such natural resources of the planet as oil, gas, fresh water, and commercial fish species. It is worth noting that the most serious threat to the natural zones of the Arctic regions comes from the extractive industry, specializing in the exploration and extraction of minerals. In addition, global warming has a negative impact on the environment of the Arctic deserts, leading to permafrost thaw.

The population of the Arctic Zone of the Russian Federation is multinational. It is home to both local (indigenous peoples and old-timers) and incoming (migrants) populations. Residents of the Arctic have a minimal impact on the environment, trying to use natural resources economically. For thousands of years the population living in these territories has developed a correct strategy of nature management allowing preservation of their native habitat, biodiversity of the region as well as rational use of renewable natural resources. At present there is an increasing impact on ecosystems and their degradation in the Arctic due to its industrial development, which affects the traditional basic industries of the northern territories (fishing, hunting, reindeer breeding, etc.).

The socio-economic development of the Russian Arctic and the implementation of investment projects for industrial development on its territory are closely connected with the solution of problems of improving the quality of life of the local population, increasing the life expectancy of citizens, decreasing migration outflows, reducing unemployment and the poverty level, and improving the environment. The implementation of such projects is also aimed at increasing the level of accessibility and quality of services, creating a comfortable living environment in settlements located in remote areas including in places of traditional residence and traditional economic activities of small-numbered peoples. Currently, there are 19 small-numbered peoples in the Arctic zone of Russia, with their heritage sites of historical and cultural value of global significance.

It is obvious that the industrial development of territories in the Arctic, the implementation of projects on the exploration of deposits and extraction of minerals may not only be accompanied by the achievement of certain economic and social results, but also have a negative impact on the environment, the climate system, the environmental conditions of the population [1–6]. Under these conditions, the implementation of investment projects for the industrial development of the Arctic should provide a balanced socio-economic development of this territory, contribute to the protection of the interests and needs of indigenous peoples, and preserve the native environment of their habitat [5]. The intensive use of natural resources forces scientists, politicians, and citizens to look for ways of interaction between the state, business, and the population of the Arctic on issues of sustainable development and environmental protection.

We should take into account that most of the indigenous peoples of the Russian Federation live in the North, Siberia and the Far East. It is in these regions that the development of natural resources, extraction of hydrocarbons, gold, silver, diamonds, platinum, and ferrous and nonferrous metal ores

[3] "On the Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period through to 2035": Presidential Decree of the Russian Federation no. 645, dated October 26, 2020. Available at: http://www.kremlin.ru/acts/news/64274 (accessed: May 31, 2021).

are taking place. The activity of resource extraction companies in a certain way contributes to the alienation of territories, which has a negative impact on the traditional way of life of the local population [6; 7].

The United Nations Declaration on the Rights of Indigenous Peoples, adopted in 2007, declares the right of these groups to live in dignity, to maintain and develop their own culture, and development in the direction which the people themselves consider most appropriate to their needs and aspirations[4]. In this regard, indigenous peoples must necessarily be involved in decision-making when developing the natural resources on their territories.

It is important to analyze and assess the positive and possible negative changes that occur or may occur in the future in the Arctic region population life during industrial development, as well as to assess the trends of these changes in terms of economic behavior of citizens including the features of perception of the ongoing changes in the gender aspect [8]. This approach involves the study of everyday life of the population, its social attitudes, motivation, financial capacity, and economic behavior [9] which in general allows drawing a social portrait of the Arctic residents under the conditions of industrial development of the territory.

The Arctic vector of development and the resulting social, ecological and economic changes in the Arctic zone of the Russian Federation largely depend on the interaction between extractive companies and indigenous minorities living in this territory [10; 11]. It is especially important to find adequate legal and economic mechanisms to protect the rights and interests of the local population, contributing to their well-being [12; 13].

For example, in order to protect the interests and rights of indigenous peoples in the implementation of investment projects for the industrial development of territories, in 2020 the Government of the Russian Federation adopted a regulation on the procedure for compensating losses resulting from damage to the habitat of indigenous minorities caused by economic activities[5]. In accordance with this document, subsoil user companies will compensate for damage caused to Russia's indigenous minorities on the basis of a special agreement. In particular, the Republic of Sakha (Yakutia) has decades of experience in conducting ethnological expert reviews of projects that assess the impact of changes in the habitat of small-numbered peoples and the socio-cultural situation on the development of the ethnos, which makes it possible to determine existing or potential threats of interethnic conflicts in society [14; 15].

The purpose of our work is to draw up a social portrait of an Arctic resident in the conditions of industrial development of the territory. The scientific novelty of the study lies in creating of an original multidimensional characteristic of an Arctic resident of the Russian Federation helping to form an idea of the social characteristics and motivational attitudes of the indigenous population in the area of the planned implementation of large-scale investment projects for the extraction of natural resources. In general, this will help to ensure a balance of interests between the population of the Arctic, state structures, and subsoil user companies.

[4] The United Nations Declaration on the Rights of Indigenous Peoples was adopted by the General Assembly resolution 61/295, dated 13 September 2007. Available at: https://www.un.org/ru/documents/decl_conv/declarations/indigenous_rights.shtml (accessed: May 31, 2021).

[5] "On validation the regulation on the procedure for compensation for losses caused to the indigenous peoples of the Russian Federation, associations of indigenous peoples of the Russian Federation and persons belonging to the indigenous peoples of the Russian Federation, as a result of damage to the original habitat of indigenous small-numbered peoples of the Russian Federation by the economic activities of organizations of all forms of ownership, as well as by natural persons": Government Decree no. 1488, dated September 18, 2020. Available at: https://www.garant.ru/products/ipo/prime/doc/74563696/ (accessed: May 31, 2021).

Theoretical aspects of the research

Sociologists, politicians, psychologists, medical workers, educators, etc., use personality portraits of various categories of citizens quite extensively in their work. Obviously, without certain characteristics of certain groups of people it is difficult to understand the patterns in their behavior, to predict it in the future for different situations and, accordingly, to develop a strategy for its management. This substantiates the relevance of compiling social portraits for science and practice.

The theoretical basis of compiling social portraits is the concept of social action developed by the German sociologist M. Weber [16]. In his modern theory of social stratification, the key criterion for social definition of a person is not class affiliation, but position in economic space which influences life chances. The status positions of individuals allow grouping them into sets [17], each of which has its own lifestyle, privileges, etc.

In recent years, researchers, related to the studying the integral aspect of the social portrait of the population based on the assessment of the social attitudes index, have been actively developing [18]. In this case, the social portrait is understood as an integrated description of the social essence of an object (a social group), including the characteristics of all its components, as well as social processes and relations associated with it. As a rule, the main social and demographic features of the object, sociocultural, economic and political attitudes, values and preferences are taken into account here. At the same time, imbalances in such socio-demographic indicators can become a cause of economic and environmental disadvantage. Modern challenges to the environment and changes in behavior culture also act as an important dominant in studying the social portrait of the population [19].

It is necessary to take into account that a certain social group is characterized by intra-group economic, ecological and social standards, which are expressed, for example, in material well-being, the possibility of living in a favorable environment, etc. At the same time, the social portrait of the population does not adequately reflect the issues of the preservation of ethnic groups, traditional culture and everyday life, economic activities of indigenous peoples [20]. The ethnological approach is not fully used in management practice, which complicates, in particular, the implementation of strategic decisions in the Arctic [21].

One of the indicators of the social portrait of society is the population's attitude to life. It reflects the social well-being of citizens and assesses their position related to various changes. This attitude can be expressed in social consolidation – the process of uniting people into groups to address certain issues. The presence of conflicts of interest in the interaction of stakeholders, such as businesses and indigenous peoples, can act as one of the elements of the social portrait of the population, making it possible to identify a certain Arctic vector of social and environmental preferences.

Economic sociology employs a variety of approaches to the study of the social portrait of the population and individual social groups. For example, the Public Opinion Foundation (FOM) used the following criteria in compiling a social portrait of young people ("Generation Y"): life satisfaction, financial situation and income structure, job availability, expectations about the economic development of Russia, loyalty to the authorities, political attitudes, and protest attitudes[6].

Sociological Institute of the RAS uses a comparative intergenerational approach to study characteristics of Russian youth, on the basis of which they identify their specific qualities and values. The main criteria for compiling such a social portrait are life goals and plans, human and social capital, intergenerational mobility, social activity,

[6] "Generation Y": a social portrait of modern youth aged 18-25 according to recent data complied by the Public Opinion Foundation. Available at: https://bd.fom.ru/report/cat/home_family/molodezh/press_r140410np (accessed: May 31, 2021).

moral and ethical values, leisure time, and personal and family life[7]. Some studies analyze family status, standard of living, work and employment, choice of profession, social well-being, and value orientations as characteristics of the social portrait of young people [22].

Some researchers use an approach based on a comparative analysis of high-income and low-income groups of the population, which allows assessing their consumer attitudes and expectations, as well as highlighting trends that characterize employee behavior, labor mobility, employment and unemployment [23].

Turning to the question concerning the study of the social characteristics of Arctic residents, it is worth noting that indigenous peoples are most often the object of study in articles on medicine, tourism, culture, ensuring social adaptation, etc. The literature review of scientific studies demonstrates that the method of compiling social portraits is actively developing and applied in different situations: the circle of customers of social portraits is increasing year by year.

Over the previous quarter century, there has been a significant increase in the theoretical and applied aspects of sociology, which is reflected in the creation of social portraits in solving problems in various sciences and sectors of the national economy. However, insufficient attention has been paid to studying the social portrait of an Arctic resident, especially in the context of its industrial development. Considering that the population of the Arctic zone of the Russian Federation has centuries-old traditions, the social portrait of its inhabitant acquires special importance for the effective solution of various social, economic and ecological tasks in the northern territories of the country.

[7] Youth of the new Russia: value priorities. Available at: https://dogmon.org/molodeje-novoj-rossii-cennostnieprioriteti.html (accessed: May 31, 2021).

Research methods and methodology

The theoretical basis of the research is the concept of benefit sharing by the interested parties (business, authorities, local population) in the industrial development of the Arctic [24]. The study is based on the results of sociological surveys of the population of the Arctic regions of the Russian Federation, where the projects of industrial development of the territory are implemented.

It is especially important when describing the social portrait of this category to identify the respondents' goals and attitudes toward natural resource extraction projects located in the Arctic, as well as to raise the concerns of the local population. A separate side of the analysis is the category of traditional trades, as it is this type of activity that serves as a source of income, food, and cultural tradition for the residents of the Arctic region. Due to industrial development and, consequently, changes in the environmental situation, people's attitude toward traditional activities is gradually changing.

Surveys of the local population were conducted in 2017–2020 as part of the ethnological examination of projects in the Arctic zone of the Russian Federation, particularly in the Republic of Sakha (Yakutia), as well as in the Taimyrsky Dolgano-Nenetsky municipal district of Krasnoyarsk Krai. The total sample of the study was 859 people. We used a cluster survey, where settlements, located in the area of industrial development projects in the Arctic, were used as clusters. The sample included all legally capable citizens over the age of 18 at the time of the survey, who were present at specially organized meetings with representatives of the scientific expedition. We used a face-to-face questionnaire survey as the research method in which respondents read the questions independently and choose their answer options. If a participant of the survey had difficulties filling out the questionnaire independently (for instance,

Table 1. Sociological research in the framework of the ethnological expertise of projects, 2017–2020

Project, place of implementation, company, year of the survey	Settlement	Number of respondents, people.
Placer gold mining, Suor-Uyalaakh stream, Ust-Yansky ulus, Yakutia, "ADK" LLC, 2017	Ust-Yansk	51
	Ust-Kuyga	40
	Kazachye	18
	Khayyr	20
Geological study of the placer diamond deposit, Polovinnaya River, Anabar National (Dolgano-Evenki) ulus (district), Yakutia, "Arctic Capital" LLC, 2017	Yuryung-Khaya	29
	Saskylakh	101
Placer gold mining, Mokrundya stream, Srednekolymsky district, Yakutia, "ADK" LLC, 2018	Srednekolymsk	101
	Svatay	65
Exploration and mining of placer gold, Artyk river, Momsky district, Yakutia, "Vostok" LLC, 2019	Sasyr	50
	Ust-Nera	62
	Artyk	22
Mining of placer diamonds at the Uchakh-Ytyrbat deposit, Oleneksky Evenki National District, on the Ochous River, Lyaseger-Yuryakh, Anabar National (Dolgan-Evenki) ulus (district), Yakutia, JSC "Anabara Diamonds", 2020	Olenyok	114
	Kharyyalakh	16
Assessment of the consequences of an emergency oil spill at CHP-3, Norilsk, Taimyr Dolgan-Nenets Municipal District, Krasnoyarsk Krai, Arctic Development Project Office, 2020	Dudinka, Norilsk, tribal communities in the Avam tundra	170
Total:		859

correct translation), the questionnaire was filled out together with a representative of the scientific expedition.

The localities included in the study sample are presented in *Table 1*.

The study sample included both women (48% of respondents) and men (52%).

While conducting sociological surveys we have solved a number of tasks. The first of them is related to identifying the attitudes of local residents to socio-economic and ecological problems and developing recommendations for improving the quality of life in the community. The second task is aimed at identifying the most promising areas of the district which it is advisable to develop with the support of the mining company. The third task of the study is to find the relationship between socio-demographic indicators of the population and the perception of socio-economic and ecological problems of the territories where mining will be carried out. The fourth task is related to identifying the attitude of local residents to the economic activities of an extractive company in the territory of traditional residence. The fifth task is aimed at determining possible formats of compensation for indigenous peoples in case of economic activities on the territory of their residence for the extraction of mineral resources. The last task is to research the needs of local residents which should be taken into account by extractive companies when exploring and extracting minerals.

In addition, sociological surveys assessed the level of awareness of local residents about the activities of subsoil user companies in the area of residence.

Results of the research

Studying and compiling a social portrait of local residents of the Arctic regions is important in the justification and implementation of investment projects for the territories' industrial development. The portrait reveals the behavioral intentions and social attitudes of local residents which must be taken into account when developing recommendations for building effective communication between local residents, company representatives, and the authorities.

Table 2. Socio-demographic characteristics of respondents who participated in the survey

Characteristic	Number of respondents, people (859 people in total)	Percentage of the total number of respondents, %
Distribution by locality		
Distribution by gender		
Men	451	52.5
Women	408	47.5
Distribution by marital status		
Married	552	64.3
Not married	174	20.3
Divorced	62	7.2
Widower/widow	71	8.2
Distribution by number of children		
No children	134	15.6
1 child	158	18.4
2 children	336	39.1
3 or more children	231	26.9
Distribution by age		
18–30 y.o.	215	25.0
31–40 y.o.	268	31.2
41–50 y.o.	169	19.7
51–55 y.o.	58	6.8
56–60 y.o.	61	7.1
Over 61 y.o.	88	10.2
Distribution by type of activity		
Employed	545	63.4
Unemployed	41	4.8
Temporarily unemployed	73	8.5
Retiree	95	11.0
Housewife	29	3.4
Student	41	4.8
Other	35	4.1
Distribution by field of activity		
Public sector employee	62	37.8
Employee of an extractive company	78	7.2
Individual entrepreneur	76	9.1
Hired worker	46	8.8
Hunter	74	5.4
Reindeer herder	75	8.6
Fisherman	123	8.7
Other	62	14.4
Distribution by source of income		
Salary at the main job	502	58.4
Income from traditional economic activities	128	15.0
Pension, benefits	109	12.7
Additional earnings (provision of temporary services)	87	10.1
Other	33	3.8
Distribution by income*		
up to 10,000 rub.	62	9.0
10 000–20 000 rub.	121	17.6
20,000–30,000 rub.	158	22.9
30,000–40,000 rub.	163	23.7
above 40,000 rub.	185	26.9
* The data on income are presented without taking into account the respondents of Norilsk, as no income survey was conducted in this locality.		

To compile a social portrait of the population in conditions of industrial development of the territory, the article proposes to use the following information.

A. Socio-demographic characteristics of indigenous Arctic residents are: age and gender of respondents, nationality, marital status, number of children, level of earnings, types of employment.

Traditionally, the Arctic regions have been inhabited by small indigenous peoples with a certain legal status. When describing the social portrait of an Arctic resident, it is important to understand how its population identifies itself. The results of the survey have showed that the majority of respondents identify themselves as representatives of small indigenous peoples: Evenks, Evens, Yukaghirs, Dolgans *(Tab. 2)*.

It is also worth noting that certain groups of respondents specifically indicated that they are residents of the North, while they did not name their nationality, but often attributed: "Born and raised in the North". This fact is largely explained by the desire of this group of people to receive benefits on an equal basis with indigenous small-numbered peoples. The respondents deliberately called themselves as "residents of the North", thereby showing their involvement in this territory and their own importance as a local resident.

The economic problems that concern the surveyed residents are presented in *Figure 1*.

In the first place in importance among them is the problem of high food prices, in the second place is the lack of jobs and low income. We should note that the distribution of respondents' answers regarding the problems is quite even. The geographical location of the uluses where the local population lives and the low level of medical services, as well as the gender and age of the respondents do not critically influence the distribution of answers.

It is worth noting that the indigenous peoples of the Russian Arctic are among the low-income groups of the population, while making a profit from economic activities is not their main goal [25; 26]. The modern model of traditional nature management in these territories is based on commodity exchange and the practice of sharing which is quite in line with the ancestral traditions of benefit sharing and social justice [27].

The most significant social problems *(Fig. 2)* include the outflow of young people, the lack of organized forms of leisure, the loss of people's connection with their culture and traditions.

The significance of the problem related to the outflow of young people is also confirmed by the analysis of the qualitative characteristics that the respondents left in the questionnaire according to their desire. Thus, for the sake of young people, the older generation is ready to change its ways

Figure 1. Key economic problems of concern to residents of the Arctic, %

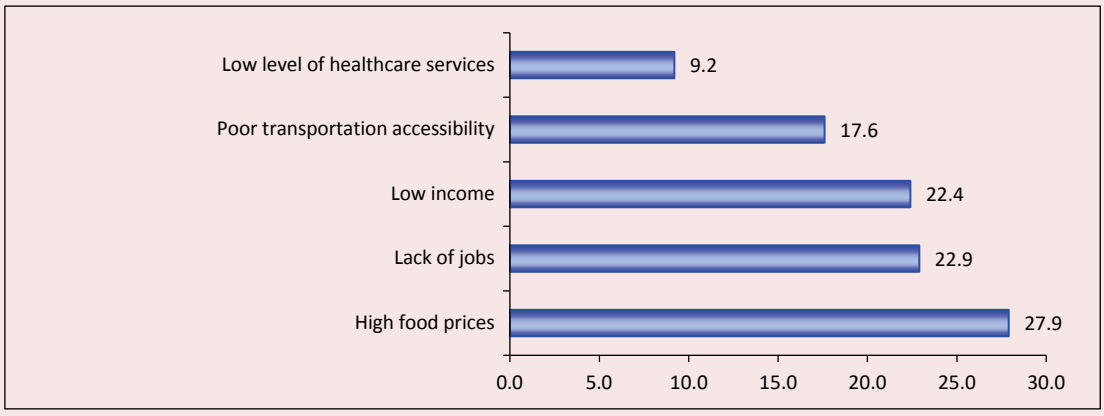
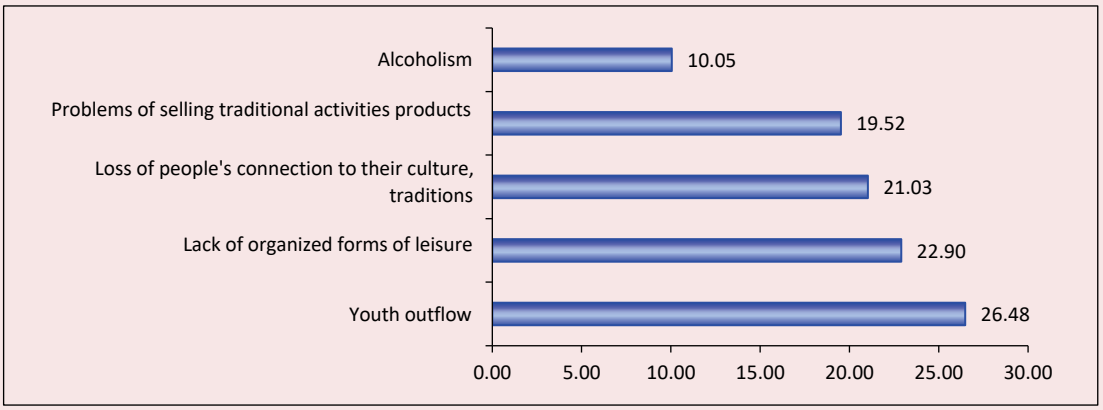


Figure 2. Social problems of concern to the surveyed residents, %



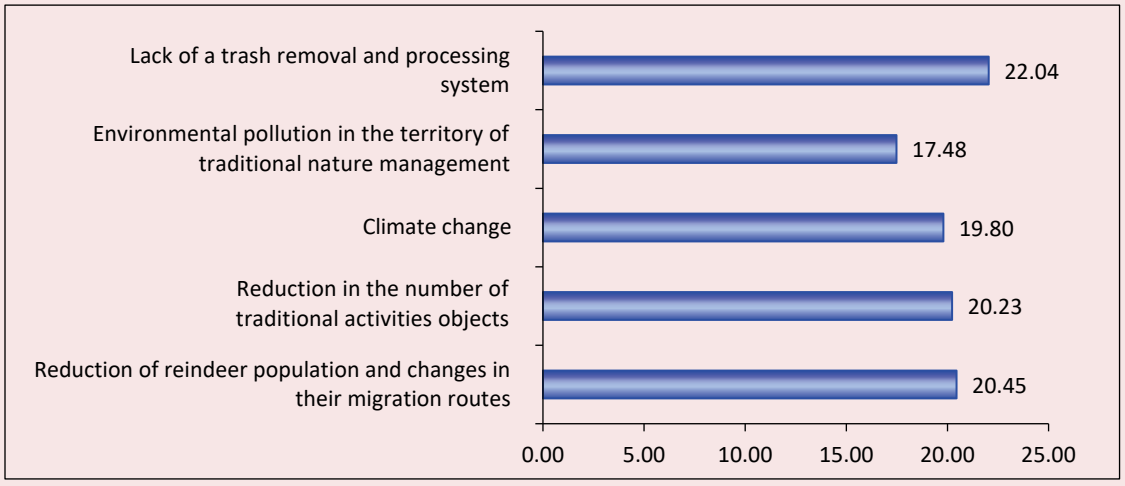
of life which is largely explained by the presence of the desire to leave their land to the younger generation, to continue and develop traditional nature management.

The residents of the Arctic regions surveyed take the assessment of the environmental situation seriously *(Fig. 3)*.

The strong connection of indigenous people with the territory where they live enables them to respond flexibly and in a timely manner to the ongoing ecological and, in particular, climate changes. The vast majority of survey participants understand the ecological problems they face and which of them are associated with the industrial development of the Arctic zone territories of the Russian Federation. Industrial development of territories often has a devastating effect on local ecosystems, which, in turn, contributes to the disappearance of indigenous cultures and sustainable livelihoods, including food resources.

Almost all of the local residents interviewed are objectively aware of the negative impact of the economic activities of resource extraction companies on the environment and the conditions

Figure 3. Environmental problems of concern to the surveyed residents, %



of traditional nature management. The answers of the respondents on the presented environmental problems are distributed fairly evenly. The most urgent problems are the lack of a system for removing and processing waste, a decrease in the number of reindeer and changes in their migration routes, and a reduction in the number of traditional activities.

Another issue of concern to residents is the waste generated by extraction of minerals, as well as disturbed lands, and quarries. Due to their close relationship with land, water, and food resources, indigenous peoples are a particularly vulnerable category of the population during the extraction of minerals. Due to the actions of subsoil user companies the local population does not have access to a number of territories; soil, water, and atmosphere are polluted by the co-products formed during extraction of resources. It is important that such environmental impacts do not become a cause of conflict between the industry, the state and the local population.

We should note that indigenous peoples of the Arctic are the most affected by climate change which also changes the temperature and ice regimes. As a result, access to traditional hunting and fishing grounds is decreasing, which is damaging to cultural practices and, consequently, to the social cohesion of indigenous peoples. Similar studies have been conducted by the Intergovernmental Panel on Climate Change and foreign scientists [28; 29; 30], who indicate that climate policies will not succeed unless the current relationship between the state and indigenous peoples is restructured and transformed.

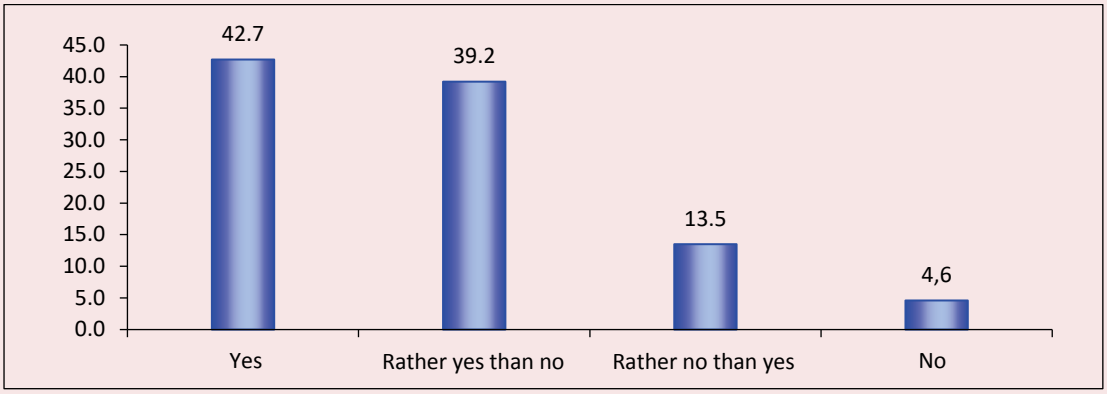
B. The attitude of local residents to traditional activities.

The close connection with the territory of residence remains a constant feature in the identification of indigenous peoples. The traditions of the local population have always been a source of pride for them. The indigenous population of the Arctic has developed such traditional trades as reindeer herding, fishing, and hunting. Another activity mentioned by respondents during the survey was the collection of mammoth tusks (paleontological remains) which are then used as fabricating material. Mammoth bone is in demand in Russian and foreign bone-carving workshops, non-traditional medicine, so Arctic residents collect it in order to earn money. Many of the respondents pointed out that this work is hard, associated with a risk to life and does not bring a stable income, but the income of respondents in this employment type is significantly higher than in the traditional crafts.

Attitudes toward traditional activities and their assessment by the local population are very different and contradictory. The perception of the value of traditional crafts is influenced by the area of residence. For instance, in some settlements, traditional crafts are a source of food resources and do not bring additional income, while in others, on the contrary, they are considered to be the main source of income.

Residents of the rural locality of Sasyr in the Momsky District of Yakutia note that traditional activities are extremely important to them. Only 14% of the survey participants from this locality indicated that they do not engage in traditional activities either for the purpose of making money or for subsistence. The residents of Srednekolymsk District (Srednekolymsk, Svatay) perceive traditional activities as an extremely unprofitable occupation. Some respondents explain this by the lack of opportunities to sell the products of traditional activities. It is worth noting that the standard of living of this group of respondents is much lower than that of the others, so they are forced to find new ways to generate income. The vast majority of the population of Olenek rural settlement. Olenek and Kharyyalakh villages. Kharyyalakh of the Olenek District of Yakutia treat traditional activities as a source of food.

Figure 4. Readiness to support projects of industrial development of the Arctic, %



C. The attitude of local residents to the industrial development of the territory.

Industrial development projects in the Arctic remain an extremely important topic for the local population. Its vast majority understands that they live in an area rich in resources. In a survey of local residents, up to 70% of respondents in some areas chose such statements. In general, the local population has a positive attitude toward industrial development projects in the Arctic *(Fig. 4)*.

The answers were distributed as follows: 39.2% of the respondents express doubt in supporting the activities of the subsoil user company, i.e. they choose the answer "rather yes than no" to the question posed; 13.5% – "rather no than yes". These survey participants are in the risk zone, as their actual behavior may differ from the attitudes at the time of the survey. In addition, men are more likely to support projects for the industrial development of Arctic territories than women.

The vast majority of respondents understand that industrial development projects in the Arctic are harmful to the environment, but at the same time, this position does not affect the attitudes associated with supporting the activities of companies for the industrial development of these territories. About half of the respondents perceive resource extraction projects as an opportunity to get a job in their native places and improve the quality of life in the area where they live.

Among the problems in terms of industrial development of territories, the survey participants named the lack of information about the projects being implemented, the lack of well-established communication between the local population and representatives of subsoil user companies. The need for closer communication with company representatives and their obligatory assistance in the socio-economic development of the Arctic territories was noted.

The type of activity of the respondent does not affect the decision to support the activities of industrial development of the territory. Respondents engaged in traditional trades are characterized by the attitude that they are owners of minerals. This explains their reluctance to support industrial development projects in the Arctic.

According to local residents, industrial development projects should aim to allocate fair compensation from the intended activities. The definition of compensation depends on the specific area. Most respondents wish to receive a monthly monetary payment, as well as to have financial support for the socio-economic development of the ulus and settlements in the zone of influence of the project.

Conclusions and discussion

Taking into account the analyzed data we can say that a typical resident of the Arctic has the following socio-demographic characteristics: age from 18 to 40 years old, lives in a large family, estimates his marital status as married, has two children. The education level of the Arctic regions residents is fairly evenly distributed across three main categories: secondary general, secondary special and higher education. For the most part, the typical representative of the Arctic works in the budgetary sphere on a full-time basis, the earnings from the main place of work being his or her main income. The level of earnings strongly depends on the area of residence, but there is a general trend – the level of respondents' income is more than 40 thousand rubles, and it does not always consist of wages only. The survey participants note that their total income includes additional income from traditional activities, temporary services, as well as benefits and pensions.

The local population is actively engaged in traditional activities, they are especially popular among men aged 30 to 50 years. Women very rarely note that they are engaged in traditional activities. Among the younger generation, traditional activities are not particularly popular. On average, the income of the local population from them ranges from 20 to 30 thousand rubles, which is lower than the income from other types of activities. Especially interesting is the fact that respondents engaged in traditional activities often consider themselves unemployed, therefore, ready for other types of activities, willing to be employed. Many people note that traditional activities are additional employment that does not bring income. The vast majority of rural residents also perceive traditional activities as a source of food resources.

On the whole, when characterizing the occupation of traditional activities, it is important to note that the share of the population, engaged in this type of activity, tends to decrease. This situation is of concern to the local population: some respondents say that the industrial development of the Arctic territory should help sell the products of traditional activities, as well as preserve the traditional culture of indigenous peoples.

The local population of the Arctic is very wary of anything new and has a hard time accepting newcomers. Nevertheless, the respondents open up to the interviewer, talk about their problems, and leave additional comments. From the answers of the respondents it can be understood that, on the one hand, they are waiting for people to come, on the other hand, they are afraid of them. Local residents understand that industrial development projects in the Arctic affect the environment and can harm traditional activities, but at the same time provide an opportunity for socio-economic development of the territories.

The most acute problem for residents of the Arctic regions is related to the outflow of young people. It is its awareness that makes the local population adjust its views for the sake of maintaining a connection with the younger generation. The typical resident of the Arctic is concerned about the following problems: high food prices, lack of jobs, low income, among environmental problems – reduction of the reindeer population and changes in their migration routes, reduction of traditional activities, climate change. It is worth noting that these problems are highlighted by all respondents, regardless of their socio-demographic characteristics.

It should be understood that indigenous peoples are not passive observers in the development of Arctic territories. Indigenous leaders seek to engage in dialogue between government and industry in order to reach agreements that are beneficial to their community[8].

[8] The leaders of indigenous peoples and the leadership of the regions make proposals on additional measures to support small indigenous peoples. Available at: https://news.myseldon.com/ru/news/index/232400824 (accessed: May 31, 2021).

The relationship between subsoil user companies and local communities is crucial, especially during the formative stages of a project's investment idea. Indigenous peoples without industrial development often face serious vulnerabilities associated with the globalization of development. Large-scale industrial projects inevitably have an impact on local people and the environment. Climate change, loss of biodiversity, and the loss of biodiversity force local peoples to adapt to the transforming conditions of their livelihoods in a variety of ways [31]. Arctic natives possess various types of traditional ecological knowledge, which helps them understand and predict environmental changes.

Worldwide, active measures to protect the rights of indigenous minorities are welcomed. Decisions on the industrial development of the Arctic must be based more on the opinion of indigenous peoples, who must be involved in the evaluation and various discussions on resource extraction projects.

It is also advisable to conclude agreements between indigenous peoples and industrial companies, and to monitor the fulfillment of socio-economic and environmental indicators in the future. It is important that the local residents during the industrial development of the Arctic get new opportunities for labor and educational activities. Taking into account the characteristics of an Arctic resident, obtained in the course of the study, subsoil user enterprises and state structures can avoid claims, conflicts and harmonize interaction when promoting economic interests.

Thus, our study develops the theoretical provisions of economic sociology concerning the economic behavior of the population in the conditions of industrial development of the Arctic. We have developed theoretical approaches to the formation of a social portrait of the Arctic residents on the basis of sociological surveys. The work has established that the peculiarity of the Arctic residents is their economic behavior based on a pragmatic approach and the receipt of benefits. Also, a resident of the Arctic is focused on the preservation of the habitat of the North peoples and the development of traditional activities.

The developed theoretical approaches to the formation of the social portrait of the Arctic residents can be used by state authorities in the implementation of strategies for socio-economic development of the Arctic, justification and implementation of investment projects for the industrial development of the territory.

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Actors of Rural Autonomous Household: Meanings and Results

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Abstract. The article examines the main areas of life of self-employed in agriculture from the position of the meanings of life, defined as the goals – principles of life activity. The self-employed include those heads of households who, having passed the initial adjustment and relying on their human potential, use the reserves of new household forms in the local environment, having partially or completely terminated their labor relations with an agricultural enterprise. They have no farm land, they do not have the status of farmers, nevertheless they live and operate according to similar technology. In terms of material wellbeing they surpass their fellow villagers, who are limited to work in an agricultural enterprise. In the context of free employment choice, these actors adhere to certain attitudes and guidelines, conforming (with varying degrees of completeness) to the norms and requirements of the institutions surrounding them. We have described the problems that arise in families whose lifestyle is determined by the objects of their household – plant and animal life. On the basis of our research we have defined the contours of the self-employment actors' creativity and the opportunity limitations of implementing the meanings

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of household, which is explained by the violation of conjugations in interaction with large agricultural entities, destruction of connections and relations in the production and sale of products. We have found that depending on the changes in a family life, with the transformation of such indicators as age, health, achievement of ultimate goals (for example, the completion of children's education in universities or, on the contrary, their return to the village), the head and family members constantly cross the formal and essential boundaries of the pre-established status, the scale of activity and, in general, the space mastered and not mastered by them. The study of the social experience of autonomous family household contributes to a deeper comprehensive understanding of the deployment of modernization in the village in the context of the conjunction of innovative and traditional trends.

Key words: village, farming, family household, self-employment, meanings, lifeworld, agricultural enterprises, prestige, status, socio-cultural practices, indicators of success.

Introduction

The village (rural "world") is traditionally endowed with significant functions of general and specific meanings in relation to society. Among the general functions, we should mention the reproduction of the population, not only the agrarian one, and the preservation of traditional culture elements. A specific function is the production of basic types of agricultural products at a level enough for the self-sufficiency of the country. They are the basis of the historical viability of Russian society. In this regard, we can agree with the opinion of our colleagues that the components of the viability of the modern domestic village are depleted, deformed, and they cease to play an essential role in the composition of the subjectivity of rural society as an independent organizing force of Russian society [1].

The reasons for the erosion of the meanings of the rural world's life are in several planes. It is impossible not to consider the fact that the world has entered a period of dynamics of accelerated changes in all areas of life: economy, politics, scientific and natural field, and culture. Its main feature is the uncertainty of the present and the future that appeared due to the globalization processes [2; 3], and it is accompanied by crisis phenomena in rural society in different countries.

Many western researchers no longer associate the prospects for the life of people in rural areas with mostly agricultural employment, and they make the preservation of human potential dependent on the placement of employment objects outside cities that are not related to agriculture [4; 5]. Discussing the combination of innovative and traditional meanings of agricultural production actors, several foreign authors believe that it is necessary to rely on internal human, cultural, and natural resources to optimize this process [6]. Other researchers insist on the expediency of combining endogenous and exogenous impacts: foreign trade and investment, government aid [7].

In Russia, recent transformations of agriculture, initiated by the state and based on the philosophy of liberalism, have dramatically changed socio-economic positions of rural residents of economically active age. It was accompanied by a transition to precarious forms of employment [8] and self-employment, implemented in various formats. This makes it difficult to determine the boundaries of various social groups in rural areas, and therefore we share the position of O.I. Shkaratan and G.P. Yastrebov who call for distinguishing social groups not on the basis of formal nominal characteristics but

based on real elements of the social structure that allows identifying the basis of "homogeneous social groups consisting of people with more or less similar characteristics" [9].

During the ongoing agricultural reforms, people, working in rural areas, have become either ordinary shareholders in an OOO, or employees who do not decide anything in the choice of technologies. distribution of income, or management. The main people, involved in the management, were the heads of agricultural holdings, large farmers, agribusiness, and not the working collective. In the Market order in the AIC (Agro-Industrial Complex), nearly all intangible resources of labor collective cohesion have been taken out of the framework. Due to the limitations of the conceptualization of the agrarian reform, various "traps" have arisen that have activated the reanimation of family farming (PSP – Personal Subsidiary Plot) as a self-adjusting survival mechanism. There was a group of rural families focused on the PSP, their own farmstead. Its share in different regions is 10% of the members of rural communities [10, p. 172–173].

At the same time, the hopes for farming becoming the main resource of agricultural production were not justified [11]. Moreover, a new stage of de-farming at the beginning of the 21st century, which took place according to neoliberal ideological patterns, led to a significant increase in the number of multi-land farms. According to the researchers, "it is related to the corrupt nature of the implementation of the "AIC Priority National Project", for the implementation of which several hundred billion rubles were spent" [12, p. 32]. As a result, the private capitalization of certain groups happened – ones close to the authorities, bureaucrats, and intermediaries.

Under these conditions, the reaction to these processes of rural residents of economically active age appears in several areas. One of them is the pendulum labor migration to enterprises in cities and suburbs; the other area is implemented in remote objects (capitals, the Far North, Eastern and Western Siberia), where rural men go for a long time. The third area is employment at your farmstead and, in case of a vacancy at a local enterprise, its combination with work in it and family household. We plan to analyze it in the article, the purpose of which is to consider the specifics of the organization of work and life of self-employed people in rural areas in the context of changing economic conditions.

The object of study in this case is the actors of self-employment, understood as individuals (families) who independently provide a fairly high income almost entirely due to the resources received, at least in comparison with an average wage worker of the AIC in corporate-equity structure organizations or with a large farmer. In other words, we exclude the official name "self-employed", which is widely used in modern literature [13] and introduced for several urban workers for purely fiscal purposes.

To determine the image of the studied group in the socio-structural context, it is necessary to distinguish it from other groups that manage independently. Commodity-type family management actors are the most similar to small farmers, who perform almost the same list of works in their daily lives as the owners of the PSP, just on a larger scale. It is more difficult to separate them from the self-employed, whose status was manifested by the state in 2018. The adopted Federal Law on self-employment[1] raised many questions among the owners of rural farmsteads. The fact is that all the channels used by a rural family to generate income,

[1] On holding an experiment on the establishment of a special tax regime "Professional income tax" in the federal city of Moscow, in the Moscow and Kaluga oblasts, as well as in the Republic of Tatarstan (Tatarstan): Federal Law no. 422-FZ, dated November 27, 2018. Available at: http://pravo/gov.ru/search/index.html (accessed: November 11, 2018).

in addition to working in agricultural organizations, are unstable and unreliable. By beekeeping, collecting wild plants, or raising cattle of meat breeds for sale, no one can be sure that each reproductive cycle (of a year, season, or month) will be identical to the previous one. But the strongest argument against classifying actors of agricultural family management as self-employed is as follows: self-employed are individuals who perform work or provide services using their skills and abilities because of a direct contract with a customer.

Thus, the actors of independent economic management in rural areas act outside the contract with a customer. They are formally and literally different due to the independence and autonomy of their status from those whom the state has introduced into this status to fill the budget through taxation. Self-managing rural families are different from the urban self-employed people in terms of their close involvement in the social environment, collectives, and communities. Their independence is manifested in the processes of exchanging benefits with external counterparties. If in the collective farm reality, an owner of a private farm could buy ("write out") the product he needed only in his collective farm, now he can choose it among many sellers.

Considering aforementioned things, we believe that autonomy is a concept that covers the semantic specifics of the actors of agrarian self-employment, and it should be present as a key term in the name of the group – these are the actors of the autonomous group of family economic management.

Research methods

During the study (2018–2020), depending on the tasks set, different methods were used, including interviewing, observation, questionnaire survey, as well as expert interview, the results of which were used to verify the reliability of information obtained using other methods, in order to clarify the bases of classification and typologies.

The identification of the meanings and results of activity as the key concepts of research determines the methodology for constructing a sample, obtaining, and using indicators. Although the group that successfully manages its household is small and must be approached as a target, it is located within rural communities, and only a comparison with the rest allows us to assess its real success. It leads to the first condition: the tools for obtaining information (at least at the initial stage) should be of the same type, standard for both groups. Another methodological task was to find a certain optimum in the ratio of the measurement of objective and subjective prerequisites for graduation within a group of successful actors. At the first (initial) stage of the study, the emphasis is placed on material prerequisites for success that were assessed by experts as decisive. At the same time, we were interested in the way of life and its meaning among similar groups according to independent family farming, which allows us to include in the sample a small-land (landless) farmer and a head of a good commodity family household.

A varying sign of the distribution of family households into successful and ordinary ones was the presence of more than three cows or 10 sheep/goats, four or more pigs or 20 rabbits, a land plot of more than 30 acres or more than 15 behind the village in a family farm.

In the future, it would be useful for analysis to have a map of the condensation or sparsity of a selected group of successful ones by region zones. However, in our study, such a task was not set: first it was necessary to identify the main signs that characterize the specifics of economic self-employment. To solve this problem, it is enough to survey the target group and its fellow villagers in the rural communities of specific villages. The territorial aspect is considered only in the proximity/remoteness of the survey sites from urban

settlements, which are widely used as one of the channels for earning vital resources.

Considering it, 97 villages in the Saratov Oblast and the Republic of Tatarstan were selected for the survey. The sample is quota-nesting, representative of the gender and age structure of residents (from 18 to 70 years old) of medium and large villages; taking into account the area of residence and distance from the regional center – the near, middle, and far periphery. The research group communicated with 367 respondents from the Saratov Oblast (190 heads of households from 52 villages located in 21 districts) and Tatarstan (112 households from 45 villages located in 9 districts).

To identify the role of the factor of territorial proximity of a village to a city, 42 people from 33 villages located in four districts of the Moscow region and 23 people in the Omsk Oblast were interviewed.

The first stage of the study, which ended with the processing of the entire array of respondents, showed significant differences between actors who successfully manage independently and those who are more focused on employment in organizations of formal AIC structures.

At the second stage, 20 heads of family households from each region were selected among the respondents for in-depth interviewing (Moscow, Omsk, and Saratov oblasts).

Transformation of the agricultural sector as a factor of labor precarization

Currently, about 5,075 thousand people work in the AIC system, which includes agriculture, forestry, and hunting[2]. At the same time, there is a certain gap between the need for employment and the supply of places of employment.

In the process of post-Soviet transformations in the AIC system, the following groups of agricultural actors can be distinguished:

– farmers of different scales (large, medium, small), the most active part of the rural agrarian society;

– successful owners of rural households, who are not different from small farmers in terms of social status and scale of management;

– ordinary shareholders and employees of collective-equity structures, performers of technological processes, strictly limited in the manifestation of initiatives;

– unsettled groups that are outside of labor collectives and do not have a stable channel for obtaining survival resources;

– old-age pensioners who receive financial resources from the state in an amount close to the minimum wage, which is sufficient for a normal life by standards of rural communities;

– the group of the greatest deprivation is rural youth, whose integration into the rural environment (primarily production) today and in the future has no objective prerequisites.

With a high level of unemployment in rural areas, a significant share of residents are not inclined to look for work. The reason for this is not just the limited labor market in the agricultural sector, but also real practices that have developed in corporate organizations: primarily the absence of a relationship between the quantity and quality of labor and its payment [14].

According to a survey in 71 villages of all federal districts in 2015, ordinary workers of agricultural organizations received an average monthly income of 11,750 rubles per family member [15]. However, an increase in the profit of owners often does not affect salaries of ordinary workers, which, as a rule, are tied to the minimum wage. Such low incomes and the lack of prospects for fair wages are important factors in deciding to run an independent farm.

According to the agricultural censuses of 2006 and 2016, the number of private subsidiary farms has significantly decreased over 10 years. However,

[2] The average annual number of employees by type of economic activity in 2017. *Russian Statistical Yearbook. 2018: Stat. Coll.* Rosstat. Moscow, 2018. P. 113.

the reduction of their number was followed by the concentration of agricultural production in the largest PSPs[3], which demonstrates an increase in the total number of livestock by more than 2.3 times. We can say that such developing large personal farms essentially become commodity mini farms, although they are different in institutionalization models.

In the early 2000s, integrated entities, agricultural holdings with creative and destructive potential, became popular in Russia. In favor of their positive role, there are more large-scale opportunities for spreading the achievements of scientific and technological progress in the agri-food system. At the same time, agricultural holdings, using imperfect land legislation, took possession of the best lands in agricultural regions (southern regions, the Volga region, the Urals, Western Siberia). In 2016, 62.3% of traditional farms (OOO, PSP, farmers) did not own land at all, while agricultural holdings and landowners owned 2.4 million hectares (13.6%) of farmland; they accounted for 25% of total revenue. Agricultural holdings, after pushing aside traditional farms, concentrated 68% of all grain production, 51% of cattle meat, 60% of pig meat, and 64.3% of poultry meat [16].

However, we should agree with our colleagues that the structural changes in the agricultural sector, which ensured the growth of production, had a number of negative consequences: reduction of agricultural employment, accelerated reduction of the rural population; deterioration of competition conditions for agricultural producers who are not part of agricultural holdings, etc. [17].

Successful family farms, in fact, being mini farmers, could form the social base of the layer of rural entrepreneurs, farmers. Although the process of transition to the group of farmers is rather slow, it is impossible not to consider these trends [18, p. 15]. In this context, we overview successful family farms with experience in commodity production and effective sales of products as a small but real resource for reproducing existing patterns and economic practices in the agricultural sector.

Financial well-being as the meaning of the life of autonomous economic actors

The life of the villagers begins with the conditions in which they live and work, and it reflects the processes and results of interactions in the social community, their place of residence. The meaning is related to the desire of subjects to comprehend the world, relying on life-practical attitudes and orientations [19]. Understanding the meaning of life as a set of goals-principles that form the strategic core of attitudes and embody the core of people's consciousness and behavior [20, p. 19], we did not limit the methodology for studying the phenomenon of life meanings to identifying respondents' subjective assessments but included objective prerequisites in the analysis. Thus, the assessment of the subject environment of economic activity simultaneously serves as an indicator of the meaning and result of active life activity.

Indicators of the meanings and results of ensuring a good material level are the accumulated production potential, the purchase of household items, cultural goods, cars, deposits in banks, etc. Assessing their material capabilities, the respondents considered that due to autonomous management, they can build a house (29.2%), purchase a car (27.5%), a tractor and a truck (13.8 and 10%), they can put aside approximately 100–150 thousand rubles a year (38.5%). Apparently, such rather optimistic assessments of their well-being emerge from the respondents' practices. For various events involving financial expenses (weddings, sending off to the army, anniversaries, purchase of housing for children), half of the respondents used money

[3] *Results of the All-Russian Agricultural Census of 2016: In 8 Vol.* Rosstat. Moscow: IITS "Statistika Rossii", 2018. Vol. 1. Book 1. Pp. 276–314; Vol. 1. Book. 2. Pp. 16–23.

received only from family economic management, which amounted to 50 to 80% of the total cost of the event. 60.8% of respondents use bank loans.

Based on the volume of the integrated production potential, we identified five groups of respondents: ones with low, below average, average, above average, and high production potential. The calculation of the integral production potential was carried out as follows. First, based on expert assessments, we compiled a list of types of grounds, land, deposits in banks, equipment, animals that ensure the transition of farms to the status of successful ones; the number of species of equal income from them was determined. For instance, 3 cows are equal to 70 rabbits or 5 pigs. By having one type of animal, but not less, the actor falls into the group of successful ones, if it met the following criterion: to have 43 types of household resources necessary for successful economic management (5 types of household buildings, 15 types of mechanical and electrical units, 9 types of sales of grown agricultural products). Based on the answers in the questionnaire, a respondent got into a group through the procedure of assigning points. The relationship between the indicators in the nominal scale was checked on the basis of the X^2 criteria (the Pearson coefficient indicated the strength of the relationship between them at a 0.05significance level).

The success indicator in the toolkit assumed the respondents' answers regarding the use of the resources of local large agricultural producers, marketability, the fact of owning machinery and other production items, the presence of farm buildings, etc. The proposed list included 43 items. Based on expert assessments, the "successful" group included 131 farms out of 364 surveyed.

The possibility of accumulating funds is an important factor in achieving success and prospects for further development. 41.4% of respondents put aside money, and its amount varied from 10,000 to 300,000 rubles; half of rural families saved up to 60,000 rubles a year.

These funds were used to increase the production potential of the economy and home improvement items: a mobile phone (48.3%), from a fifth to a half of rural families bought books and textbooks (29.9%), building materials (28.7%), household appliances (26.4%), household furnishings (23%), cultural goods (21.8%).

An important indicator of success is the dynamics of the level of financial situation: successful owners, as a rule, plan to expand farms, while 41.4% of respondents indicated that their financial situation has improved over the past three years, the third part remained unchanged, 21.8% of rural families felt a decrease in material prosperity.

It is predictable that the production potential of PSP of successful farms is significantly higher *(Tab. 1)*.

Table 1. Distribution of successful and other households according to the values of the integral production potential of the economy, %

Integral indicator of the production potential of the PSP	Successful	Other
Low	13.0	39.1
Below average	20.6	3.2
Average	28.2	19.5
Above average	22.9	9.5
High	15.3	1.7

Interaction with local agricultural organizations plays an important role in ensuring the material level. Of course, in the post-reform period, relations have become more alienated in comparison with the collective farm reality, or rather, they are implemented according to strict norms of market relations.

Currently, the relationship of autonomous economic actors with corporate-equity organizations (OOO) is carried out at the level of market exchange of resources, or one of the family members works at an enterprise *(Tab. 2)*.

Table 2. Resources for ensuring the financial level of families

Resources / Household group	Plot near the house, acres	Plot behind the village, acres	Fruit trees, un.	Cows, heads	Calves, heads	Sheep, goats, heads	Pigs, heads	Piglets, heads	Rabbits, heads
Percentage of households of the specified group that have the corresponding resource									
All adults work in OOO	78.6	11.9	78.0	37.7	36.5	23.9	22.0	10.7	11.3
One adult working in a family household	94.7	26.3	90.5	67.4	60.0	46.3	38.9	27.4	13.7
Two adults working in a family household	82.6	19.6	82.6	58.7	56.5	39.1	26.1	21.7	8.7
With retired parents	89.8	14.3	83.7	51.0	49.0	44.9	30.6	14.3	16.3
Without retired parents	83.3	18.3	82.5	50.2	46.6	31.1	27.5	18.3	10.8
With student children	82.1	22.4	80.6	50.7	50.7	34.3	31.3	13.4	9.0
Without student children	85.0	16.3	83.3	50.2	45.9	33.0	27.0	18.9	12.4

The data in table 2 indicate that households with two adult children (one in five of the surveyed) are larger. In every fourth of the surveyed households, one or two family members are employed in local agricultural enterprises, which facilitates their access to the resources necessary for the management of private farms. However, employment at local agricultural enterprises practically does not correlate with success, since in this case there are fewer livestock on the farmstead.

The presence of student children is also a factor in the growth of family farms since it encourages a family to receive additional income to support children.

The family economy can compete with employment in other areas to ensure well-being if the selling of manufactured products is established. Unfortunately, long distances to marketplaces, the lack of personal cars, and poor roads limit the sale of products. Nevertheless, almost half of the families deliver food to the places of trade. The farmsteads of successful owners, as a rule, are commodity-oriented, focused on increasing quantitative indicators and on sales.

The social composition of family members and their education also play an important role in the success of economic management. Education in this case correlates with the presence of equipment (tractors and trucks) and animals on the farmstead. It is the farms where a head or family members have a higher education (34.4% in the sample) that are more likely to become marketable. Let us remind that it was in the initial years of the agrarian reform that specialists with higher and secondary specialized education made a choice in favor of independent economic management, which corresponded to the values of independence and rootedness in rural life. People with higher and secondary specialized education predominate in the groups of successful private entrepreneurs with above-average potential *(Tab. 3)*.

Respondents from different groups also evaluate the factors of successful household management in different ways *(Tab. 4)*.

A significant gap is revealed in the indicators "friendship with the right people", "good technical means", and "territorial availability of sales places", which confirms the fact that successful households are oriented toward sales and commodity relations.

Let us pay attention to the higher level of social optimism among successful owners: they, as a rule, have a higher level of life satisfaction. According to

Table 3. Distribution of PSP groups with different potential depending on the education of family members, %

PSP potential	Groups by level of education		
	general, below secondary	secondary vocational	higher
High	15.0	40.0	45.0
Above average	16.7	36.7	46.7
Average	21.6	37.8	40.5
Below average	22.2	63.0	14.8
Lowest	23.5	58.8	17.6

Table 4. Respondents' assessment of the household success factor on a 10-point scale

Success factor	Successful	Other
Fruitful year	4.31	3.66
Availability of assistants	3.89	3.25
Availability of a car	3.82	3.26
Good technical means	3.47	2.72
Territorial availability of places of sale	3.18	2.46
Friendship with the right people	2.83	1.92
Compliance with agricultural technologies	2.74	2.30
Available loans	1.90	1.37
Interaction with consumer cooperatives	1.82	1.34

the results of the analysis, a statistically significant difference in the average life satisfaction scores between successful rural families and other groups was recorded.

Rural families' plans for PSPs are closely correlated with their success[4] *(Tab. 5)*. Most successful owners of rural farmsteads preferred to expand their PSP" (73.9%), "less successful" and "unsuccessful" (the rest) preferred to leave their private households as they were before (48.3 and 66.7%, respectively). "Unsuccessful" rural families were more likely than other categories to plan to abandon the management of their PSP altogether (25% vs. 1.7 and 0). "Less successful" rural families were more likely to think about the reduction (13.3% vs. 4.3 and 8.3).

Thus, the following key factors and resources for the success of rural households can be recognized: a high level of professionalism and knowledge in various fields (household, economic), the presence of an above-average production potential, the presence of socio-psychological attitudes to success, education and cultivation of traditional family values, a tendency to innovation and risky behavior.

Table 5. Differentiation of rural families according to the criterion of achieving the expected success of managing the PSP, % in groups

Possible answers to the question: "To what extent have your expectations of PSP success come true?"	Successful	Less successful	Other
100% and more	4.3	5.0	8.3
80%	34.8	21.7	16.7
60–70%	34.8	15.0	33.3
Half	21.7	23.3	0
Less than half	4.3	21.7	0
Did not come true	0	13.3	41.7

[4] These indicators have a correlation relationship with each other at the level of significance 0.01 (sig-0,00).

Meanings of interaction with the social environment

The reproduction of traditional peasant culture is largely caused by the fact that the social circle of villagers is still located within the boundaries of neighbors, relatives, heads of agricultural organizations, employees of a rural municipality, teachers, and medical workers. As a rule, the same people are called as reliable assistants when emergency care is required. Thus, 63.4% of respondents count on the help of relatives, on help of neighbors and friends – 45 and 42% of respondents respectively.

Support networks that include the "right" people have become very valuable in rural areas: the presence of relatives/friends in government bodies, businesses, and public organizations is an important component of success, and actors, who manage autonomously, contribute to this. They have twice as many such people as other members of rural communities. Gifting of a villager, adopted in the past Soviet years, at the expense of scarce resources withdrawn from the company's funds (often illegally), was replaced by the "barter" exchange of items in monetary equivalent. Guided by this approach, a less profitable partner began to be replaced by a more profitable one, which even applies to charitable acts. Thus, autonomous economic actors, in comparison with those employed in corporate-equity organizations, are more likely to choose the alternative "I help only those who helped me earlier".

At the same time, the self-employed, regardless of the conditional success of the farms, demonstrate greater involvement in social life of a settlement. More than a third of the respondents testified about their participation in rural assets, local self-government bodies, which, in our opinion, is a positive trend, reflecting the expansion of the responsibility area of independent economic entities from personal economy to local society at the level of a rural settlement, municipality.

Independent economic management and achievement of a certain level of well-being through it, which is defined by the phrase "the family lives well" in the rural community, are fraught with several points of interest for agricultural sociology.

How to assess total workload of personal time with work? For an outsider, it seems completely unacceptable when an individual does not have time for leisure in its socially organized forms: visiting cultural institutions, sports shows, restaurants, rest in a sanatorium, etc. However, this situation is not perceived dramatically by rural residents: "If you are tired, sit down, rest, no one is chasing you. You manage your own time", the respondents say.

Second, employment in socially organized production and in the household are two components of the rural way of life. Animals, a garden, a vegetable garden have firmly entered the life of a rural family. It is generally accepted that human behavior is determined by necessity and need. The grassroots layer of independent farming – small and medium-sized farmers, successful owners of rural households who have reached a fairly high level of well-being. They are usually guided by this principle, but not constantly. Everyday preoccupation with the issues of a household is connected not only with the meanings of ensuring material well-being, but also with its existentialist dimension, i.e., with the non-objectivity of one's behavior: everyday preoccupation with affairs puts family members, especially a head of a household, into a rigid framework.

Even the public channels of consumption of spiritual goods and values are used extremely unevenly. The self-assessment of the actor's participation in cultural events, common for rural areas, showed that watching television programs dominates (82.7% of respondents "regularly sat at the TV"). The indicators of intra-village communication with neighbors and visiting guests remained almost unchanged; a quarter of

the respondents read fiction and special literature on agricultural topics; a third of them rested "doing nothing". Other leisure activities that were previously common in rural areas, which are amateur art, interior decoration, sports competitions, playing checkers, chess, have almost disappeared. This corresponds to the general trend of rural residents' detachment from the cultural situation created by the poor rural socio-cultural infrastructure. The situation is also determined by an extremely small proportion of young people in the village. The noted shifts in the socio-cultural life of independent farmers and the entire rural community, being illogical and contradictory, are also the result of life activity in the new market situation.

Everyday preoccupation with household chores limits spatial mobility. Only in the winter months, according to 38–40% of respondents, it is possible to leave the household for up to 7 days, and in May – June, August – October it is impossible even for a day. Despite such a busy schedule, 71% of respondents note that autonomous employment is equivalent to corporate-equity employment (in OOO, PSP) in terms of its impact on preserving health. Vacation according to the model adopted in a formal organization is almost impossible for self-employed actors: only 6.6% rested in holiday homes, 5% – in cities with relatives and friends, 5.8% went outside a village on a tourist trip.

By the present (post-reform) time, many positions of employment, habitat arrangement, and health saving have mostly acquired stability, but family management has retained a high meaningful value, remaining an institution of insurance against economic, natural and climatic challenges, risks of unforeseen events associated with epidemics and epizootics [21].

Limitations and challenges in the space of rural self-employment

The Institute of farming entered the practices of the post-reform period inorganically, which was caused by organizational, legal, and mental prerequisites.

Arable land passed into the hands of large business structures, while ordinary residents received only shares, which turned out to be very difficult to privatize. Household (PSP) remained more accessible, and its expansion at the initial stage of the agrarian reform was not limited to the state. The way of life of such actors of life turned out to be close to those who only expanded the volume of land, equipment, and their responsibility, i.e., small and medium-sized farmers.

PSPs are comparable to small and medium-sized farms in terms of everyday concerns and are not against the transition to the formal farming sector.

According to the study, 47.3% of successful households prefer to expand their private farms, which may be hindered by restrictions in expanding the land area outside the household plot. There is a reverse movement: the transition from the status of a farmer to the legal position of a head of a family household (PSP).

Any economic actor in a market environment faces restrictions and challenges, which are successfully presented in the M. Porter model in the form of five threats [22] that affect the competitiveness of a firm. Considering the specifics of the rural place of activity of household owners and farmers, we have added two more threats: unfavorable initial conditions and the emergence of new norms, according to which it is necessary to change the usual practices of selling products. The owners of rural households distributed threats according to their significance (from 0 to 100 points): 30 points were given to the weather and power, 20 points – to the behavior of buyers (they stop buying for unknown reasons), 10 – to competitors from retail chains offering the same type of products. The remaining threats – the power of resource owners who raise prices for gasoline, electricity, gas, etc., and the possibility of

competitors entering the market from their village – received 5 points each.

Farmers' threat assessments show similarities with the opinions of household owners, but there are also differences. Farmers rated the threat of an increase in the cost of resources, which cannot be dispensed with during field work (gasoline, lubricants, spare parts), and the influence of competitors five times higher. They proposed to divide the latter into two subgroups: firms engaged in retail trade (5 points) and wholesale purchases (75 points). The shift in the weight of estimates to the marked areas of interaction with market forces, which firms cannot influence, is associated with the scale of management: the larger the production capacity, the larger the volume of consumables is.

A comparison of the restrictions of cattle farmers and owners of households containing a lot of cattle shows almost complete similarity of their situation: both are in the hands of manipulators-dealers, whose power is not limited in any way.

Since large family farms and households operate using similar technologies, it is possible to compare their perception of common threats and challenges. For livestock farmers, the time factor plays a limiting role, in addition to the challenges common with field breeders: marketable products must reach the markets in a short time. It is easier to cope with this task for owners of small farms, such as private farms, offering dairy and meat products at half-stops, near highways or in the courtyards of apartment buildings in the city. When you need to sell a dozen pigs, meat breeds of cattle, sheep, the most convenient and profitable option is to deliver them to the meat processing plant in live weight, which is usually not available to farmers. Meat processing plants allocate quotas for the reception of livestock for processing, which fall to resellers of animals, who will take them out of villages, buying them at an imposed low price.

Individuals who fundamentally change their way of life, when they take up a new decisive task, stay for a certain time on the border of the mastered and undeveloped space. Employment in farming technologies is complicated by the fact that its success depends not only on the social qualities of the actors applying for this role, but also on the lack of coherence of institutional norms.

It is enough to give only some facts. Heads of small farms often operate on land that is not their property, which deprives them of the opportunity to use it as collateral for obtaining bank loans, to make long-term investments in increasing fertility, etc. People focused on family farming have found themselves in a dead-end situation due to conflicting regulations. For example, grants and subsidies to novice farmers are allocated for peasant farming, and according to the regulations of the Federal Tax Service, only registered sole IE (individual entrepreneurs) are allowed, for which state support is not provided. If a novice farmer, without taking advantage of state support, still starts working and building a house on his land (which is allowed by the federal law), then he will have to pay a fine for inappropriate use of the land. When registering a family farm, a head of a farm must hire a certain number of fellow villagers, otherwise he will not get the necessary score in points and will lose something.

In addition to this absurd situation, the applicant for the transition to a new status will have to go to large transaction costs for processing the relevant documents and numerous approvals in various instances. All of this often becomes a serious obstacle to entering a new socio-economic "territory", which hinders the modernization of the agricultural sector.

Conclusion

The representation of the social experience of the actors of independent economic management in this article can serve to form a deeper,

comprehensive view on the spread of innovations, strato-formation in the village and play a positive role in clarifying the theoretical and methodological principles of explaining social development.

Despite the limitations and challenges, a form of family management has developed in the living space of the modern village at a level exceeding the PSP traditionally inherent in rural families. The appearance of a group of successful economic entities in rural areas, practically not motivated by external actors, like the state, has a huge socio-economic significance and indicates the presence of a serious potential of peasant tradition. To date, many positions of employment, habitat improvement, health saving have mostly acquired stability, and family management has retained a high semantic value, remaining an institution of insurance in the face of the challenges of uncertainty.

The independent and autonomous management of rural actors entails a change in the structure of their roles: economic (owner, participant in the exchange of resources); professional (combining traditionally peasant and innovative qualities); social (framework has expanded and procedure for access to socially significant functions in the rural community and municipal district has been simplified); the emphasis on the prestige of successful villagers has shifted.

Successful owners, defined by us as self-employed actors, are in no hurry to become farmers, not considering it appropriate to change their status. The main reason for this is in regulatory mechanisms and barriers that do not stimulate but impose a significant number of responsibilities on a farmer and do not help to cope with the problems of production and selling of products.

The most important factor limiting the further development of the PSP in the area of farming is the lack of normal consumer cooperation, which forces "unofficial farmers" to sell products on roads, railway stations, in the courtyards of apartment buildings in nearby cities.

The autonomous management of a rural family can also be viewed as a force for overcoming contradictions in the self-reproduction of heads of official farms. This is evidenced by the dynamics of the ratio between small, medium, and large farms: in 2006, there were 47% of the former, in 2016 they became 30.6%, while the land area of the average ones decreased by half (from 18.3 to 9.3%). The land area of small farmers decreased even more – from 2.9% to 0.8%. But large farms have dramatically increased in number and in size of the land belonging to them. In 2006, there were 8.4% of them, in 2016 – 20.5%, the land area per household increased from 962 to 1095 hectares[5].

It can be assumed that in the longer term, land areas are highly likely to be transferred to the disposal of large and largest farmers. Although all this is happening legitimately, negative social consequences are obvious: a decrease in the share of rural families who independently realize their potential in solving national agri-food problems.

The authors defend the idea that the "grass-roots" composition of farmers and farmer-like groups represented by successful farms of family households is the last estate that has the qualities of a poly-professional, or a universal peasant, since the vast majority of hired workers in the agro-industrial complex, due to modern technologies, turn into a "partially working" industrial production.

The agriculture and daily life of villagers, including those working in a personal household, includes technical innovations, electronic innovations, the ability to use the Internet for receiving services and for self-education. It is too

[5] *Results of the All-Russian Agricultural Census of 2016: Vol. 1.* Rosstat. Moscow: IITS "Statistika Rossii", 2018; *Results of the All-Russian Agricultural Census of 2006: Vol. 1.* Rosstat. Moscow: IITS "Statistika Rossii", 2008. Pp. 320–323.

early to say whether this will lead to an expansion of the practices of autonomous functioning of individual farms and an increase in production, especially since a reduction in the number of rural residents in general and the number of rural families employed in private farms and in formal agricultural organizations is inevitable [23]. The state should already contribute to the formation of new, more effective cooperative relations in order to ease the situation of a rural family with a commodity family household, to increase its importance in preserving the stability of territories.

It is worth looking at independent family economic management from a broader perspective. The fact of the loss of two small villages per day and the gradual transition of medium-sized villages to this perspective is very disturbing. The thought that peasant wisdom does not allow a unique phenomenon, the Russian village, to disappear can be supported by the facts of the resilience of families who have chosen self-organization of employment through an autonomous model. This gives hope for the preservation and self-reproduction of the core of the village world.

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Acceleration Programs in the Ecosystem of Social Entrepreneurship Support*

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Abstract. The development of social entrepreneurship in Russia belongs to the topical areas of state policy and is aimed at creating conditions for the formation of the social services market, the participants of which, along with government agencies and non-profit organizations, become social enterprises. Social accelerators are a new tool for their development that requires systemic understanding. The article reveals the role of acceleration programs in the emerging ecosystem of social entrepreneurship support institutions initiated by the state, shows their common and specific features. The empirical basis of the study was formed by the data posted on the websites of Russian foundations supporting social entrepreneurship. We consider the general scheme of acceleration programs of the Social Projects

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Support Fund, Social Investment Fund, The Foundation of regional social programs "Our Future" and RAISE University Accelerator (RANEPA), including an analysis of the basic events organized for the participants of accelerators. This article presents systematized data on such interrelated elements of social acceleration as training, mentoring, partner and client networking, local community of social entrepreneurs, direct and indirect funding, and information support. The programs we analyzed followed the same pattern. They include a set of segments, each with a specific function for the development of promising social enterprises. We have identified the problems of exaggerated selection criteria for the acceleration cycle, the lack of direct financing as an element of Russian acceleration programs, which reduces the potential for participation of interested target groups, and weak information support for existing programs. Thus, the results of this study contribute to the study of the strategic advantages and limitations of social acceleration.

Key words: social entrepreneurship, social accelerators, social incubators, mentoring, Social Projects Support Fund, Social Investment Fund, The Foundation of regional social programs "Our Future".

Introduction

In the previous decade, the social services market has been transforming in Russia. The state, while retaining the role of the main regulator and manager of resources, delegates its powers to new market participants – socially oriented non-profit organizations and social entrepreneurs. The number of social enterprises, despite the tendency to increase, remains relatively small. According to the Unified Register of Small and Medium-Sized Businesses (EP SMEs), as of April 2020, 1,197 legal entities and individual entrepreneurs had the status of a social enterprise, and the July cross — section of the same year showed an increase in their number by 2.5 times — up to 2880 units[1]. Our analysis of regional registers of social service providers (n = 85) has proved that representatives of the commercial sector occupy from 5 to 12% of the total share of all suppliers represented in different federal districts, while state institutions, included in the register, make up at least 70%, and non-profit organizations on average occupy at least 15%[2]. According to the Head of the Chamber of Commerce and Industry, there are at least 50 thousand actually operating social enterprises in Russia[3]. The discrepancy in the figures indicates that the development level of social entrepreneurship is still only a rough estimate, as it is at the initial stage of formation.

Passing the law on social entrepreneurship in 2019 marked the integration of business with a social component into the general sectoral system of entrepreneurship in Russia. The initiators of

[1] Information about social enterprises has been entered in the Register of SMEs. Available at: https://www.nalog.ru/rn77/news/activities_fts/9732584/ (accessed: March 01, 2021).

[2] "On the basics of social services for citizens in the Russian Federation": Article 25. Federal Law no. 442-FZ, dated December 28, 2013. Available at: http://www.consultant.ru/document/cons_doc_LAW_156558/8aa93e4372acfa5dd8c704830 619f2f65aa84528/ (accessed: March 01, 2021); The results of the rating of the entities of the Russian Federation based on the results of implementing mechanisms for supporting socially oriented non-profit organizations and social entrepreneurship, ensuring access of non-state (non-municipal) suppliers to the provision of services in the social sphere and the introduction of competitive ways of providing state (municipal) services in the social sphere, for 2019. Available at: http://www.nko.economy.gov.ru/podpisannyij-rejting-skorrektirovannyij-i-napravlennyij-v-pravitelstvo-(1).pdf (accessed: August 09, 2021).

[3] There are about 50 thousand social enterprises operating in Russia. Available at: https://tass.ru/ekonomika/9054185 (accessed: March 01, 2021).

passing the law focused on the fact that social enterprises, sharing the principle of combining social effect and economic benefit and being deprived of such a significant disadvantage of many NCOs as financial instability [1], satisfy the demand for innovations in the social sphere, and also organize the production of the necessary volume of goods and services demanded by certain consumer categories, whose demand was not provided by state institutions or traditional commercial enterprises [2]. Nevertheless, the chosen path of social entrepreneurship development has weaknesses. One of them is the presence of a large number of competitors. Social enterprises are trying to find their niche in the field of social services, where state institutions and NCOs traditionally prevail, and in the framework of market competition they face traditional commercial enterprises. Therefore, the use of all possible competitive advantages becomes an urgent need for a social enterprise which is why the community of social entrepreneurs quite clearly formulates its own requests for the development of the supporting infrastructure.

According to the report of the SEFORIS research consortium for 2016, representatives of the social and entrepreneurial community formulated five main "supporting" proposals to the country's leadership: maintaining federal support programs, increasing the availability level of capital, introducing tax incentives, removing administrative barriers (especially in terms of reporting documentation) and expanding information and explanatory support for social enterprises[4]. The indicated formats of the requested assistance reveal not only the fact of "underfunding" of social enterprises, but also the problem of forming society's loyalty to social entrepreneurship as a whole. Another sore point of the sector, according to experts, is related to the fact that the state provides assistance mainly to social startups, while working businesses are given much less attention[5].

Among the urgent problems, associated with the formation of Russian social entrepreneurship, the problem of ensuring human resources remains one of the key ones, as it is human capital that largely determines the success of the activity of a social enterprise [3; 4]. The report of the research group "Zircon" for 2018 shows that active social entrepreneurs are mainly people over the age of 30, who already have a higher education[6] and often have experience working in commercial structures or conducting social projects with elements of entrepreneurial activity. They become the target group for which the format of accelerators is designed as short-term practice-oriented integrated programs for the intensive development of social enterprises and social projects including elements of mentoring, expert, network, financial and information support in addition to the educational segment.

The purpose of the research is to analyze the features of the functioning of various types of acceleration programs for social entrepreneurs as a way to accelerate the development of promising social enterprises. The research objectives are aimed at identifying common and distinct structural elements of acceleration programs initiated by different founders; determining the conditions and algorithm for implementing programs; forming an idea of value propositions and the range of support resources provided to participants of acceleration programs; formulation of the benefits acquired by the founders of various types of programs.

[4] SEFORIS. Cross-Country report. Russia. 2016. Available at: https://issuu.com/kwinbxl/docs/seforis_country_ report_ru_ 04_april (accessed: March 01, 2021).

[5] Social entrepreneurs called the necessary measures of state support. Available at: https://tass.ru/msp/6902652 accessed: March 01, 2021).

[6] Social Entrepreneur – 2018. Self-portrait. A brief analytical report on the research results. Available at: http://www.zircon.ru/upload/iblock/4e7/socialnyj_predprinimatel_2018_avtoportret.pdf (accessed: March 13, 2021).

Theoretical foundations of the research

Social entrepreneurship is an area of intensive innovation generation, an example of using new combinations of existing resources [5] and a source of ideas for traditional commercial enterprises that are under pressure from the economic crises that have erupted in the previous two decades, the risks of a competitive economy and the spreading paradigm of social responsibility [6]. We pay attention to issues related to the support and development of the social entrepreneurship ecosystem [7; 8] which is understood as a set of interrelated elements that contribute to the fullest disclosure of the potential of social entrepreneurship within a single territorial entity. In the interpretation of the well-known research network of social entrepreneurship in Europe EMES, this ecosystem includes the following support elements:

– the ability to self-organize (involving the community of citizens in solving social problems);

– political, legal, public and private recognition of social enterprises;

– access to resources (using "irrevocable" resources to start and debug the work of a social enterprise, tax benefits, etc.);

– organization of research, educational programs that allow developing skills for running a social business.

The social acceleration included in the last three segments according to this classification, although it acts as an integral element of the ecosystem, nevertheless remains poorly studied. The researchers focus on the difference between different types of social "catalyst", accelerators and incubators from each other, as well as from accelerators and incubators focused on working with traditional enterprises [9]. We adhere to the approach according to which accelerators are focused on existing social enterprises and are focused on developing a strategy for their growth and leveling weaknesses, while incubators work with projects that need to be launched or are at the idea stage [10]. In addition, as there are more similarities than differences in the basis of social and traditional business [11], the "catalysts" of social startups and enterprises differ only in the context of goal-setting, as the priority for the former remains the development and refinement of the social mission.

Initially, researcher considered acceleration programs as a new tool of social policy, functionally replacing traditional government and commercial structures which is demonstrated by the example of support programs deployed in the USA and Europe [12], Brazil [13; 14], further – as an element of the ecosystem of support for social entrepreneurship [15; 16] or a mechanism that allows integrating new actors into the development process of this ecosystem – non-profit organizations [17; 18], students[7] [19; 20], interest groups of potential entrepreneurs: women, representatives of ethnic minorities [21], rural residents [22], the elderly [23], etc.

Among the issues of greatest interest to researchers of social "catalysts", such as increasing the sustainability of social enterprises through acceleration tools [24], a "basic" set of problems inherent in social startups that can be leveled by participating in an acceleration program [25], catalyzing strategic opportunities for social business by expanding its ties with small traditional companies [26], using social accelerators and incubators as a medium for promoting social innovations [27]attract attention, characteristic structural elements of acceleration programs [28].

Studying acceleration activities in the social sphere is mainly based on the consideration of materials from individual local cases that characterize acceleration programs in different

[7] Collections based on the results of implemented projects in 2016–2020. All-Russian accelerator of social initiatives RAISE: website. Available at: https://raise.ranepa.ru/biblioteka/sborniki-po-rezultatam-realizovannyh-proektov/ (accessed: March 01, 2021).

countries, such as Italy [29], Singapore [30], Spain and the United States [31], countries that are members of the Organization for Economic Cooperation and Development [32], and a number of others [33].

The researchers focus on the problems of evaluating the effectiveness of the "catalyst" as a tool that increases the probability of success of social and entrepreneurial initiatives. It is calculated taking into account a combination of such indicators as an increase in the employment level in the region, financial return and social impact [34], the launch of technological startups and the creation of dyadic partner networks with stakeholders [35; 36].

Many authors insist on the need to introduce unified evaluation indicators [37] that would correlate with the legal forms of enterprises and the economic conditions of the region of their localization [38], take into account the idea underlying the competitive selection [39], and at the same time take into account the symbiosis of social, technological and economic variables demonstrated by enterprises [40; 41].

Due to the fact that Russia, like other countries, is building its own strategy to develop social entrepreneurship [42], it seems timely to raise the question of what functional niche acceleration programs occupy in the context of the environment for the development of social entrepreneurship and what requests of "target audiences" (the state, big business, social entrepreneurs) they satisfy.

Methodology and materials

Social entrepreneurship occupies a specific niche in the business sector, as the emphasis on solving the problems of local communities and socially vulnerable groups of the population inevitably limits its resource potential [43]. This feature makes social startups more receptive to the help of external parties compared to traditional businesses that rely on the stability of their internal resources.

Within the framework of the sponsorship theory [4], there are two main mechanisms that are used by the founding organizations of accelerators. The first of them is the mechanism of "buffering and building bridges", implemented through such measures as direct support for entrepreneurs, organization of their network interaction with stakeholders and creation of a field for testing their activities. The second "supporting" mechanism includes the creation of a mentoring system, opportunities for additional fundraising and increasing the level of authority of the enterprise at an early stage of its existence through information support.

The analysis of foreign "catalysts" [25] shows that social accelerators mainly cooperate with newly formed social enterprises and enterprises that are at the launch stage, and both of these mechanisms are used within the framework of seven key areas of the programs: training, mentoring, creation of partner and client networks, formation of a community of like-minded partners, direct financing (provision of initial capital), indirect financing (organization of access to investors), raising the level of awareness about social entrepreneurship and trust in it.

The information base of our research is the materials from the websites of the Social Projects Support Fund8, the Social Investment Fund[9], the fund for regional social programs "Our Future"[10], the All-Russian accelerator of social Initiatives RAISE11. The choice is due to the fact that the analyzed acceleration programs, firstly, have been operating for a number of years, which makes it

[8] The Foundation of the Social Projects Support: website. Available at: https://fundsp.ru/ (accessed: March 15, 2021).

[9] Social innovations. Acceleration programs: website. Available at: https://www.soc-innov.ru/ (accessed: March 16, 2021).

[10] The Foundation of Regional Social Programs "Our Future": website. Available at: http://www.nb-fund.ru/ (accessed: March 18, 2021).

[11] All-Russian accelerator of social initiatives RAISE: website. Available at: https://raise.rane pa.ru/ (accessed: March 09, 2021).

possible to summarize the accumulated experience of implementing programs, and secondly, the existing experience demonstrates high effectiveness in quantitative and qualitative terms in relation to "graduates". The sample was made by the type of the founder of the acceleration program: public, corporate, university, private.

We have analyzed all acceleration programs according to the following criteria: the goals declared by the founders, the selection criteria (entry points) for the acceleration program, the duration of the acceleration program and its territorial coverage, the algorithm of the acceleration program to check the presence of such elements as an educational segment, mentoring support, partner and client networking, creation of an informal community of social entrepreneurs, access to direct and indirect investments, information support of the accelerator.

Results of the research

Taking into account the main selection criterion (the type of founder of the acceleration program), the accelerator of the Foundation of Social Projects Support (FSPS) demonstrates its belonging to the state type, as the fund itself was created in accordance with the decision of the Supervisory Board of the Autonomous Non-Profit Organization "The Agency for Strategic Initiatives for the Promotion of New Projects" (ASI) in 2017. ASI was established by the Government of the Russian Federation in 2011; therefore, the FSPS is actually a subsidiary of the ASI and can be identified as a state structure.

Within the framework of the presented typology, the social investment fund belongs to a private type. Its creation was initiated by a private person (the head of the fund), it has the status of a limited liability company. However, the founder, S.V. Golubev, at the same time has the status of the commission chairman on social entrepreneurship of the public organization "Support of Russia", supervised by state structures, and is a member of the ASI expert council, a member of the expert group on social entrepreneurship of the Ministry of Economic Development of Russia and the Council for Social Innovations of the Russian Federation. The experts of the acceleration program of the Social Investment Fund include government experts, employees of the Ministry of Economic Development. Therefore, this Foundation cannot be fully typologically characterized as private, as it has strengthened ties with the authorities that form the state support system for social entrepreneurship.

The Foundation of regional social programs "Our Future" which oversees the accelerator "Formula for Growth" can be classified as a corporate type, although formally its founder is an individual V. Y. Alekperov, and in this sense, de jure, it belongs to a private type. Nevertheless, this Foundation, established in 2007, remains de facto one of the first non-governmental structures operating in the support system for social entrepreneurship, and its founder is a co-owner of PJSC Lukoil. Accordingly, this company actually directly finances the activities of the Foundations.

Finally, the All-Russian accelerator of social initiatives RAISE, launched in 2012, belongs to the university type of founders. Its creator is the Institute of Organizational Development and Strategic Initiatives of the Russian Presidential Academy of National Economy and Public Administration.

The lists of acceleration programs within each of the declared organizations differ. At the moment, the FSPS has launched three acceleration programs: the main one has been operating since 2018, seven of its acceleration cycles have already been carried out, two more have been launched at the end of 2020 – a pre-accelerator for novice social entrepreneurs and a program for leadership projects in the social, educational and technological spheres.

The "Federal Accelerator" and the "Regional Accelerator" are opened on the platform of the Foundation of Social Investments. The first is an exact program implemented in Moscow at the foundation's site and worked out for existing social enterprises in order to scale their activities and attract additional investments. The second one, in the format of a full-time program, works at the sites of the "My Business" centers and the Centers for Social Innovation (CISS) and is focused on the requests of these organizations which vary depending on the region.

The Foundation of Regional Social Programs "Our Future", in addition to investment competitions, implements the only acceleration program "Formula for Growth", positioned rather as an auxiliary direction within its activities. The RAISE Social Initiative Accelerator is also the only acceleration platform to realize social and entrepreneurial activities within the framework of the basic university. However, we should note that RANEPA has a branch network and attracts representatives of other higher educational institutions to participate.

Table 1 shows the goals of the declared acceleration programs, grouped into two categories: general goals, the achievement of which should ensure a sustainable launch and development of a social enterprise, and specific goals, separately formulated by the founders. It follows from its data that all acceleration programs, except for the "Formula for Growth", are aimed at forming entrepreneurial competencies among participants, while the accelerator of the Our Future Foundation obviously works with already established social entrepreneurs and their projects. The growth of financial indicators (attracting investments, increasing key financial indicators, increasing revenue, optimizing costs) is a priority for everyone except the RAISE accelerator which can easily be explained by the student status of the contingent of participants who do not yet fully have the

Table 1. Goals of acceleration programs

Name of foundation/ accelerator	Common				Specific
	Formation of competencies	Growth of financial indicators	Increase of social effect	Building partner and client networks, communities of entrepreneurs	
Foundation of Social Projects Support	+	+	-	-	Bringing a social project from the "prototype" stage to the "product" stage
Foundation of Social Investments	+	+	+	+	1. Search for new directions of development 2. Registration in the register of social enterprises
Foundation "Our Future"	-	+	+	+	1. Enterprise scaling 2. Transformation of products in accordance with new economic opportunities and the needs of customer groups during the pandemic
RAISE	+	-	-	+	1. Attracting active youth 2. Formation of career opportunities for students through access to employer companies

Source: websites of acceleration programs.

resources necessary to start their own business. The emphasis on the importance of building partner and client networks, communities of entrepreneurs is made by the Foundation of Social Investments, the Foundation "Our Future" and RAISE, while the main goal for the Foundation Social Projects Support is to launch a product and develop a sustainable business model. At the same time, the social mission is a priority, indicated in the statutory documents, only for two of the four acceleration programs under consideration.

As specific goals of acceleration programs, work on the received product of the project/enterprise is mentioned including its reformatting in accordance with the requests and capabilities of the target audience ("packaging" of the project, project development, successful product promotion, search for new directions of development), securing the official status of the enterprise, the issue of scaling existing social enterprises is raised, the importance of forming a communication network between students interested in creating a social business is considered, companies-employers and beginning and established entrepreneurs in the social sphere.

Table 2 describes the conditions for participation in accelerators indicating that there is a sufficiently high selection bar. The Foundation of Social Projects Support, the Foundation of Social Investment and the Foundation "Our Future" demonstrate their readiness to work only with officially registered enterprises of various legal forms and pay attention to the availability of a product/service that can be offered to the client audience. At least three foundations consider the acceleration process as a team effort.

Table 2. Accelerator entry points

Name of foundation/ accelerator	Common			Specific
	The status of an individual entrepreneur/ legal entity	Ready-to-sell product/service	The presence of a team ready to implement the project	
Foundation of Social Projects Support	+	+	-	1. The project relates to the social sphere, solves the problems of unprotected segments of population and the disabled 2. ≥ 50% of the company is owned by residents of the Russian Federation
Foundation of Social Investments	+	+	+	Compliance of the company's activities with the priority areas of the accelerator
Foundation "Our Future"	+	+	+	1. The participant is the owner/co-owner of a social business 2. The main activity of the enterprise is carried out in the region of the accelerator for 1–5 years (≥ 2 years in the KhMAO-Yugra) 3. Оборот предприятия не менее 10 млн рублей в год (≥ 1,5 млн рублей в ХМАО-Югра) The company's turnover is not less than 10 mil. rub. per year (≥ 1.5 mil. rub. in the KhMAO-Yugra)
RAISE	-	-	+	1. Quantitative restrictions and restrictions on the age of participants (≥ 10 students aged ≤ 25 years) 2. The presence of a curator assigned to the team (teacher/university employee)/mentor (representative of government, business, NCOs)
Source: websites of acceleration programs.				

Additional criteria for participation are the proven survival of an officially registered enterprise in the long term, the localization of the enterprise on the territory of the Russian Federation, the entrepreneur's personal interest in business development, provided by his status as an owner or co-owner. Obviously, social projects at the entrance to most acceleration programs already have a certain development history and are aimed at improving qualitative and quantitative indicators by working out weaknesses, creating a new product in demand or transforming an existing, acting algorithm for scaling.

With regard to the territorial coverage and duration of the program, we can conclude the following: the accelerators of the Social Projects Support Fund and RAISE have federal coverage, the Foundation of Social Investments also implements its goals at the federal level, but complements this activity with the presence of a regional program. The "Formula for Growth" accelerator is characterized by a clearly defined regional coverage, as it is implemented only on the territory of the Kaliningrad, Nizhny Novgorod and Astrakhan Oblasts, the Khanty-Mansi Autonomous Okrug. According to the duration of the acceleration programs, the longest of them is the university accelerator RAISE which has been operating since 2012, the Foundation of Social Investments launched its program in its current form in 2015, although before that, acceleration activities were carried out at the regional level in cooperation with big business and CISS in the format of the "School of Beginning Entrepreneurship" (2012–2014) and the "School of Social Entrepreneurship" in the Penza Oblast (2014–2015). Finally, the Foundation of Social Projects Support and the Foundation "Our Future" held their first acceleration session in 2018. All this indicates that acceleration in the social sphere can be considered as a new developing element of the ecosystem of support for social entrepreneurship.

The available information allows making the following assumption: regional programs are implemented to a large extent if there is a direct demand for their organization from local support structures, for example, the already mentioned CISS or the "My Business" entrepreneurship support centers. In other words, a social and entrepreneurial initiative within the local community should gain strength and coordinate the necessary amount of resources in order to signal its own importance to local authorities which, in turn, get the opportunity to deploy the potential for solving local social problems in the role of an intermediary providing a space for communication between the training structure (accelerator) and its target audience (social entrepreneurs).

Table 3 shows the algorithm of the four accelerators.

The organizational structure of accelerators includes a training block and mentoring support, however there is a difference in the configuration of their use. Within the framework of the Foundation of Social Projects Support and the Foundation "Our Future", the module, related to training, precedes a meeting with mentors, while the Foundation of Social Investments and the RAISE accelerator mix these modules in the format of their events. In the first case, the organizers of the accelerator are aimed at filling the gaps in the basic knowledge of the participants and separating the process of working on projects from the theoretical part, in the second case, the learning process is intensified and involves more intensive work with the participants' cases.

It seems interesting to select mentors for acceleration programs who are actually leaders of informal socio-entrepreneurial communities. Taking into account personal motivation and willingness to share the experience of running a social business, mentors undergo preliminary training.

All acceleration programs include such elements as the formation of a local community of social

Table 3. Operation algorithm of acceleration programs

Name of the program /foundation	Period	Program elements
Foundation of Social Projects Support	1,5–2 months	1. Theoretical block: trainings on strategic and operational planning, working out of a marketing strategy, calculation of key product metrics, analysis of the social impact of projects, training in teamwork skills 2. Practical block: work with participants' cases on market research, working out of a self-supporting and financially stable business model, marketing promotion and preparation of presentations 3. Presentation block: meeting with potential partners and investors (demo day)
Foundation of Social Investments	3 months	1. Strategic sessions including lectures, individual work and brainstorming on the following topics: social impact model, target markets and value proposition, marketing strategy, business modeling and financial planning, long-term planning 2. Investment session: feedback from experts and interaction with investors
Foundation "Our Future"	9 months	1. Module "Training": 10 interactive classes with social business practitioners on the following topics: strategic planning, marketing, internet marketing, sales management, personnel management, management and leadership, financial flow management, investment attraction, presentation to the investor 2. Module "Mentoring": 18 personal meetings with a mentor 3. Module "Exchange of experience": 4 business breakfasts with guest speakers, 7–9 meetings to discuss participants' cases 4. Final reporting lesson: presentation of the results of changes in the organization of the activities of participating enterprises
RAISE	9–9,5 months	1. Round tables with potential project partners to clarify project ideas (representatives of NCOs, businesses, authorities) 2. Road Show: teams' participation in educational installation events-workshops at universities 3. Accelerator Tournament: correspondence competition of participating teams to perform special tasks 4. Two three-day educational sessions: trainings, master classes, speeches and expert consultations 5. Intermediate examination of projects (face-to-face / video conference format) for the admission of participants to the final events 6. The final which consists of two stages and includes a presentation of the projects being implemented before the jury. Additionally, teams participate in nominations from partners 7. Internship of winners of competitive events
Source: websites of acceleration programs.		

entrepreneurs and network interactions "program participant – partner", "program participant – client". Creating informal ties in the conditions of the accelerator is ensured by organizing events of a team format of work ("brainstorming") and the mentoring element, when several participants gather around one mentor with their projects.

Building partner and client networks are due to the presence of investment sessions that provide participants with indirect financing. There is no direct funding within the framework of the above examples of acceleration programs. It is often carried out from other sources – specialized grants and subsidies. Sometimes an investor and/or an accelerator partner, provided that they are interested in the product of a participating enterprise, can become its customer in the post-acceleration period. Such offers are conditioned by the opportunity to reduce the competition level for the manufactured product.

It is worth noting that Russian acceleration programs provide information coverage of their activities at a low level. Materials about the held events, as a rule, are posted on the website and in the accompanying social networks of the accelerator itself, on the personal pages of participants of

acceleration programs, a few specialized sites, such as the "Social Information Agency", on the pages and in groups of social networks of partners who focus rather on their own participation[12]. In other words, the "territory" of social acceleration and social entrepreneurship remains closed to the mass reader/viewer.

Conclusions

The analysis demonstrates that all acceleration programs are characterized by a number of fundamental features. We cannot say that social accelerators pursue absolutely identical goals, but it is true that their target orientation is to form a strategy for the sustainable development of a social enterprise. This activity continues being fully implemented in the post-acceleration period, however, it may be accompanied by the risk of losing such priority as increasing the social effect of the activity. Additional tasks of acceleration programs include scaling of enterprises, official registration of their status, and more dense orientation of the manufactured product to the client audience.

The data on the "entry points" to acceleration programs allow concluding that potential participants face several barriers at once. With a few exceptions, accelerators are focused on working with established, officially registered and operating enterprises for a certain time. But at the same time, the FSPS launches a pre-accelerator for aspiring social entrepreneurs, and the RAISE accelerator retains the ability to launch and implement a project that is at the idea stage, as it is aimed at working with a student audience.

Finally, acceleration programs are structurally built on the same model including educational, practical and reporting (investment) segments. The educational module is focused on getting participants basic ideas about doing business, the practical segment includes a mentoring support mechanism, supported by events that allow building informal ties between accelerator participants and communication with experts in the field, who can also be partners of the accelerator. The investment (reporting) segment provides an opportunity for selected enterprises to receive feedback from experts, to attract additional resources for business development.

However, within the framework of these acceleration programs, a direct financing mechanism is not implemented; participants do not receive financial funds from the organizers to implement the project following the completion of the accelerator. A common vulnerable element of acceleration programs is also weak information support of events: the created content is placed on resources that do not allow drawing attention of the general public to the topic of social entrepreneurship in general and acceleration programs in particular.

The significant difference between the programs is the duration of the acceleration cycle (from 1.5 to 9.5 months), which indicates different approaches to the process of their organization. Prolonged acceleration focuses more on ensuring that participants get basic ideas about doing business and can work out their own projects in the case of successful cases, the emphasis is on independent individual work of the participant using the acquired knowledge and skills. The reduced acceleration initially uses the projects of the participants as a visual aid for analyzing the strengths and weaknesses and development prospects. We assume that the latter already largely possess the necessary set of competencies for doing business in the social sphere.

[12] Accelerators for social projects were discussed at the Blagosphere Center. Social Information Agency: website. 2018. Available at: https://www.asi.org.ru/news/2018/09/28/akseleratory-sotsproektov/ (accessed: February 16, 2020); The Foundation of Social Investments presented acceleration programs for social entrepreneurs. Social Information Agency: website. 2018. Available at: https://www.asi.org.ru/report/2018/07/27/ moskva-akseleratsionnye-programmy/ (accessed: March 12, 2020); Social Initiative Accelerator RAISE. Official group VKontakte. Available at: https://vk.com/raiser anepa (accessed: March 12, 2020).

Despite the fact that formally the founders of social acceleration programs are different types of founders, the main beneficiary, in addition to the social entrepreneurs themselves, is the state, primarily represented by regional and municipal authorities, as the development of another branch of the business sector creates conditions for the inflow of investment into the region and mitigates existing local social problems. In addition, by participating in the organization of accelerators, the state acquires an additional lever of influence on the business environment, and expands the range of players in the social services market.

It is obvious that a large socially responsible business is also interested in developing the infrastructure of social accelerators. Its representatives with a high frequency become partners and experts of acceleration programs. On the one hand, such a level of participation helps them to acquire certain reputational dividends; on the other hand, they get access to an acceleration environment that catalyzes the design of innovative ideas that can be incorporated into the operational activities of large companies to solve internal (personnel) or external (reputational) tasks.

The founders of the private type of accelerators are also representatives of either large businesses or state structures, so it is extremely difficult to consider them in isolation from the acceleration programs of the corporate or state type. In turn, the university, on the basis of which the acceleration program is being developed, uses the capabilities of the business simulator to "train" the student audience: the most active part of it acquires a set of skills and knowledge relevant for future employment, builds a system of partnerships inside and outside the university environment.

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The Effectiveness of the Authorities' Activities at the Local Level in the COVID-19 Pandemic (the Experience of Russia and China)*

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Abstract. The qualitative changes caused by the COVID-19 pandemic at all levels of the organization of the world community (individual, group, national, global) have actually formed a new social reality. Moreover, this process was of a force majeure nature; it took place in the conditions of a sharp increase in the uncertainty feeling, changes in the lifestyle of almost every person and every particular family, the unpreparedness of world medicine for an adequate response to the global epidemiological challenge, as well as the inevitability of large-scale problems in the economy and politics. The current conditions have become a challenge for the existing systems of public administration. The governments of different countries had to act quickly and decisively in order, on the one hand, to keep the development of the epidemiological situation under control, and on the other hand, to prevent a sharp deterioration of social stability against the background of objectively emerging epidemiological, social and psychological challenges. While the world medicine was urgently accelerating the development of a vaccine against coronavirus infection, the scientific and political community discussed the general strategy for implementing quarantine restrictions. However, against this background, the local community level remained virtually behind the scenes, which, nevertheless, was and still remains the most practical in terms of interaction of population with the authorities. It is at the local level (meaning the regional level, as well as the level of local self-government) that the authorities are more close to the society problems, have the opportunity to interact face-to-face with its representatives, and the population, in turn, can actually participate in activities to improve living conditions (including solving problems caused by the pandemic). The article presents the experience of Russia and China in organizing interaction and evaluating the activities of local authorities by the population. Both countries have shown high efficiency in overcoming the crisis in 2020–2021, so their experience is of considerable interest, primarily in practical terms. The authors of the study have concluded about the importance of public assessment regarding the effectiveness of the activities of local authorities, as well as the prospects for actively involving citizens in solving problems arising against the background of force majeure.

Key words: COVID-19 pandemic, local community, public assessment of the effectiveness of public administration, civic engagement, anti-epidemic measures.

Introduction

The global epidemiological crisis that took place in 2019–2020 was the 18th pandemic in the history of mankind[1]. Its complexity and originality were expressed not only in the exponential spread of COVID-19, but also in the specifics of the measures required to contain the viral infection. In particular, mandatory lockdown, which has become the most effective means of preventing the epidemic, was implemented against the background of a long-term trend of an annually increasing flow of international tourism, which "in 2019 was observed in all regions of the world[2].

Large-scale restrictions on domestic and international movements, and suspension of the work of most enterprises during the lockdown could not but affect global economy, putting the world "on the verge of a global recession"[3]. Experts from leading international organizations (World Trade Organization, International Monetary Fund, Bloomberg, World Bank) predicted a drop in global

[1] Pandemics in the history of mankind. For reference. *Vesti.ru*, March 12, 2020. Available at: https://www.vesti.ru/doc.html?id=3247270; Cases of pandemics in the world in the 20th century. *RIA-novosti*, March 12, 2020. Available at: https://ria.ru/20200312/1568463184.html

[2] Finmarket with reference to the data of the United Nations World Tourism Organization (UNWTO). Available at: http://www.finmarket.ru/news/5153745

[3] Ivanter A., Kudiyarov S., Obukhova E. The crisis to which we are ready. *Ekspert=Expert*, 2020, no. 12, p. 13.

GDP and a global recession in the next 3–4 years [1], comparable to that in the period of the Great Depression in the United States in the 1930s.

The task of coping with the complex (social, economic, political) impact of the COVID-19 pandemic is becoming more urgent as humanity passes through the acute phase of the spread of coronavirus. This is facilitated by the accumulation of public and individual experience of living under an epidemiological threat, as well as the latest achievements in the field of medicine; first of all, several vaccines, the development of which was accelerated from the very beginning.

Obviously, overcoming the epidemiological crisis is a key condition for the return of any country to normal life. And in this sense, the experience of Russia and China, which demonstrate the most successful results in handling this problem, is interesting and useful. Thus, according to the data as of the beginning of May 2021, the incidence of coronavirus in Russia was 3,298 cases per 100 thousand people, in China – 7.5 cases per 100 thousand people. For comparison, the same indicator in the United States is 9,853 cases, in most countries of Western Europe (including the United Kingdom, France, Belgium, Italy, Spain, Sweden, etc.), as well as in many Latin American countries (Brazil, Colombia, Argentina, Chile, Uruguay, etc.) – more than 6,000 cases per 100 thousand population[4].

In the present paper, we analyze the Russian and Chinese experience of interaction between authorities and population at the local level, which has become one of the important conditions for containing the spread of coronavirus infection successfully.

Measures to prevent and combat COVID-19 have become one of the most important tasks for local governments. Urban and rural settlements play an invaluable role in preventing the spread of the virus within the country, as they are key elements in the implementation of preventive measures and in the use of all possible resources to reduce the incidence of the disease.

It is still not possible to control effectively the sources and channels of transmission of the disease, since the nature of the virus itself has not been studied sufficiently; the development and research of vaccines is underway. Due to the mutation of the virus, the threat of increased morbidity remains a serious problem.

The spread of COVID-19 will continue for a long time; in this regard, regular prevention measures are required, as well as efficient work of local governments in this direction. Currently, it is common practice to assemble special initiative groups for the prevention and control of the pandemic in districts and settlements, raise awareness among residents, train volunteers, distribute management responsibilities, introduce preventive measures in everyday work, and make joint efforts to prevent the spread of coronavirus in all areas. Based on the study of rural and urban settlements in Jiangxi Province (China) and the Vologda Oblast (Russia), the article highlights the following aspects: effectiveness of the work of local government in the context of the pandemic, public prevention measures, and related issues. The article also puts forward relevant proposals.

Effectiveness of the work of government authorities in the context of the COVID-19 pandemic in scientific discourse

The theoretical basis for assessing the effectiveness of public administration in the crisis conditions of the COVID-19 pandemic is at the initial stage of accumulation. The limited range of research and publications on this topic is due to the fact that COVID-19 pandemic is a new challenge and it has not been resolved so far. The scientific discourse is gaining strength, and a pool of issues that require scientifically substantiated solutions in the field of public administration assessment in

[4] Current epidemic information in Russia and in the world as of May 5, 2021. *Official website of Rospotrebnadzor.* Available at: https://www.rospotrebnadzor.ru/region/korono_virus/epid.php

the context of the spread of coronavirus infection, is being formed. At the same time, we point out the growing number of publications by researchers from Russia and other countries.

Following the logic of our research, first of all, we find it necessary to highlight scientific publications that consider the actions of the authorities in addressing the issues of combating coronavirus in China and Russia [2, 3]. The academic community engage in discussing the issues of human mobility and the impact of state control measures on the COVID-19 epidemic in China as a model country that has successfully implemented policies in these areas [4, 5, 6, 7]. "The state has shown its ability to mobilize labor, financial and other resources in the shortest possible time, to work out an action plan to overcome difficulties and stabilize the situation" [8].

The impact of the new coronavirus infection on the economy and social sphere is also discussed in the works of Russian scientists. Thus, they study the implications of the pandemic for certain economic sectors [9, 10, 11, 12]. Another range of works concerns state measures to prevent socio-economic consequences of the spread of coronavirus infection, and assessment of their effectiveness [13, 14, 15, 16]. The issues concerning the implementation of epidemiological, restrictive, and administrative measures imposed by the government are considered in the study by Doctor of Sciences (Economics) T.V. Chubarova and M.A. Sharova (Institute of Economics of the Russian Academy of Sciences). It is concluded that the measures taken are organized, comprehensive and interdepartmental; besides, recommendations for improving the implemented policy are given [17]. A collective monograph of the Institute of Socio-Political Research – Branch of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences is of considerable interest: it reflects key trends in the socio-political and demographic situation in Russia in the context of the COVID-19 pandemic. The work is aimed at obtaining reliable scientific knowledge about the reaction of society to the internal and external anti-crisis policy of the Russian state [18]. We should also point out the significance of the work *Russian Society in the Context of the Pandemic*, which is written in the form of an information and analytical report under the guidance of Academician M.K. Gorshkov, Doctor of Sciences (Sociology), Professor. The study was conducted in 22 constituent entities of the Russian Federation and covered 112 settlements, including two megacities, 19 administrative centers of RF constituent entities, 35 district centers, 19 urban-type settlements and 37 villages [19].

Let us provide some examples of research and discussions on public policy regarding the introduction of restrictive measures during the pandemic. Scientists from the University of Oxford (UK) conducted a large-scale assessment of government interventions against coronavirus infection based on modeling data from 41 countries. The authors concluded that measures such as limiting gatherings, closing face-to-face businesses with a high risk of infection, schools, and universities had a small-to-moderate effect. In turn, the order for complete self-isolation had a weak additional effect. These results suggest that by using effective interventions, some countries could contain the epidemic without ordering people to stay at home [20]. A similar study was carried out by Russian scholars from the Higher School of Economics. As a result of simulating the behavior of individuals under the possibility of being infected with COVID-19, they concluded that complete isolation of all population groups is impractical from the point of view of public welfare, while planning quarantine measures aimed at isolated homogeneous population groups is a more preferable strategy for the state [21]. In contrast, scientists in China have shown that preventive closure of schools helped reduce the transmission of the virus, although this measure alone would not have prevented the COVID-19 outbreak. Restricting household mixing proved to be the most effective

measure [22]. Scientists conducted an empirical test concerning the requirement to comply with mandatory mask-wearing. The study has found that a voluntary policy in this regard will lead to insufficient compliance with the requirement, while a mandatory policy seems to be an effective, fair and socially responsible solution to limit the transmission of the virus [23].

According to the analysis of scientific publications we can say that the assessment of the effectiveness of anti-crisis public administration measures in Russia and China during the pandemic is carried out mainly at the national (federal) level or deals with specific measures. This problem has not been sufficiently studied at the subnational (regional) and local levels from the point of view of an integrated approach. First, it is necessary to form an understanding of the extent to which regional authorities and local governments are involved in the work to prevent the spread of coronavirus. Second, we should consider people's response to these actions and pay attention to the participation of proactive citizens in overcoming the implications and addressing real social issues caused by the COVID-19 pandemic.

Research methodology and information base

We used several data sets in our study. The analysis of China's experience in combating the pandemic is based on a study that was conducted in the first half of 2020 in Jiangxi Province in the south-east of China. The survey covered the following administrative divisions: 2 districts, 11 urban communities, and 3 villages in 5 counties, including Jinxian County of Nanchang City, Qingshanhu District of Nanchang City, Nanchang High-Tech Zone, Yuanzhou District of Yichun City, and Poyang County of Shangrao City. We selected 5 territorial units for analysis, in accordance with the structure of urban and rural communities, regional distribution, population size, and potential risks.

Materials of sociological measurements carried out on the territory of the Vologda Oblast (a constituent entity of the Northwestern Federal District of the Russian Federation) formed the information base for the study of the situation in Russia. "The monitoring of the economic situation and social well-being of the Vologda Oblast population" is carried out by Vologda Research Center of the Russian Academy of Sciences (VolRC RAS). The survey covers 1,500 respondents over the age of 18 in the cities of Vologda and Cherepovets and in eight districts of the Vologda Oblast. The representativeness of the sample is ensured by the following conditions: proportion between the urban and rural population; proportion between residents of various types of localities; gender and age structure of the Oblast's adult population. The survey method is a questionnaire based on the respondents' place of residence.

The Vologda Oblast is a typical Russian region; its area is more than 140 thousand square meters. In the Nortwestern Federal District, it is second in population only to the Leningrad Oblast and Saint Petersburg (at the end of 2019, the population of the Vologda Oblast was 1.16 million people[5]). Among the 10 constituent entities of the Northwestern Federal District, it ranks 5th in terms of GRP (in 2018 – 582,630.4 million rubles) and life expectancy (71.82 years), 7th in terms of the share of the urban population (72.6%), 8th in terms of the average per capita monetary income (28,334 rubles per month). At yearend 2020 (as of December 31, 2020), the Vologda Oblast ranked 8th in the Northwestern Federal District in terms of the number of COVID-19 cases per 100 thousand people[6]. In other words, among the regions of the Northwestern Federal District, the Vologda Oblast is not an obvious "leader" or "outsider" either in terms of key features of its development or the state of the epidemiological situation caused by the spread of COVID-19.

[5] *Regions of Russia. Socio-economic indicators – 2020.* Rosstat. Available at: https://gks.ru/bgd/regl/b20_14p/Main.htm

[6] Real-time statistics on the spread of coronavirus. Available at: https://datalens.yandex/7o7is1q6ikh23?tab=X1&utm_source=cbregion&state=b3cbf9f7315

We should note that during the most acute phase of the "first wave" of the epidemiological crisis, when large-scale quarantine restrictions were introduced nationwide and in the Vologda Oblast as well, VolRC RAS researchers could not conduct sociological research in a usual way that requires direct interaction between interviewers and respondents. Therefore, in the period from March to June 2020, questionnaire surveys were not conducted, but instead two online surveys were implemented via GoogleForms. The surveys were dedicated to a very important event for Russia: the amendment of the Constitution; they also touched upon people's conduct in the conditions of the spread of coronavirus (the questions mainly concerned compliance with personal hygiene rules, attitude toward the activities of employers under the COVID-19 pandemic, etc.)[7].

In addition to the above-mentioned sources of information, we used regulatory and legal documents, including federal and regional laws and bylaws of state authorities at the relevant level, materials of official media, and websites of government bodies.

The collected data were processed and interpreted using systematic, comparative, statistical, and sociological analysis.

Empirical results of the study

Regional and local governments play a leading role in implementing effective measures to combat COVID-19; Russia and China are no exception in this regard. Measures taken at the subnational level to prevent the spread of COVID-19 require more detailed consideration in the framework of this study.

The local community level is of particular interest. A local community is a socio-territorial community located on a specific territory – a village, a settlement, a city, a group of districts and cities [24]. Socio-territorial communities are historically formed and continuously renewed communities of people who jointly develop and use a certain territory in economic, social, household and socio-cultural relations [25]. In foreign literature, "local community" is usually understood as a locality, as well as social groups with a special type of relations [26].

Measures to prevent and combat COVID-19 have become one of the most important tasks at the local community level. Urban and rural communities play an invaluable role in preventing the spread of the virus on the national level, because they are key elements in implementing preventive measures and in using all possible resources to reduce the incidence of the disease. The local community is a kind of "battleground" for joint preventive measures and for strengthening general social efforts to contain the spread of the virus.

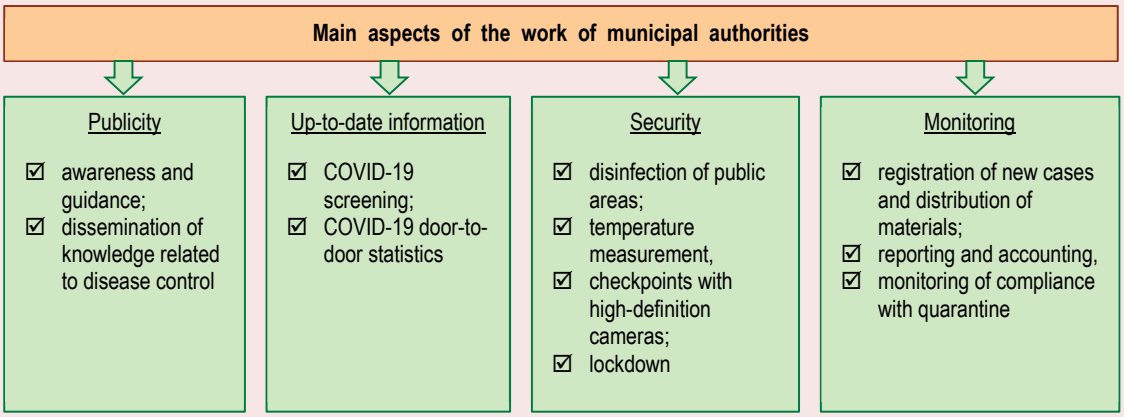
The study has shown that local governments in China engage in full-fledged cooperation in combating coronavirus at all levels, largely due to the effective work of the Party Committee and the Provincial Government in the field of personnel management, as well as the successful practice of forming the "Five Directions Government"[8]. In particular, it has been revealed that after a confirmed case of COVID-19 was discovered in the village of M in Poyang County of Shangrao City, the rural self-government bodies almost collapsed, and only after the city government intervened in the activities of the rural authorities, the order of life was restored, after which preventive measures for the spread of coronavirus brought results.

In the fight against coronavirus, the main function of Chinese local authorities is reflected in the effective management and control of such aspects as publicity (awareness and guidance, dissemination of knowledge related to disease control), up-to-date information (COVID-19

[7] In this article, the results of online surveys were not taken into account due to their indirect significance for the stated purpose of the study. Therefore, the tables and graphs (as well as the analysis) present data from surveys that were conducted after VolRC RAS had resumed the monitoring (since August 2020).

[8] The Five Directions Government is a government regime proposed by Jiangxi Province, the essence of which is that the government should be focused on loyalty, innovation, responsibility, performance of its duties and resilience.

Figure 1. Main aspects of the work of Chinese municipal authorities in the prevention of coronavirus infection



Source: own compilation.

screening, door-to-door statistics), security (disinfection of public areas, temperature measurement, operation of checkpoints with high-definition cameras, necessity to stay at home) and monitoring (registration of new cases and distribution of materials; *Fig. 1*). All the above-mentioned aspects make micro-management and micro-services particularly important in the activities of local governments.

The most important direction in overcoming the epidemiological crisis is the introduction of information monitoring methods. In particular, the analysis of the data revealed that all checkpoints in the settlements of District N of Nanchang City are equipped with high-definition cameras, which are used by persons on duty for observation with the help of the monitoring system. The observers detect clusters of people, thus reducing their workload and the risk of their infection. This provides a technical guarantee of effective management during the pandemic. The population Z of Nanchang City no longer needs to register the old-fashioned way using pen and paper; to enter the High-Tech Zone, they just need to scan a QR code in real time, use a mini-program WeChat, etc., which allows them to minimize possible risks.

In the context of the spread of COVID-19, governments at all levels in Jiangxi Province, in order to improve their efficiency, must adhere with the powers to address specific tasks and jointly tackle major issues related to the national economy and the life support of the people. In China, the Party plays a special role in resolving these issues at the local level. During the pandemic, primary-level Party organizations must follow orders from higher-level agencies, fulfill their responsibilities, strengthen good governance by ensuring the leadership role of Party members, promote public mobilization through timely and wide-scale public awareness campaigns, and systematically improve measures to prevent the spread of COVID-19 by strengthening organizational capacity.

The study has shown that the Party branches and Party members of rural and urban settlements performed their primary duties in an exemplary manner. Twenty-six Party members from village N of Jinxian County of Nanchang City, 18 Party members from village L of Yuanzhou District of Yichun City, and 15 from village M of Poyang County of Shangrao City took active part in a number of anti-epidemic measures, such as screening, temperature measurement, process management, and stand-by duty at COVID-19 checkpoints. By remaining at the forefront of the fight against COVID-19, they demonstrated the leading role of the Party and attracted more people to participate in government activities, thereby expanding the engagement of actors.

Network managers are an important administrative link in the management at the municipal level in Jiangxi Province, especially in the crisis period. Being a method of public administration, network management implements the relationship and interaction between actors, directs resources and personnel for management up to the primary level, helps to improve administration for each specific position and the base network, and build a network administration scheme with people working in network management. It has been found that there are 54 network managers in district N of Nanchang City, 6 network managers in 2 communities in district S of Nanchang City, 6 – in village N of Nanchang City, 8 – in village L of Yichun City, 4 network managers in village M of Shangrao City. Network managers keep in touch with residents to the greatest extent and provide timely feedback on the health status of residents, thus contributing to the achievement of good results in the implementation of preventive measures.

In addition, the analysis of the data has shown that in both urban and rural communities, due to the joint actions of the primary level authorities (for example, in village L in Yuanzhou district of Yichun City, village N in Jinxian County of Nanchang City, community N and community W in Qingshanhu District of Nanchang City), incidence control groups were established, which carried out a thorough survey of the population. It has been revealed that in other localities (in district N of Nanchang City, district S of Nanchang City, village N of Jinxian County of Nanchang City, village H of Qingshanhu District of Nanchang City, village L of Yichun City, and village M of Shangrao City), in the midst of the pandemic, disease prevention and control groups were also immediately established, which, among other things, actively motivated residents to work together to combat the pandemic and follow the instructions of the Central Committee of the Party. As a result of all these measures, the number of infected people was significantly reduced.

In Russia, a set of measures aimed at combating and preventing coronavirus infection has also been developed and implemented at the regional and municipal levels. According to the monitoring "Regions, municipalities and local communities against COVID–19", preventive measures were carried out in all constituent entities of the Russian Federation, which can be recorded on the example of the Northwestern Federal District. The analysis of the experience of the actions of regional authorities and local governments allows us to summarize the main preventive measures taken at the local level. The measures are as follows:

– informing citizens and organizations about COVID-19 prevention measures;

– disinfection of public areas;

– identifying persons suspected of having coronavirus infection (testing);

– marking for social distancing;

– restriction of access to public areas, to the territory of the municipality;

– control/supervision of compliance with these measures by citizens and organizations.

Data on the regions of the Northwestern Federal District show that in the Arkhangelsk, Kaliningrad, Leningrad, and Pskov oblasts, restrictions on movement between municipalities were not introduced, at least, the information about these measures was not found in open sources. The Vologda Oblast introduced all the above-mentioned epidemiological measures *(Tab. 1)*, including checkpoints at the entrance to and exit from the Oblast, as well as at the borders of some municipal districts[9].

During the coronacrisis, the Vologda Oblast, as well as Russia as a whole, began actively introducing digital technologies; but at the local level, it was done so as to implement effective and safe interaction between local authorities and the population rather than for monitoring the

[9] Checkpoints will start working at the entrance and exit from Vologda. Official website of the Administration. Available at: http://vologda-portal.ru/novosti/index.php?ID=425633&SECTION_ID=151

Table 1. Preventive measures introduced by regional authorities and local government bodies to counteract the spread of coronavirus infection in Russia

RF constituent entity	Informing citizens and organizations about the measures taken	Disinfection of public areas, streets, public transport, entrances of apartment buildings	Detection		Marking for social distancing	Restriction of access		Control/supervision of compliance with the measures	
			Incomers	Symptoms in employees and incomers		In public areas	On the territory of the municipality	By citizens	By organizations
Arkhangelsk Oblast	+	+	+	+	+	+	-	+	+
Vologda Oblast	+	+	+	+	+	+	+	+	+
Kaliningrad Oblast	+	+	+	+	+	+	-	+	+
Republic of Karelia	+	+	+	+	+	+	+	+	+
Komi Republic	+	+	+	+	+	+	+	+	+
Leningrad Oblast	+	+	+	+	+	+	-	+	+
Murmansk Oblast	+	+	+	+	+	+	+	+	+
Nenets Autonomous Okrug	+	+	+	+	+	+	+	+	+
Novgorod Oblast	+	+	+	+	+	+	+	+	+
Pskov Oblast	+	+	+	+	+	+	-	+	+

"+" – information about the measures is available in open sources.
"–" – information about the measures is not found in open sources.
Source: Regions, Municipalities and Local Communities against Covid–19. Monitoring of the All-Russian Congress of Municipalities. 2020.

epidemiological situation. The local government has developed various forms of communication with the population – mobile reception rooms, unified reference and information services, face-to-face meetings of managers with local residents, information stands, "hotlines", public online reports, services provided by "electronic" administrations, etc. [27]. These online services and platforms became particularly popular during the height of coronavirus infection and the introduction of the lockdown in order to develop a remote format for interaction between local authorities and the public.

As we can see, local authorities in Russia and China have adopted a wide range of measures aimed not so much at preventing the spread of coronavirus infection, but at maintaining the standard of living and quality of life of the general population. At the same time, we find it necessary to focus on some of the difficulties and problems that local authorities have to deal with in implementing their policies during the coronavirus crisis.

First, there is a lack of clear and operational guidelines and rules for the prevention and control of the virus. Largely, the lack of unified guidelines, standards for prevention and control of morbidity, and methods of public awareness campaigns led to uncoordinated actions of authorities at different levels. For example, in the Chinese province, when dealing with the coronavirus pandemic, the authorities sometimes demonstrated inconsistent network management, implemented jointly by the departments of health, public safety, transport, communications, and medical materials management, and there was also an insufficient awareness of early prevention and control.

Second, we can point out the problem related to the formation and dissemination of an array of data containing basic information about the community during the COVID-19 period. The spread of coronavirus is closely linked to population flows. Despite the fact that there are still some cases of infection in the country, during the period of regular prevention and control of the pandemic, population mobility in China has increased dramatically,

compared to the first wave of COVID-19. Initially, big data technology was used for preventive measures to provide each region with the necessary scientific support to predict the risk of infection and prevent disease by tracking the number of patients with COVID-19 and screening for the spread of coronavirus. However, the study has revealed that the databases in different localities are being created unevenly. It is particularly difficult to create databases in rural areas, due to the high frequency and uncertainty of population mobility. In addition, a conclusion has been obtained that China's urban and rural communities still do not have standardized data exchange processes, and there is a need to increase the effectiveness of joint emergency response. Data exchange is not yet formed between departments and socio-economic actors; data from the departments of transport, healthcare, communications, and public safety cannot be collected together and used to the fullest extent; government data is fragmented, and the degree of resource sharing is low.

In the Vologda Oblast, as in other Russian regions, data on coronavirus cases per day, data on the number of recovered patients, deaths, as well as the workload of COVID hospitals in each municipal district are promptly collected and published in official sources. At the same time, today, when the role of information technologies increases dramatically (among other things, due to the virtualization of lifestyle against the background of quarantine measures), the spread of the so-called "fake" news is a serious problem for the psychological background in society and for the preservation of social stability in the country. In this regard, the indicative point is the extent of people's satisfaction with coverage of the coronavirus situation by the media. According to surveys of VolRC RAS in the Vologda Oblast, more than 67% of people are satisfied with the volume of information in the media about the coronavirus situation in the world, in Russia and in the Oblast (16 to 28% of respondents hold the opposite opinion[10]). At the same time, we are concerned with the fact that only 35–39% of Vologda Oblast population fully and significantly trust the official information about the coronavirus situation, which is distributed in the media; *Tab. 2*).

Third, it is pointed out that at the local level, China and Russia do not use new technologies sufficiently. Traditional management practices continue to be used in cities and especially in rural settlements. The study has found that in Jiangxi Province, despite the need to comply with prevention measures during the pandemic, manual recording of information is still commonly used, and the use of new technologies, such as smart technology and digitalization, has not yet become widespread at the municipal level. The current implementation of measures such as scanning the QR code at registration helps to track the location of people promptly and avoid cross-infection. However, the majority of older people in rural areas and older communities do not know how to use a smartphone, and poor connection in some rural settlements also limits the use of new technologies.

In Russian society, there is also a problem of digital divide caused by the lack of infrastructure development at the local level, the socio-cultural characteristics of the regions, differences in the standard of living and the extent f development of digital competencies in local residents [28]. Of course, these problems make it difficult for municipal authorities to implement digital technologies, and in the context of an epidemiological challenge, as well.

We should note that the public assessment of the effectiveness and limitations of measures is an

[10] For comparison, according to VTsIOM, 88% of Russians in early April 2020 said that they "had enough information about the situation regarding the spread of coronavirus in the world, ways of transmission of the virus, and methods of prevention". Only 10% of respondents held the opposite opinion (Source: Russia in the pandemic: evaluation of the effectiveness of anti-epidemic measures. A VTsIOM analytical review. April 8, 2020. *Official website of VTsIOM*. Available at: https://wciom.ru/analytical-reviews/analiticheskii-obzor/rossiya-v-pandemii-oczenka-effektivnosti-protivoepidemicheskikh-mer)

Table 2. Assessment of the coverage of the coronavirus situation by the media (% of respondents)

Answer options	In the world	In Russia	In the Vologda Oblast
Do you think that you receive sufficient or insufficient information from the media about the situation regarding the spread of coronavirus, ways of its transmission, and methods of prevention?			
Sooner sufficient	77.8	73.5	67.5
Sooner insufficient	16.4	21.7	27.9
Difficult to answer	5.8	4.7	4.6
Do you trust the official information about the coronavirus situation that is being spread in the media?			
I trust fully and significantly	44.4	35.0	38.9
I trust only partially	37.0	41.2	38.9
I don't trust at all	14.5	20.1	19.1
Difficult to answer	4.1	3.6	3.3
Source: VoIRC RAS public opinion monitoring (October – November 2020; N=1,500).			

important condition for maintaining social stability at the local level and consolidating society and local authorities in the implementation of anti-epidemic measures. To this end, mass public opinion polls are regularly conducted on location; they demonstrate, among other things, the degree of public support for the activities of government bodies during the pandemic. The results of surveys conducted in a number of municipalities of the People's Republic of China have revealed that, with a high assessment of the effectiveness of the measures implemented by the authorities, the assessment of residents' satisfaction was also high (from 79 to 92 points on a 100-point scale; *Tab. 3*).

Table 3. Evaluation of the effectiveness of measures implemented by local authorities at the local level (China, public opinion poll data)

Observed territory	General conditions	Degree of risk	Number of network managers	Volunteer service	Degree of achievement of the goal	Degree of residents' satisfaction	Performance evaluation
District N of Nanchang City	9 communities, 9,049 households, 21,610 residents	Average	54	136 registered people, 50 people involved in COVID-19 prevention, most of them – elderly people	High	92	Excellent
District S of Nanchang City	2 communities, 1,420 households, about 4,500 residents	Average	6	10 employees of the Social Security Administration in Yuzhan	Average-to-high	85	Good
Village N, Jinxian County	3 villages, about 290 households 33 Party members	Low	6	41 volunteers, including: 26 Party members, 9 retired soldiers and 6 volunteers	Average-to-high	83	Good
Village L, Yuanzhou District	8 villages, 278 households, 1,488 villages, 39 Party members	Low	8	More than 60 volunteers (18 Party members, and rural residents)	Average	79	Satisfactory
Village M, Poyang County	5 villages, 1,075 households, 3,468 villages, 36 party members	High	4	More than 30 volunteers (rural residents-working migrants)	Average-to-high	86	Good

Note: The degree of residents' satisfaction is evaluated on a one-hundred-point scale.
Source: in the first quarter of 2020, a survey was conducted, covering the following administrative divisions: 2 districts, 11 urban communities, and 3 villages in 5 counties, including Jinxian County of Nanchang City, Qingshanhu District of Nanchang City, Nanchang High-Tech Zone, Yuanzhou District of Yichun City, and Poyang County of Shangrao City. We selected 5 territorial units for analysis, in accordance with the structure of urban and rural communities, regional distribution, population size, potential risks, etc.

Table 4. Vologda Oblast population assessments of the measures taken by the regional authorities to combat the coronavirus pandemic (% of respondents)*

Population group	Everything possible and everything necessary is being done		Measures taken are excessive		Measures taken are insufficient		I know nothing about the measures taken		I find it difficult to answer	
	Aug.20	Feb.21	Aug.20	Feb.21	Aug.20	Feb.21	Aug.20	Feb.21	Aug.20	Feb.21
Sex										
Men	29.1	31.6	29.7	28.2	17.9	14.6	7.2	3.9	16.0	21.8
Women	34.4	36.6	27.7	26.8	17.2	14.7	5.2	3.9	15.5	18.1
Age										
Under 30	34.1	24.5	23.7	30.0	16.8	12.7	9.5	5.9	15.9	26.8
30–55	27.0	31.5	33.4	29.4	17.4	16.0	5.3	3.8	17.0	19.2
Over 55	37.6	41.5	24.7	23.9	18.0	13.8	5.6	3.1	14.1	17.6
Education										
Secondary and incomplete secondary	28.4	30.8	29.0	27.9	15.1	13.4	5.1	3.5	22.3	24.4
Secondary vocational	35.2	37.8	28.1	28.6	17.6	12.3	6.9	3.0	12.2	18.2
Higher and incomplete higher	32.4	33.6	28.8	25.2	20.0	19.1	6.0	5.5	12.8	16.6
Income groups										
Bottom 20%	29.1	26.3	32.0	24.8	13.8	10.3	8.4	5.0	16.7	33.6
Middle 60%	32.3	35.7	26.1	26.8	20.8	15.8	6.3	3.9	14.6	17.8
Top 20%	42.9	37.4	27.3	29.0	14.9	15.3	2.2	5.0	12.7	13.4
Territories										
Vologda	26.3	27.3	41.3	37.9	14.0	15.2	2.3	4.8	16.3	14.9
Cherepovets	37.2	37.6	22.9	24.0	25.4	19.8	6.7	1.2	7.7	17.3
Districts	32.5	36.4	24.6	23.4	15.0	11.4	7.9	4.9	20.0	23.9
Oblast	32.1	34.3	28.6	27.4	17.5	14.7	6.1	3.9	15.7	19.7

* Surveys were conducted in August 2020, October 2020, and February 2021.
Source: VolRC RAS public opinion monitoring; N=1,500.

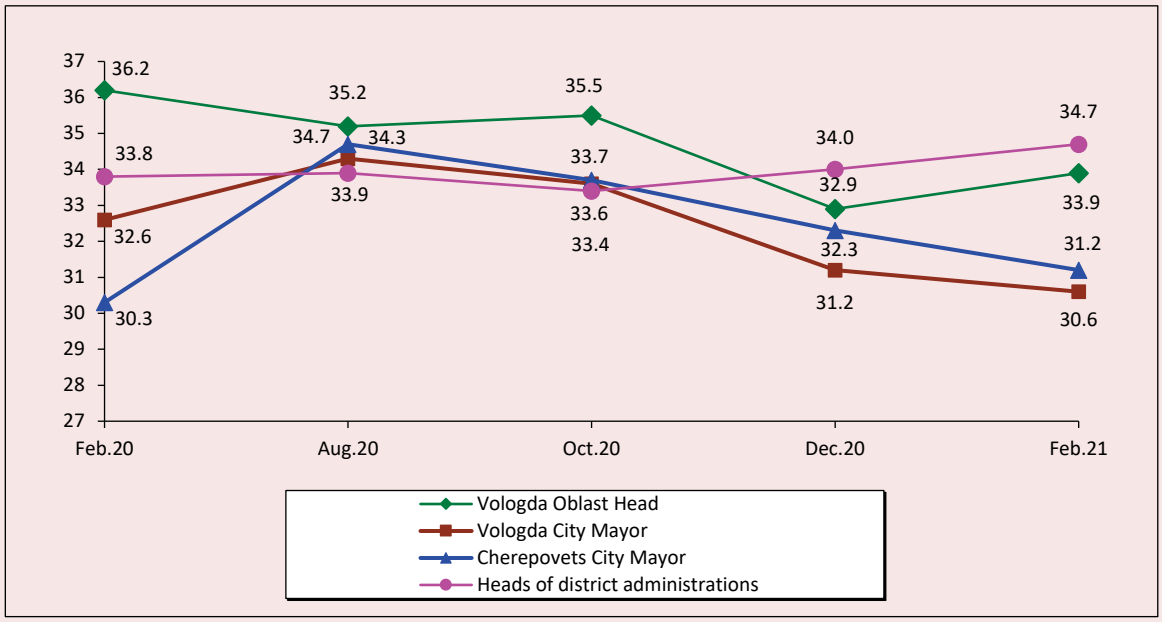
According to the monitoring of public opinion conducted by VolRC RAS for the period from August 2020 to February 2021, the share of residents of the Vologda Oblast who believe that in the context of the pandemic, regional authorities "do everything possible and everything necessary" increased from 32 to 34% *(Tab. 4)*. For comparison, the share of those who consider the measures taken by local authorities "insufficient" is almost twice lower, and during this period it decreased from 18 to 15%. At the same time, only 4–6% of the population say that they "know nothing" about the measures taken by regional authorities.

It is noteworthy that a significant preponderance of the share of positive assessments over negative ones is observed in all major socio-demographic groups (also among people who, according to self-assessment of their income, belong to 20% of the least affluent residents of the Vologda Oblast), as well as in urban and rural areas.

We should also note that the predominantly positive attitude of the population toward the activities of the authorities aimed at combating the pandemic is not a unique phenomenon for the Vologda Oblast. For example, according to VTsIOM[11], in late March – early April 2020, 59% of

[11] Russia in the pandemic: evaluation of the effectiveness of anti-epidemic measures. A VTsIOM analytical review. April 8, 2020. *Official website of VTsIOM*. Available at: https://wciom.ru/analytical-reviews/analiticheskii-obzor/rossiya-v-pandemii-oczenka-effektivnosti-protivoepidemicheskikh-mer

Figure 2. Assessment of the activities of regional and municipal authorities (Vologda Oblast, % of respondents)



Surveys were conducted in August 2020, October 2020 and February 2021.
Source: VolRC RAS public opinion monitoring; N=1,500.

Russians considered the measures implemented by the authorities to prevent the spread of coronavirus to be "sufficient" (for comparison, only 32% of Russians held an opposite viewpoint)[12].

In general, the level of approval of the activities of regional and municipal authorities throughout 2020 remained stable (30–35%; *Fig. 2*), despite the fact that during this period, people had to face a huge number of not only epidemiological, but also psychological and socio-economic threats that somehow affected the daily routine of each individual[13].

Thus, the great extent of residents' support for the measures taken by the authorities at the local level has become an important factor, due to which the acute phase of the spread of coronavirus was overcome relatively successfully. This not only made it possible to maintain stability in the socio-political situation at the regional and federal levels, but also to create constructive conditions for the broad inclusion of representatives of society itself in the implementation of measures aimed at maintaining the living conditions of the most vulnerable population groups.

[12] Due to the differences in the techniques for conducting the surveys, it would be inappropriate to compare the specific research data obtained by VTsIOM and by VolRC RAS. However, in this case, it is important to characterize the general situation, which is evidenced by the results of both studies – residents' overall positive assessment of the work of the authorities during the pandemic, both in the Vologda Oblast and nationwide.

[13] The seemingly insignificant level of support for the work of regional and municipal authorities (30–35%) is largely due to the following methodological specifics of VolRC RAS surveys: in contrast to interviews, the survey assumes a significant proportion of respondents who find it difficult to answer or those who did not form a definite opinion. For example, on average for 2020, the share of such answers regarding the activities of regional and municipal authorities ranged from 20 to 36%.

Nevertheless, we should also note that at present the attitude of the population toward the activities of authorities at the regional and municipal level is actually more skeptical, compared to the federal level. This is a nationwide problem, not limited to the Vologda Oblast alone, and it is due to a wide range of factors (political, psychological, socio-cultural), which is pointed out, in particular, by Russian sociologists, as well (see, for example: Russian everyday life in a crisis: how do we live and what do we feel?: information and analytical summary based on the results of a nationwide study. IS RAS, 2015. 22 p.).

We should emphasize that when considering the crisis situation associated with the spread of coronavirus, the public discourse focuses mainly on the options for regulating this situation and on assessing the prospects for overcoming the threat that has arisen. Practitioners and theorists mainly consider the role of authorities at all levels and the effectiveness of public policy instruments to overcome the implications of the epidemiological crisis.

At the same time, the current crisis has another key dimension, which will have long-term consequences for the state and society, as well as for every citizen. We are talking about civic self-organization in the face of an unforeseen threat not only to life, health, standard of living, but also to personal freedom. This is a matter of fundamental importance in many aspects, and social security in society is one of them. The fight against the pandemic requires the involvement of both material and human resources, joint efforts of society, stimulation of its vitality, as well as the awareness that active participation in all necessary events will guarantee the protection of society. Civic engagement in addressing social issues and the cohesion of society will largely determine how successfully the governments of the countries will cope with the COVID-19 pandemic and its impacts[14].

The study has revealed that both in Chinese and Russian society, the epidemiological challenge provoked a surge in volunteer activity at the local level. It is necessary to highlight the importance of the role of volunteers in the urban communities of the Chinese province. For example, in district N of Nanchang City, there are 50 volunteers, and most of them are elderly people, and the oldest of them is 70 years old; participants from two communities of district S of Nanchang City (10 people) have been fully engaged in social work to counteract the virus; nine retired soldiers in village N of Jinxian County of Nanchang City joined the number of volunteers on their own initiative.

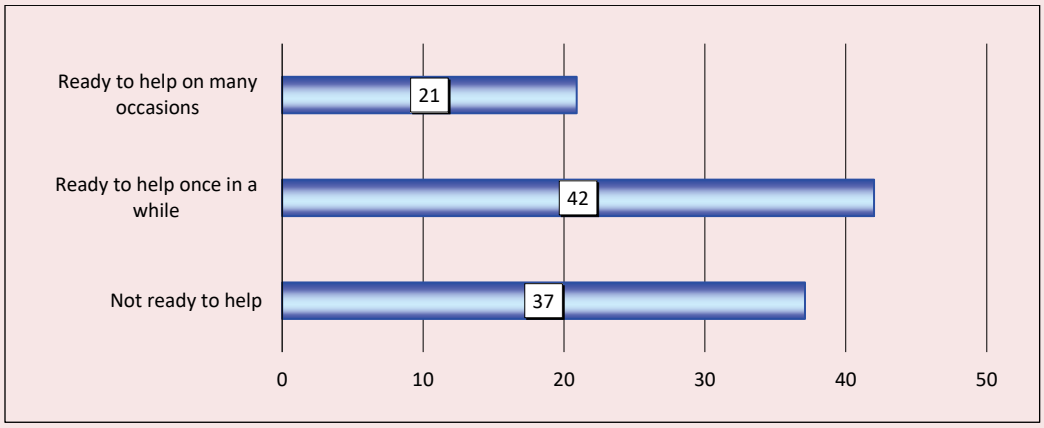
The high personal initiative of local residents in ensuring safety of life is also observed in rural communities in China. In village L in Yuanzhou District of Yichun City, 32 residents took the initiative to participate in the fight against the pandemic, and more than 30 residents of village M in Poyang County of Shangrao City became volunteers. Thus, it can be seen that the local communities mentioned above played an important role and produced their results in the implementation of preventive measures. At the same time, an analysis of the data obtained has shown that the volunteers in the villages are mainly Party members and a small number of young volunteers are working migrants. The bulk of responsibility rests with the heads of rural settlements and representatives of the authorities, while the awareness of residents about self-government and volunteerism is insufficient. Thus, there is reason to talk about the problem of the insufficiently active participation of the local community of China in addressing socially significant issues in the context of the pandemic.

The sociological research conducted by VolRC RAS in the Vologda Oblast in October – November 2020 shows that the vast majority of the regional community (63%) think that people around them are ready to help each other in the context of the spread of coronavirus infection in Russia *(Fig. 3)*.

However, the level of actual participation in various practices of self-organization aimed at helping people who find themselves in a difficult situation in connection with coronacrisis is almost two times lower than the potential of such participation (22% of respondents said they were already engaged, 40% – declare their willingness to provide such assistance in the future; *Tab. 5*). At the same time, there are grounds to say that there is a

[14] A COVID-19 Philanthropy Stimulus Package: Unlocking further giving in the UK to support civil society at a time of crisis. CAF, 2020. Available at: https://www.cafonline.org/about-us/caf-campaigns/a-champion-for-charities/policy-briefings-andconsultations-library/covid-19-philanthropy-stimulus-package (accessed May 11, 2021).

Figure 3. Vologda Oblast population assessments of whether people around them are ready/not ready to help each other in the context of the spread of coronavirus infection in Russia*, % of respondents



* Answer to the question: In your opinion, do people around you are ready or are not ready to help each other in the context of the spread of coronavirus infection in Russia? And if they are ready, is it often or seldom?

Source: Public opinion monitoring (October – November 2020; N=1,500).

Table 5. Participation and readiness of local communities to participate in helping others in conditions of the spread of coronavirus infection in Russia* (% of respondents)

Answer option	Yes	No
I help others	22.3	77.7
I am willing to help others in the future	40.0	60.0

* Answer to the question "Do you personally help people who find themselves in a difficult situation in connection with the spread of coronavirus infection, or are you willing to provide such assistance in the future?"
Source: VoIRC RAS public opinion monitoring (October – November 2020; N=1,500)

significant potential for solidarity and consolidation in the Russian society in crisis conditions at the local level.

Regional sociological data show that women are more likely to help people who find themselves in a difficult situation due to the spread of coronavirus infection than men. Depending on age and education: people aged 30–55 and those who have higher education take a direct part in overcoming the impacts of COVID-19 more often than the rest of the population of the Oblast. In terms of income, two opposite groups are most active: the bottom 20% and the top 20% *(Tab. 6)*.

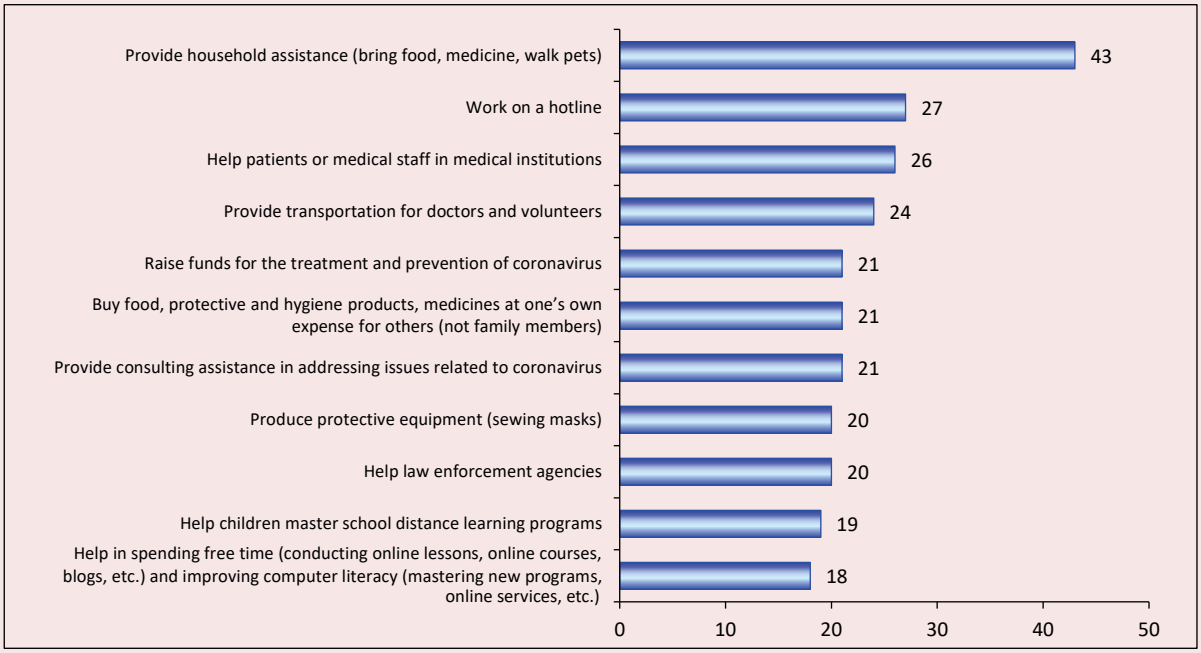
Sociological studies show that Russian youth today is a promising subject of civil self-organization aimed at combating new challenges and risks. The younger generation is the social group that is constantly open to everything new; it easily adapts to emerging changes and welcomes social transformation [29]. In particular, the socio-demographic portrait of a volunteer of the city of Vologda is as follows: first of all, this is a young person under 30 with a higher education, or a university student living in the regional center [30].

According to the obtained data, local communities during the period of coronavirus infection tend to engage in practices primarily aimed at providing household assistance to people who are under lockdown or in quarantine – more than 40% of respondents are ready to bring food, medicines, walk pets, etc. *(Fig. 4)*. More than a quarter of the population are ready to engage in such social activities as working on a hotline (27%), providing assistance in medical institutions (26%),

Table 6. Socio-demographic characteristics of the population in the context of providing assistance during the spread of coronavirus infection (real and potential participation; % of respondents)

Population group	I provide assistance		I am willing to provide assistance in the future	
	Yes	No	Yes	No
Sex				
Men	18.1	81.9	34.0	66.0
Women	25.7	74.3	44.7	55.3
Age				
Under 30	22.1	77.9	45.5	54.5
30–55	25.8	74.2	42.1	57.9
Over 55	18.1	81.9	35.0	65.0
Education				
Secondary and incomplete secondary	14.1	85.9	30.6	69.4
Secondary vocational	21.8	78.2	37.6	62.4
Higher and incomplete higher	32.3	67.7	53.8	46.2
Income groups				
Bottom 20%	26.1	73.9	36.9	63.1
Middle 60%	19.1	80.9	39.2	60.8
Top 20%	27.9	72.1	46.5	53.5
Territories				
Vologda	27.0	73.0	51.8	48.2
Cherepovets	16.3	83.7	28.3	71.7
Districts	23.3	76.7	40.1	59.9
Oblast	22.3	77.7	40.0	60.0
Source: VoIRC RAS public opinion monitoring (October – November 2020; N=1,500).				

Figure 4. Readiness of Vologda Oblast residents to participate in helping people under lockdown or in quarantine caused by the spread of coronavirus (in % of those who gave an answer to each statement)



Source: VoRC RAS public opinion monitoring (October – November 2020, N=1,500).

and transport volunteering (24%). It is noteworthy that the population of the region mainly declares they are ready for informal participation (often situational, without membership in a specific non-governmental organization), the so-called practices of smaller-scale stories, which is typical of Russian society as a whole in the modern period [31].

Thus, the destabilizing situation of the pandemic has particularly clearly demonstrated the importance of civil self-organization for social stability at the local level in Chinese and Russian societies. Through joint efforts, it is possible to mobilize the masses in a critical period. The dynamics and nature of community management can be ultimately improved only by motivating residents to participate in it.

Conclusion

Summarizing the results of the study, we would like to emphasize that the key to preventing the spread of the virus is to organize the life of residents effectively and not just rely on primary-level civil servants to handle the matter. In order to promote the activities of local governments, it is necessary to change the directions and ideas of pandemic prevention and control. In particular, it is necessary to start with trivial questions and details in people's daily lives and find ways to organize the activities of the local community in an efficient way. We consider it relevant to direct the power of self-government to the primary level and expand the opportunities of communities and residents. It is important to focus on mobilizing the enthusiasm of civil society activists (leaders of various initiative groups) within communities. As the fight against the spread of coronavirus is underway, it is necessary to enhance the organizational potential of public figures and strengthen their leadership potential in order to develop self-organization of residents further.

In addition, we find it important to improve modern digital technologies during the prevention and control of the pandemic in the part concerning organization of interaction between society and government at the regional and municipal levels (expansion of online platforms, online services), as well as in the development of local civic engagement as a significant resource for social development. In the course of pandemic prevention and control, online organizations such as online platforms, WeChat and QQ can be used to organize the activities of local authorities.

For Chinese society, the following measures are of greatest importance: development of political advantages of the Party, strengthening of the leadership role of the Party apparatus, improvement of the construction of Party organizations at the primary level, and full use of Party branches in the field of organizing the life of society at the local level.

The danger of the pandemic is due to a number of factors, the complexity of the fight against COVID-19 and the costs of local government activities may increase as soon as new cases are detected and confirmed. Non-epidemic target reference points are the most important indicators. The development of a scientific assessment system for effective public administration is a long-term goal in assisting local authorities. It is recommended to build a relatively substantiated assessment and measurement model that takes into account the extent of the impact of the pandemic, institutional improvement, quantitative performance indicators of participants, the technical support system, satisfaction of residents and other comprehensive assessment systems.

Summing up, we should note one of the major factors that allowed Russia and China to cope relatively well with the outbreaks of the COVID-19 epidemic and the socio-economic challenges that arise during this period. This factor consists in maintaining constructive relations between society and government, based on a positive public assessment of the activities of local governments and on the active implementation of the potential of civil society and civil initiatives in addressing dynamically emerging issues during the epidemiological crisis.

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Current Stage of International Cooperation in the Arctic: Search for Answers to the Challenges of Economic Development

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Abstract. The transformations in the natural and socio-economic environment occurring in the Far North and the Arctic put forward the problem of regional sustainable development. This makes it necessary to address the task of finding strategic approaches to the management of the nonstandard Arctic region, considering the national interests of many states, including the Russian Federation, which dominates territorially in this region. Taking into account the size of the Arctic space and the extreme conditions of economic management, it seems relevant to comprehend the experience of international cooperation in the Arctic and analyze its use for socio-economic development in the entire Arctic region. The aim of the article is to analyze the current stage of international cooperation so as to find answers to the challenges of socio-economic development of the Arctic region. To achieve the goal, we have analyzed the state policy features of the Arctic states based on strategic planning, thus the northern states are able to adapt to the changing natural, socio-economic and geopolitical conditions. We considered approaches in the implementation of projects to develop mineral deposits on the continental shelf of the Arctic Ocean. With the support of international cooperation we give examples of nature management aimed at harmonization of economic interests of business entities and the need to preserve the environment quality in the Arctic. The scientific novelty consists in the critical analysis of the international cooperation features in the Arctic and its readiness to participate in overcoming the new challenges of the Arctic development. The practical relevance of the study lies in the fact that its findings can be used in the educational process in universities, as well as at the state level by executive and legislative authorities in the development and implementation of state policy in the Arctic zone of the Russian Federation, considering the features of international cooperation.

Key words: the Arctic, development strategies, international cooperation, climate change, sustainable development.

Introduction

For a long time, the Arctic (the Arctic Ocean and the land areas of the Far North, the borders of which are defined by the national documents of the respective states) was considered from a military-strategic position, and only recently it has become a place of attraction for economic and research interests of states both having direct access to the Arctic Ocean and located thousands of kilometers from its coast. One of the reasons for this interest is *new challenges*, i.e. transformations in the natural and socio-economic environment of the Arctic, about the causes and consequences of which not enough is known yet. The relationship between natural and socio-economic changes is also a matter of debate. The global nature and interconnectedness of the challenges in the Arctic determine the leading role in their solution not so much for national governments, but for the efforts of all interested countries and their associations. It is important to note that each Arctic country has its own meaning in the concepts of the Arctic and the Far North. Sweden, Finland and Iceland consider their entire territory as Arctic, although they do not even have access to the Arctic Ocean. In some studies, the Arctic refers to all northern regions where the average July temperature does not exceed 10°C, that is, areas and waters located south of the Arctic Circle including most of the Bering Sea between Russia and Alaska, the Labrador Sea between Canada and Greenland. On land, regions north of the edge of the forest distribution can be considered Arctic. The Fridtjof Nansen Institute and DNV report focuses on the Arctic Ocean and its surrounding areas, where economic activities that affect the state of the ocean waters are carried out. It is said that "the Arctic Council has not established precise geographic boundaries of its mandate. Therefore, there is no clear legal definition of the borders of the Arctic. The situation is particularly murky with regard to the delimitation of Arctic water boundaries in the Northeast Atlantic. In terms of environmental protection against pollution, the OSPAR Convention, whose subject matter is the Northeast Atlantic region, defines Arctic waters (Region I in the document) as located north of 60° north latitude"[1]. Thus, the issue of defining the territory of the Arctic and drawing its southern borders remains debatable.

An example of natural changes in the Arctic region is the increase in air temperature over the previous 30–40 years at a rate several times higher than the global average. The fifth report of the International Panel on Climate Change (IPCC) states: changes in the climate system in industrial times are an undeniable fact. It is highly probable (over 90%) that increasing concentrations of anthropogenic greenhouse gases is responsible for much of the global warming since the mid-20th century [1]. The Arctic Council's report Arctic Climate Impact Assessment (ACIA) notes that during the 21st century the average global temperature may increase by 2.8°C (currently about 0.4–0.6°C), with a 3.5°C increase in most land areas and a 7°C increase in the Arctic [2]. According to the Russian Federal Service for Hydrometeorology and Environmental Monitoring, an absolute minimum of ice has been registered for 30 years, their area decreased from 7.3 mil. sq. km in 1979 to 5.2 mil. sq. km in 2018 (5.1 mil. sq. km in 2013)[2].

The relevance of the "climate issue" is also conditioned by the fact that in the Arctic region natural and climatic problems are transformed into political ones. As the Arctic Ocean seas become free

[1] Arctic resource development: risks and responsible management. Available at: http://pro-arctic.ru/24/09/2012/resources/316 (accessed: December 04, 2020).

[2] Global climate change. Available at: https://climate.jpl.nasa.gov/ (accessed: August 12, 2019); *Arctic climate issues 2011: changes in Arctic snow, water, ice and permafrost*. AMAP, SWIPA, 2011. Available at: http://www.amap.no (accessed: August 12, 2019).

of ice, access to mineral resources becomes easier, and competition for maritime communications, not yet fully included in the turnover of the world economic process, develops. In an effort to expand their influence on the use of natural resources, the countries of Northern Europe, the United States and Canada have developed plans and strategies for the development of the Far North and national Arctic zones. In order to find an effective response to the new challenges, aware of the size of the Arctic region and the extreme conditions of economic activity, foreign countries are developing international cooperation within both regional formats and bilateral relations.

The history of the development of areas near or north of the Arctic Circle confirms that economic activity here is relatively recent. There are two types of economy in the Arctic: rent-based and transfer-based, as well as models – American, Canadian and Russian – typical for states with a federal structure, characterized by the joint involvement of federal and regional authorities in economic processes, and European, typical for unitary European states, where responsibility for the development of regions lies with the central government [3]. Their organizational and managerial mechanisms are to ensure sustainable development of the northern (Arctic) territories: social and economic development, environmental protection [4]. The models have specific features: the US Arctic economy is characterized by high investment level of developing extractive industries and tourism in the North and intensive expansion of capital to other northern countries; Canada applies unique methods of compromise with indigenous peoples in the North; Norway has developed science-intensive standards of resource development in offshore areas and has strict environmental standards in this area; Russia is accumulating experience in oil and gas production on land in the Far North [5].

Among foreign countries, Canada, Norway, Denmark and the United States play a major role in Arctic natural resource management. Russia was one of the first to start developing areas north of the Arctic Circle, creating here the most powerful industrial layer among the world's analogues over the past 90 years against a background of high urbanization and sparse population settlement. Commercial use of the Northern Sea Route (NSR) has been underway since 1932. Iceland, Sweden, and Finland position themselves as experts in the development of natural resources and have practical experience and competences of human resources for work in the Far North.

Research methods

The issues concerning strategic planning for the development of Northern and Arctic territories, peculiarities of international cooperation and responses to challenges in the Arctic region are considered in the scientific literature in Russia and abroad. The analysis shows that the selected topic is especially widely covered in Russian publications in the early 2000s. As noted earlier, the countries of Northern Europe and North America are characterized by a high level of socio-economic development, competitive economy, and ability to effectively respond to global challenges and elaborate development strategies for the peripheral northern territories [6; 7]. V.N. Konyshev, A.A. Sergunin have analyzed the specifics of the Arctic strategies of the North American countries, compared them with their Russian analogue, and come to the conclusion about the need to preserve partnership relations between the states in the interests of safe development of the entire Arctic region [8; 9; 10]. Russian publications focus on theoretical analysis of the organization of international cooperation in the Arctic in the political, environmental and ecological [11; 12], intellectual [13], energy [14], military security, and sustainable development fields [15]. Russian authors compare domestic and foreign experience of economic development of the Northern territories [16]. Considering the peculiarities of international

relations in the Arctic, researchers note that they develop in several directions, and it is difficult to identify the prevailing one [17]. Doctor of Sciences (Geography) A.N. Pilyasov analyzes the concept of northern futurology as a special research field, an interdisciplinary platform to consolidate the efforts of specialists in forecasting the development of Northern and Arctic territories of the world, shows the positive role of international cooperation in the economic development of the Arctic [18; 19]. He considers the phenomenon of the Arctic Mediterranean, "just as the Mediterranean in the ancient era was the cradle for new socio-cultural communities, the global influence of which we still feel today". The prerequisites for the implementation of the new concept of Arctic development put forward in the countries of Northern Europe at the beginning of the 21st century are "the growing availability, the enormous oil and gas potential of the shelf, which is in demand of the leading economies of the world, the significant similarity between the value systems and features of economic behavior of the Arctic natives and the communities of intellectual territories of the world, the global creative class...". [20].

The Russian International Affairs Council is implementing the project "International Cooperation in the Arctic". Its participants (universities, the expert international community, and the Institute of World Economy and International Relations of the Russian Academy of Sciences) aim to "work out proposals for the development of international cooperation in the Arctic taking into account the priorities of the Arctic Council, in partnership with research centers of the Arctic region and extra-regional countries". The project has published reports on the characteristics of international cooperation in the Arctic region. Among their topics are natural resource management, development of marine nature management, interaction between Russia and Arctic countries in the Arctic, Asian countries' interests in the Arctic, and development of the Roadmap for International Cooperation in the Arctic[3].

Foreign publications have examined the development of the Arctic Council [21], climate change, the adaptation to it of natural, socio-economic systems, the transformation of cultural landscapes, the influence of the media on attitudes to climate change issues [22; 23; 24], and the choice of development trends in the Arctic beyond 2050 [25; 26]. Foreign economists and political scientists analyze the interest of extra-regional countries (especially China and Japan) in the Arctic and conclude that it is based on the desire to use mineral resources and maritime routes of the Arctic Ocean, especially the NSR [27; 28]. The relevance have the study of Canada's experience in ensuring national security in the Far North [29; 30], the relationship between Norway and Russia in the context of maintaining maritime security in the Arctic [31], the application of the World Trade Organization tools for the regulation of shipping in the Arctic [32].

Results and discussion

In the years 2000–2020, Russia, Denmark[4], Iceland [33], Norway[5] [34], Finland[6], Sweden[7], and the United States of America[8] and Canada[9]

[3] International Cooperation in the Arctic: Project of the Russian International Affairs Council. Available at: https://russiancouncil.ru/projects/regional/arctic/ (accessed: November 10, 2020).

[4] Denmark, Greenland and the Faroe Islands: Kingdom of Denmark Strategy for the Arctic. 2011– 2020, 58 p.

[5] The Norwegian Government High North Strategy. Norwegian Ministry of Foreign Affairs, 2017. 76 p.

[6] Finland's Strategy for the Arctic Region: Government resolution, dated August 23, 2013. Prime Minister Office, 16/2013. 70 p.

[7] Sweden's Strategy for the Arctic region. Government Office of Sweden. Ministry for Foreign Affairs. Department for Eastern Europe and Central Asia. Arctic Secretariat, Stockholm, Sweden, 2011. 52 p.

[8] National Strategy for the Arctic Region. May 2013. USA, Washington D.C., 13 p.; United States Coast Guard. Arctic Strategy. May 2013. USA, Washington D.C. 48 p.

[9] Canada's Northern Strategy. Our North, Our Heritage, Our Future. Government of Canada, Ottawa, 2009. 48 p.

published and later updated (Norway was the first to do this) the strategies for the development of their national northern outlying regions and Arctic zones. The activity of states not only directly bordering the Arctic Ocean, but also lying much to the south of it (China, Japan, Germany, Great Britain, France, Switzerland, the Republic of Korea), and their associations (the communiqu "European Union and the Arctic Region", 2008 and 2012; the activities of the Arctic Council) is dictated by objective factors: climate change, the shift of business activity to high latitudes due to the reduction of fuel reserves in traditional extraction sites, the desire (with limited own capabilities) to use the transport routes of the Arctic Ocean, attention to the problems of indigenous peoples.

Each Arctic strategy is unique, but all documents have socio-economic, geopolitical (including military-strategic) and geo-environmental aspects. All the northern countries (including Russia) see the Arctic space as a zone of peace and stability. Their strategies proclaim the need to strengthen sovereignty, support "people's diplomacy" in the Barents region (Norway), and develop interaction on a multilateral basis and with the participation of Russia. The Arctic Council is especially emphasized as having no alternative for formulating policies for the sustainable development of the Arctic.

When organizing economic activities in the Arctic, most countries (including Russia) proceed from the principles of the UN Convention on the Law of the Sea (1982). Its provisions are used for delimitation of water areas of the World Ocean, organization of navigation. At the same time there are discrepancies in the application of the documents. Disputes become more acute where mineral and biological resources are available and strategic maritime routes pass. The United States has not yet ratified the 1982 Convention and claims to act unilaterally in the Arctic, regardless of borders. Some countries interested in developing transport links between the North European and Asia-Pacific regions are ready to declare the NSR, Russia's national Arctic transportation route, and the Northwest Passage, much of which runs along the Canadian coast, as international waters.

Foreign strategies emphasize natural resource management in the Far North: the precautionary approach, EIA procedures based on stricter environmental management standards than in the southern regions, environmentally safe use of energy resources consistent with the norms of international law, development of tourism and alternative energy. These points are important because the Nordic countries were at the forefront of the Arctic environmental protection and sustainable development concepts in 1992, the establishment of the Barents Euro-Arctic Council in 1993, the Arctic Council in 1996, and the EU's Northern Dimension institutions in 1997. These organizations develop and implement policies in the Arctic, concentrating common technological, research and financial resources. Their activities contribute to the successful search for answers to socio-economic, geo-environmental, international-legal, geopolitical challenges of Arctic development.

The strategies justify the need to develop competencies and technologies, expedition activities, academic and research mobility, and filling the portal of the Arctic Information and Statistical Center with relevant content. For this purpose, the northern states cooperate within the framework of the EU programs, the International Association of Arctic Social Sciences, the International Arctic Science Committee, thematic networks of the University of the Arctic, which unite scientists on the problems of studying the Arctic region. The Arctic countries participate in the creation of the Report on the Quality of Human Life, Trends in Socio-Economic Systems, and Scientific Research in the Arctic. R&D underpins

high living standards, a safe and comfortable environment, government and corporate innovation and technological policy, and, as a result, the high competitiveness of the economies of the Nordic countries. Such experience in the formation of innovative economy in the northern regions with the support of scientific research is of interest for the Russian Arctic regions.

In the Danish and Canadian strategies, the imperative is the preservation of state integrity and socio-economic development (including through direct subsidies to the local population) of Greenland and the Far North territories respectively.

The composition of the land territories of the Arctic zone of the Russian Federation is defined by the Presidential Decrees of Russia in 2014 (May 2, 2014, no. 296), expanded by the Decrees of 2017 (June 27, 2017, no. 287) and 2019 (May 13, 2019, no. 220), as well as the Federal law no. 193–FZ, dated July 13, 2020[10]. The main documents defining the state policy in the Arctic are the Principles of state policy of the Russian Federation in the Arctic through to 2035[11] and the Strategy for development of the Arctic Zone of the Russian Federation and national security for the period through to 2035[12]. One of the tasks is to "strengthen good-neighborly relations with the Arctic states on a bilateral basis and within the framework of multilateral regional cooperation formats including the Arctic Council, the coastal Arctic Five and the Barents Euro-Arctic Council, increasing international economic, scientific, technological, cultural and cross-border cooperation, as well as interaction in the field of global climate change research, environmental protection and effective development of natural resources in compliance with high environmental standards", in particular, "development and implementation of programs of economic and humanitarian cooperation of the subjects of the Russian Federation, the territories of which belong to the land territories of the Arctic zone, with the regions of the Arctic states", "development of general principles of implementation in the Arctic zone of investment projects with the participation of foreign capital", "promoting the importance of the Arctic Economic Council as one of the central forums for the sustainable development of the Arctic". The importance of international cooperation and the study of experience for the sustainable development of territories in the Arctic zone of Russia is relevant for reasons of particularly harsh (compared to the rest of the Arctic) natural and climatic conditions, spatial extension, and the orientation of the local economy on the central regions of the country.

The Norwegian Arctic strategy is considered the most elaborated of all foreign analogues; it fully promotes the ideas of "presence" and socio-economic growth of northern territories, aimed at the exchange of relevant information with partners, especially with Russia. Comprehensive measures of state support, reliance on R&D, active international cooperation in various forms help to improve profitability, efficiency and safety in the development of hydrocarbon deposits on the continental shelf of the Arctic Ocean, taking into account some of the highest environmental quality standards in the world. In the 1970s, for the purpose of sustainable socio-economic development of the Northern territories, Norway created a coastal infrastructure and began to modernize it; the country carries out scientific forecasting and

[10] On state support for entrepreneurial activity in the Arctic Zone of the Russian Federation: Federal Law no. 193–FZ, dated July 13, 2020. Available at: http://www.consultant.ru/document/cons_doc_LAW_357078/ (accessed: October 15, 2020).

[11] Basic principles of Russian Federation state policy in the Arctic through to 2035: Presidential Decree no. 164, dated March 5, 2020. Available at: http://www.kremlin.ru/acts/bank/45255 (accessed: May 5, 2020).

[12] Strategy for developing the Russian Arctic Zone and ensuring national security through to 2035: Presidential Decree no. 645, dated October 26, 2020. Available at: http://www.kremlin.ru/acts/bank/45972 (accessed: November 5, 2020).

management of personnel needs, provides tax and customs incentives for environmentally oriented projects, and develops transport, logistics and energy infrastructure at the state level [35]. While Norway has integrated the "northern" component into the country's oil and gas management system, its closest neighbors, Finland and Sweden, coordinate their actions with the EU in the elaboration of socio-economic development directions for the northern territories within its regional policy and with the financial participation of the European Regional Development Fund, the Social Fund and the Cohesion Fund [36].

One of the factors in the development of Norwegian economic policy in the Arctic is the R&D management system. Thanks to this, it is possible to observe the development of technological and service infrastructure on the principles of cooperation and in the interests of the development of the northern territories [37]. The creation of R&D involves:

– *the state*: the parliament and the governments that determine the direction and amount of funding for research and technology policy of the country;

– *strategic institutions*, among which we can highlight the Norwegian Research Council (NFR), subordinated to the Ministry of Education and Science, acting in integration with state companies to support innovation ("InnovasjonNorge"), business and industry development ("Siva") in the northern regions;

– *project-executive organizations, including universities*: NFR distributes state, corporate, and public funds on a competitive basis.

The Canadian Arctic Strategy also relies on R&D as a tool for technical, technological and information support of natural resource management. In the interests of innovative development of the northern regions, there is a network of research bases that implement scientific programs in the fields of Arctic shelf exploration, development of transport infrastructure and navigation, improvement of the quality of life of local communities [38].

Analyzing the foreign experience of the development of northern territories through the prism of international cooperation, we note: one of the tools of regional policy is the internationalization of economic activity. It boils down to two main approaches:

1. The "open door" policy. According to the foreign experience of developing sites located in areas with extreme natural and climatic conditions, it can be argued that almost everywhere in these areas raw material production began within a few decades from the start of exploration. In Norway, in order to develop the largest field discovered in 1984, Snohvit, with natural gas reserves of 10.6 bil. cub. m and about 20 mil. t of hydrocarbons (which is 24 times less than the gas reserves of Shtokman GCF) involved the companies Statoil, PetoroSA, Total EP Norge, Gaz de France [39]. Created alliances include operators with a good reputation, scientific support, technological means and financial resources to work in extreme conditions. "A peculiarity of the organizational structure of the global oil and gas sector is the high role of small companies at the initial and final stages of exploration and development of resource provinces. However, the Russian reality rejects this rather general pattern" [40, p. 112]. The Norwegian experience shows that access of foreign companies to field development can help to solve technological, economic and social problems of peripheral territories. At the same time, receiving technologies and competencies in a ready-made form, "from the outside", rather than preparing them "from within", can have a negative impact on their own R&D, contributing to the intellectual and technological degradation of national scientific schools and developers of finished products.

Denmark also adheres to the principles of cooperation, supporting, for example, China's participation in solving the problems of the Arctic. The development of trade between these countries has grown into a partnership, the reduction of the Greenland ice sheet allows Denmark and China to jointly mine rare-earth metals. By becoming an investor in a mining project at the local Isua iron-ore deposit, the Chinese corporation SichanXinueMining is helping to attract new companies (JiangxiZhongrunMining, JiangxiUnionMining) [41].

Geopolitical partnerships in equal measure with internal measures to support economic entities allow leveling the factors of "northern appreciation". States have legislated and successfully implemented a set of mechanisms and tools to support investment projects, based on the formation of a regulatory framework governing the development of Arctic projects. In Russia in 2020, there was adopted a federal law regulating entrepreneurial activity in the Arctic zone of the Russian Federation[13]. Regulatory measures of the state are aimed at clarification of the resident status, the procedure of acquisition and termination of such status. The law establishes conditions of conclusion (and termination) of the agreement on investment activity, realization of the state and municipal control (supervision), rules of leasing land plots and real estate located on them, privileges on taxation, compensation of a part of expenses on payment of insurance premiums. The law stipulates that in applying the procedure of a free customs zone, the Arctic zone of the Russian Federation is equated with a special economic zone.

In 2011–2013, Russian companies signed agreements providing for 100% financing of exploration by foreign partners, who received 33.3% stakes in joint ventures. Statoil, ENI and Rosneft plan to explore and develop the Fedynsky vault deposits. The agreement provides for the development of natural gas and oil within the boundaries of the Perseevsky plot in the Barents Sea, as well as deposits in the Norwegian waters. Total and Novatek are working to develop the Yuzhno-Tambeyskoye gas condensate field on the Yamal Peninsula. Total plans to participate in the development of the Khvalynsky gas condensate field. In 2012–2013, alliances between Rosneft, BP, Exxon Mobil and General Electric were created for exploration of areas in the Kara Sea with reserves of about 4.9 bil. t of oil and 8.3 trillion cub. m of gas.

Despite the achieved successes, economic and technological cooperation in the Russian Arctic is hampered by sanctions imposed by Western states. Although the consequences of the sanctions policy are of practical interest to many countries, these issues have not yet been sufficiently studied. We should add that before 2014, Norway unilaterally and in violation of the 1920 Svalbard Treaty imposed restrictions on access of Russian companies to the archipelago (the Russian Research Center operates here), use of local aquatic biological resources, and reduced cooperation in the development of hydrocarbon fields.

2. Restrictive policies. The economic development of the Arctic implies intensive use of its resources. Acting in extreme natural and economic conditions, with minimal size of local economies, the Arctic states create conditions for attracting private companies – subcontractors and investments (including foreign ones) to work [39]. However, as far back as the mid-1960s, a well-known northern scientist G.A. Agranat, referring to the Canadian experience of developing natural resources, pointed out that "serious shifts in their development became possible due to the turn in the last two or three decades of economic policy from private "free enterprise" on a market basis to a system in which the state plays a huge role.

[13] On state support for entrepreneurial activity in the Arctic Zone of the Russian Federation: Federal Law no. 193–FZ, dated July 13, 2020. Available at: http://www.consultant.ru/document/cons_doc_LAW_357078/ (accessed: October 15, 2020).

Only the state is capable of mastering the North which requires a very broad political and economic approach" [42, p. 82]. Further, "private firms ... may not be able to undertake some of the resource development work to the extent that society needs it". "Private firms take into account only the returns on investments they will make within a few years. On the other hand, the state may consider the benefits of projects decades later" [42, p. 82]. Similar conclusions are drawn with regard to attracting investment for the development of mineral resources in Alaska and Greenland [42, p. 84].

In Russia, the admission of private companies to work on the continental shelf is currently deprived of a legislative basis. In order to fulfill the tasks in the sphere of economic development, the Arctic strategy provides for "the creation and development of a new model for the implementation of economic projects on the continental shelf, providing for the increased participation of private investors in such projects, while the state retains control over their implementation"[14].

Participation of foreign companies in the development of mineral resources is regulated by Federal law no. 58, dated April 29, 2008 which excludes independent activities of foreign companies in subsurface areas of federal significance including those on the continental shelf. Their joint activities with companies in which the state owns at least 50% are allowed (Article 9)[15]. In accordance with the Federal law "On subsoil" (Article 9)[16], subsoil users on subsoil areas of the continental shelf may be companies with state participation in capital exceeding 50%, with more than five years of experience in developing Russian offshore fields.

A topical area of international cooperation in the Arctic is environmental protection. Its relevance stems from the threats that arise in the Arctic against the backdrop of climate change (degradation of permafrost, land subsidence, the appearance of seeps in the Arctic Ocean seas, coastal abrasion, surface water and soil pollution by runoff and new chemicals), the need to preserve biodiversity, and the continuing demand for hydrocarbon raw materials at the same time. The current period of international cooperation in the Arctic is characterized by a shift from private initiatives to the development of legally binding instruments and the establishment of collective assistance funds to improve operational cooperation and coordination between the parties to the agreements. Exploitation of mineral resources is combined with the adoption of laws and the establishment of indigenous community development assistance funds (particularly in Alaska and Canada). As practice shows, interstate relations in the Arctic in the field of development of extraction and processing of natural resources tend to be bilateral, while multilateral relations are built when solving the problems of harmonization of economic activities in the Arctic and preservation of environmental quality. The Arctic Council has signed agreements on cooperation in aviation and maritime search and rescue in the Arctic (Nuuk, 2011) and on preparedness for responding to oil pollution at sea in the Arctic (Kiruna, 2013).

The development of the Arctic shelf, maintaining a high share of hydrocarbons production in the Arctic in the total world production (over 30%),

[14] Strategy of development of the Arctic Zone of the Russian Federation and the provision of national security through to 2035: Presidential decree no. 645, dated October 26, 2020. Available at: http://www.kremlin.ru/acts/bank/45972 (accessed: November 5, 2020).

[15] On amending certain legislative acts of the Russian federation and declaring invalidated certain provisions of legislative acts of the Russian federation in connection with adoption of the Federal law on the procedure for making foreign investments into economic companies which are of strategic importance for ensuring the country's defense capacity and state security: Federal law no. 58, dated April 29, 2008. Available at: http://base.garant.ru/ (accessed: April 12, 2019).

[16] "On subsoils": Federal law no. 2395–1, dated February 21, 1992. Available at: http://base.garant.ru/. (accessed: May 3, 2019).

care about the environment require the states to use innovative technologies, modernize infrastructure, including ports, adoption and implementation of organizational and managerial (personnel, marketing) decisions, taking into account environmental standards. Coordinated action and respect for national interests can ensure sustainable development throughout the Arctic. The current institutional and legal framework for the Arctic conditions, based on the interaction of governments alone, is often unsuitable, so new levers for socio-economic development must be sought. It seems that public-private and other types of partnerships ("business-universities", "government-corporations-aborigines", "corporations-aborigines", and "military-civilian") can be the most effective of them. Through partnerships, interested countries can gain access to new models of management and technology both in the field of extraction of minerals and fuels, and in the field of emergency response, development and implementation of environmentally friendly technologies [43].

Modern problems of the Russian Arctic development are associated with the peculiarities of development management of the vast region, as well as the forms of regulation of natural resource extraction, as the resource specialization of the Arctic zone land territories of the Russian Federation is dominant. Despite the fact that at present the strategic management of the Russian Arctic zone development is based on a set of scenario development options, the objectives and goals of sustainable development are not achieved, there is a delay in the implementation of large-scale investment projects (megaprojects).

It seems necessary to improve legislation on subsoil use, to strengthen control over the environmental expertise of each megaproject, and to link it with the tools of territorial development.

Speaking about the problems of the Arctic environment, we should emphasize that the region's economic development cannot be implemented without taking into account the foreign policy context. It is necessary to add the environmental component to the existing set of problems of Russia's Arctic development with an assessment of the scale of environmental pollution and its impact on the ethnogenetic diversity of the Far North. The scenarios of economic development of the northern territories are influenced by the forecasting of risks associated with natural changes. In the Arctic, the mechanisms and prospects of international cooperation make it possible to speak of a successful attempt to form an environmentally responsible model of management. The environmental aspect in the partnership of the Arctic countries will make it possible not only to introduce common environmental requirements into the system of international standards, but also to create comfortable economic conditions for all the countries concerned by soft power.

Analysis of the experience of interaction among the Arctic states shows that Arctic infrastructure is not sufficient to meet the current needs of society, social services, or to help assess threats in the field of Arctic emergencies, the consequences of which may be difficult to predict. One tool that may be of interest, particularly to Russia and the USA, in organizing navigation in the Bering Strait and in connection with the growing potential risks of oil spills, is the Environmental Response Management Application (ERMA)[17]. The system was "developed by the National Oceanic and Atmospheric Administration (NOAA) in conjunction with the University of New Hampshire and is used by USA federal agencies to deal with environmental disasters. This creates an operational picture of all available response sites at risk"[18]. The platform

[17] Russia and the United States held exercises and a joint workshop on optimizing the response to oil spills in the Bering Sea. Available at: https://neftegaz.ru/news/ecology/197178 (accessed: October 10, 2020).

[18] *Ibidem.*

collects abiotic and biotic data necessary for effective response to emergencies in the Arctic, including information on ice conditions, locations of ports and other infrastructure, environmentally sensitive areas and key habitats. Through technical means, the platform provides visualization and improves information interaction between emergency responders and regulatory agencies.

In the international practice there is an increase (in comparison with the period of 20–30 years ago) of activity on providing the universal regime of environmental protection. This regime is the general purpose of realization of project researches, interdisciplinary scientific development and observations in Polar Regions of the Earth and assumes improvement of personnel protection and observance of ecological safety, first of all in development of hydrocarbon deposits and their transportation. In support of such projects, international exercises on oil spill search and emergency response are conducted annually.

Conclusion

At present the Arctic countries, as well as the entire global community, are facing the priority goal of strengthening comprehensive security and strategic stability in the unique Arctic region through the interaction of all interested (non-military) structures. We should note that given the current dynamic processes in the world which influence the technological capabilities of the Arctic development, there is no universal agreement establishing its international legal regime. This approach lies in the plane of international legal relations, is relevant for the Arctic region, and makes it possible to solve the problems arising in the relations between the Arctic countries and move toward sustainable socio-economic development of the world Arctic.

The further direction of the scientific search may be related to the construction of models for the future development of international cooperation in the Arctic region in the interests of efficient nature management and population safety. Studying the experience of the development of foreign areas of the Far North, in particular, and especially Norway as one of the few countries that conduct active economic activities in the Arctic region, can be useful in the development of the Arctic territories of the Russian Federation.

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On the Results of the Round Table "30 Years of Research on the Socio-Cultural Evolution of Russia and Its Regions: Results, Prospects"

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As a part of the events, dedicated to the 100th anniversary of the RAS Institute of Philosophy, on May 26, 2021, there was held an online Round Table "30 Years of Research on the Socio-Cultural Evolution of Russia and Its Regions: Results, Prospects" by the Center for Studying Socio-Cultural Changes (CISI) of the RAS Institute of Philosophy with the participation of the Vologda Research Center of RAS and the Research Committee "Socio-Cultural Comparative Studies of the Regions of Russia" of the Russian Society of Sociologists.

As the permanent Scientific Supervisor, ideological inspirer and organizer of the program "Problems of Socio-Cultural Evolution of Russia and Its Regions", ***N.I. Lapin*** noted in his welcoming speech, the purpose of the round table in the conditions of a remote format of

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work is to comprehend the achieved results, and exchange views on realistically constructed prospects. CISI, where the project ideologists started working (N.I. Lapin – RAS Corresponding Member, Head, Doctor of Sciences (Philology), Professor, L.A. Belyaeva – Doctor of Sciences (Sociology), Leading Researcher, I.E. Achatkina – Referent) was organized back in 1988. This small employee group eventually put forward a hypothesis about the qualitative restructuring of the values and interests of population as transformation drivers of Russian society. Realizing this idea, N.I. Lapin has developed a methodological research tool based on a socio-cultural approach. The main form of the toolkit implementation was the All-Russian monitoring, conducted by the method of complex interviews at home with a frequency of 4–5 years. For more convincing specification of the research tasks of this direction[1], there was developed the toolkit "Socio-Cultural Portrait of the Regions Russia" which became the basis of the interregional program "Problems of Socio-Cultural Evolution of Russia and Its Regions". This made it possible to diagnose the main phases of the socio-cultural evolution of post-socialist Russia.

Doctor of Sciences (Sociology), Leading Researcher of CISI of IP RAS ***L.A. Belyaeva*** revealed the history and methodology of Monitoring and Program in the speech. Seven waves of monitoring, conducted since 1990, have allowed identifying three transformation stages of Russian society[2]. At the first stage, there was formed a multilayered economy, and there was a fast growth in the share of population who, according to their financial situation, were below the poverty line. The second stage, which began in the zero years of the 21st century, was prepared by the increase of the state supporters that ensured freedom, and a request to the state to ensure personal security. The stabilization processes at this stage were supported by the hope of society for the possibility of harmony of freedom and security, provided that the state effectively performs its functions. The third stage, the beginning of which was recorded by the 7th wave of Monitoring in 2015, showed that this problem cannot be satisfactorily solved in modern Russian conditions.

Since 2005, CISI, with the involvement of specialists from the regions, has begun implementing the Program which was modified and updated five years later for the study of new social problems[3]. Of great importance for the Program development was the holding of 15 annual research and practical conferences which were hosted by different capitals and regional centers of Russia's regions. They discussed methodological and methodical issues, and new research results. A significant result of the first five years of collective work was a monograph[4] that reflected the specifics of socio-cultural development of several regions of the European Russia, the Urals and Western Siberia. L.A. Belyaeva noted the importance of the appearance of another monograph, dedicated to the 85th anniversary of N.I. Lapin "Atlas of Modernization of Russia and Its Regions: Socio-Economic and Socio-Cultural Trends and Problems"[5]. It set out classification system

[1] Ed. by Lapin N.I., Belyaeva L.A. Regional Socio-Cultural Portrait. Standard Program and Methodology, Methodological Problems. Moscow: IF RAN, 2006. P. 328.

[2] Ed. by Lapin N.I., Belyaeva L.A. Dynamics of Values of the Russian Population. Moscow: URSS, 1996, p. 224. Ed. by Lapin N.I., Belyaeva L.A. Crisis Society. Our Society in Three Dimensions. Moscow: IF RAN, 1994. Lapin N.I. The Ways of Russia: Socio-Cultural Transformations. Moscow: IF RAN, 2000. Lapin N.I. Socio-Cultural Approach and Societal-Functional Structures. Sociological Studies, 2000, no. 7, pp. 3–12.

[3] Lapin N.I., Belyaeva L.A. Program and Standard Tools "Socio-Cultural Portrait of the Russian Region" (Modification – 2010). Moscow: IF RAN, 2010. P. 111.

[4] Ed. by Lapin N.I., Belyaeva L.A. Regions in Russia: Regional Socio-Cultural Portraits in the All-Russian Context. Moscow: ACADEMIA, 2009. P. 807.

[5] Ed. by Lapin N.I. Atlas of Modernization of Russia and Its Regions: Socio-Economic and Socio-Cultural Trends and Problems. Edit. Board: Lapin N.I., Belyaeva L.A., Kasavina N.A. Moscow: Ves Mir, 2016. P. 360.

of the regions and federal districts of Russia by modernization level, justified the need and possibility of a new state strategy that integrated the regions and Russian society into an integral civilization.

The Program has been successfully developing for 30 years; currently, research teams from 27 regions are involved in its implementation. In 2020, the Vologda Research Center of RAS was appointed the curator of the Program with the participation of the Research Committee of the Russian Society of Sociologists "Socio-Cultural Comparative Studies of the Regions of Russia".

The second section of the Round Table "On the Concept and Methodology of the 10-Volume Library "Regions of New Russia" (moderated by N.I. Lapin) was opened by the Scientific Director of the VolRC RAS, RAS Corresponding Member, Doctor of Sciences (Economics), Professor ***V.A. Ilyin*** with a report on "Where Does the Soullessness of the Ruling Elites Lead?" [6]. The presentation was based on the results of long-term foreign and Russian sociological measurements, as well as on the data of public opinion monitoring implemented by the Center in the Vologda Oblast since 1996. V.A. Ilyin drew attention to the global nature of the negative consequences of the liberal capitalism ideology which led to disillusionment with it among the broad segments of population in most world countries. According to the speaker, soullessness as a psychological trait of the ruling elites, who gave priority to the achievement of personal interests to the detriment of the national development goals, was one of the reasons for unrealization of national projects. In conclusion of the speech, V. A. Ilyin noted that he agreed with the point of view of N.I. Lapin about the need to create a strong, humanistically active social state in Russia adding that the scientific community should mobilize the available resources to achieve this goal.

According to the idea of N.I. Lapin, a promising direction of the Program was, as mentioned above, the idea of studying interaction culture between citizens and society as one of the actual and poorly studied problems of consolidation of the Russian society. The implementation of this idea will become the subject of regional research and the basis of future fundamental work in the form of a mass library in 10 volumes "Regions of new Russia: to increase the welfare and consolidation of population". The Director of the VolRC RAS, Doctor of Sciences (Economics) ***A.A. Shabunova*** spoke about the structure of one of the volumes of the future library dedicated to the Northwestern Federal District. Her report also showed current trends in modernization of Russian regions, identified on the basis of the updated dynamics of indicators in the IS "Modernization" in 2020, developed using an adapted generalizing methodology for measuring the state of modernization in different world countries which was developed by colleagues from the Chinese Academy of Sciences of the People's Republic of China. For the participants of the Program, the methodology was used to obtain internationally comparable data on the modernization state of all regions of the country. A.A. Shabunova proved that current trends indicated the preservation of asymmetric development trajectories in the Russian territories which increased the relevance of studying the problem of inequality in the Russian regions.

The socio-cultural guidelines for the development of three regions of the Central Black Earth region – the Voronezh, Kursk and Lipetsk Oblasts – were presented by ***E.A. Kogai*** (Doctor of Sciences (Philology), Professor, Kursk State University). According to the author, the main competitive advantages of the regions were related to the nature of economic activity, history and culture. At the same time, such negative trends

[6] Ilyin V.A., Morev M.V. Where Does the Soullessness of the Ruling Elites Lead? *Economic and Social Changes: Facts, Trends, Forecast,* 2021, vol. 14, no. 2, pp. 9–28. DOI: 10.15838/esc.2021.2.74.1

as depopulation, low potential for public health, paternalism dominance in labor motivation, and low level of per capita income of population were recorded in the regions of the Central Black Earth region. Kogai agreed with the opinion of previous speakers about the weak achievability of the national development goals noting the ambivalent nature of the state of the institutional and regulatory sphere, in which there was an increase in self-awareness and self-organization of citizens and, at the same time, a weak orientation of representatives of political elites for the public good, as well as the alienation of the majority of the regional residents from the political process. Nevertheless, citizens expressed their readiness for active interaction with representatives of the authorities, preferring such forms as personal meetings of political leaders with representatives of population, public reporting of authorities to residents, and conducting opinion polls.

The logical development of the main ideas was the speech of representatives of the Perm State National Research University ***E.B. Plotnikova*** (Candidate of Sciences (History), Associate Professor) and ***Yu.S. Markova*** (Candidate of Sciences (Sociology). The authors paid special attention to the development and interpretation of the results of a qualitative study of the life world of the municipalities' population in a risky socio-cultural environment. Life worlds were represented by changing, dynamic structures that are in close interaction with social interactions. The risk-taking nature of socio-cultural environment was manifested in "the loss of historical memory, destruction of cultural objects, and "delay" in the culture development which led to inequality in society". The second type of risks was of an existential nature, as it created a danger for implementation of social practices associated with the lack of necessary conditions. The third type of risks was associated with the destruction of moral values and moral norms, and negative self-organization of population due to the lack of innovative strategy and cultural policy. The authors confirmed that in order to reduce socio-cultural risks, the necessary things were mutual participation of social institutions (different spheres of social development), public organizations, social communities and groups, and individuals. The Perm Oblast peculiarity was manifested in actualization of the role of industrial enterprises that participated in the territory's development through project activities. This positive experience was revealed through the mechanisms of social construction of life worlds. For example, the project activities of enterprises could create favorable conditions for increasing social activity and creative self-development of residents, forming social capital of territories through networks of joint activities, forming and increasing public trust which was critically lacking in modern Russian society. E.B. Plotnikova and Yu.S. Markova concluded that such activities created opportunities to increase the effectiveness of measures to overcome "existing socio-cultural risks and reduce the emergence of new ones".

As noted by the following speakers, ***G.F. Romashkina*** (Doctor of Sciences (Sociology), Professor) and ***M.V. Khudyakova*** (Doctor of Sciences (Sociology), Associate Professor) from the Tyumen State University, on the one hand, regional development was determined by the quality of human capital. On the other hand, an environment, in which social elevators were open, trusting relationships were supported by society, interaction with social institutions motivates people to improve their education and qualifications, self-preserving behavior, was the main condition for developing high-quality human capital. In such a society, citizens received positive feedback that reflected on their social status and social well-being. The empirical materials were based on complex measuring tools of human self-assessment according to the methodology of A. Moses, F. Luthans, R. Ployart and co-authors, included in the Program methodology as an additional logical

block. In the Russian-language version, these questionnaires were tested in a mass survey for the first time[7]. The authors showed structural models of human, social and psychological types of capital in relation to socio-cultural and socio-economic variables. Not all hypotheses were confirmed during the analysis. The authors' models only partially confirmed the theoretical constructs. For example, the inclusion of labor motives in structural models completely overrode the significance of variation under the influence of other socio-demographic and status parameters. The greatest influence on the variation of human capital on the part of labor motives was exerted by the individual importance of self-realization, real results, interesting, and meaningful work. Further, there was revealed the influence of income (status) or its indicators, self-assessment of health, education and marital status. G.F. Romashkina and M.V. Khudyakova were developing ideas about Russia's regions through the human capital concept which complemented the Program methodology[8]. The findings showed that the weakness of achievement motivation, noted by all the regional teams of the Program, was directly related to socio-economic inequality; currently, it creates the main risk for a positive development scenario in Russian regions.

The presentation of ***V.A. Davydenko*** (Doctor of Sciences (Sociology), Professor, Head of Research Center) and ***E.V. Andrianova*** (Candidate of Sciences (Sociology), Head of Department, Associate Professor, Tyumen State University) was devoted to the analysis of developing urban and suburban territories in the Tyumen Oblast. The conducted research was based on the approaches of social philosophy of space production, social constructivism, social space production, spatial rotation in general in the humanities, and visual sociology. The authors studied local communities residing in rural and suburban spaces through the life worlds of residents of suburban neighborhood. The report proposed a rethinking of the space reproduction concept both at the symbolic level of local subjectivity and at the level of the life worlds of residents of new territories of spatial development. V.A. Davydenko and E.V. Andrianova concluded that the world was becoming "increasingly suburban", and urbanization itself found its embodiment mainly in suburbanization associated with the development of peripheral urban territories – "between city and rural area".

N.M. Lavrenyuk-Isaeva (Candidate of Sciences (Sociology), Bashkir State University, Ufa) presented the draft concept of socio-cultural strategizing of the development of Russia's regions. The author rightly concluded that the rich material, collected during 30 years of research on socio-cultural evolution of Russia and its regions, should be fully and effectively implemented in practice. For instance, within the framework of the NP "Housing and urban environment" in the region, there was taken a serious step toward "awareness by the local population of the importance of public spaces, to the development of socio-constructive competencies of local initiative communities during design, to saturation with meanings". N.M. Lavrenyuk-Isaeva showed how the potential of development was forming "from within" within the framework of transformation and convergence of culture and economy using the involvement technology in the social construction of public spaces. Such technologies allowed identifying the genome of territories, working with socio-cultural codes of specific spaces, and with public opinion leaders at a new level. Further social construction included the synthesis of the accumulated results of regional

[7] Romashkina G.F. Human Capital Study: the Experience of Empirical Verification of Complex Tools. Romashkina G.F., Davydenko V.A., Andrianova E.V., Khudyakova M.V., Pecherkina I.F. *Siberian Socium*, 2020, vol. 4, no. 3 (13), pp. 8-32. DOI: 10.21684/2587-8484-2020-4-3-8-32

[8] Romashkina G.F., Khudyakova M.V. Sociological Analysis of Human Capital Factors and Resources. *Economic and Social Changes: Facts, Trends, Forecast*, 2020, vol. 13, no. 6, pp. 232–251. DOI: 10.15838/esc.2020.6.72.14

and municipal socio-cultural research into a single logical system, presentation of a practical apparatus for effective application in the strategic development of the regions of Russia. According to the author, the final product could be a formalized concept of socio-cultural strategizing of the development of Russian regions based on a forecast, with "a certain mission, priorities, scenarios and strategic projects, with a "roadmap" for monitoring qualitative results in the parameters of target indicators in the unity of the diversity of common and unique heritage, preservation and creation of values".

The speech of ***A.V. Tikhonov*** (Doctor of Sciences (Sociology), Professor, Head of the Center for the Sociology of Management and Social Technologies of the Institute of Sociology of the FCTAS RAS) completed the second part of the round table. As a team-mate and colleague, the author spoke about the contribution of N.I. Lapin to the development of Russian sociology and management practice. Describing the research works of Nikolai Ivanovich, A.V. Tikhonov pointed out that they actually symbolized the appeal of Russian sociology to the methodological foundations of its own historical development. Recent works of N.I. Lapina contained an original concept of "the formation laws of modern Russian society in the new geopolitical conditions and its use for managing the modern processes of our evolution". They expressively showed the total alienation of a person as the deep foundation of the universal crisis of Russian society, the author proposed the idea of social action in the form of civil self-enlightenment as a way to prevent destructive processes. A.V. Tikhonov described an anthroposocio-cultural approach to the analysis of socio-cultural processes as a fundamental application for the revision of the foundations of both domestic and world sociology. He also noted that the concept of criteria for civilizational development, developed by N.I. Lapin, was fruitfully used in research conducted by the Center for Sociology of Management and Social Technologies of the FCTAS RAS.

The third section of the Round Table "On New Trends in the Socio-Cultural Evolution of the Regions" (moderator – L.A. Belyaeva) was opened by ***Yu.M. Pasovets*** (Candidate of Sciences (Sociology), Associate Professor, Kursk State University). She has recreated the leading trends of changes affecting the spheres of economic activity and labor motivation of population of the Central Black Earth region over the previous twenty years. The speaker pointed to such trends as a reduction in the number of people employed in the economy, general increase in the economic activity level of residents of the macroregion, the dominance of employment in trade, manufacturing and agriculture, and involvement in the private economic sector. A field sociological study conducted in three regions of the Central Black Earth region (Voronezh, Kursk and Lipetsk Oblasts) found paternalism in the structure of labor motivation of population as a desire to work mainly at state and municipal enterprises, a desire to provide social guarantees and stable earnings, even if it is low. At the same time, the study showed regional differentiation within the category of persons with market labor motivation which indicates the uneven regional development in the labor sphere.

Speech by ***E.V. Kargapolova*** (Doctor of Sciences (Sociology), Professor, Plekhanov Russian University of Economics) focused on the well-being of the Moscow agglomeration residents in difficult conditions of social restrictions. Based on the data of two waves of sociological research, conducted by the online questionnaire method, the author noted the predominance of positive assessments of life satisfaction, as well as the presence of moderate optimism. The year 2020 was not an easy test for Muscovites, however, by the end of the year (November–December), the share of elections for the answer "we will live much better" slightly increased compared to the results of the first wave (April–May).

I.V. Lashuk (Candidate of Sciences (Sociology), Associate Professor, Belarus State Economic University) told the participants of the round table about the transformation of the value structure of modern Belarusian society. Field sociological studies in 2017 and 2020 demonstrated the stability of such values as life and order in the integrating core of the basic values of the Belarusian society, and this stability is inherent in all age groups. The second study showed a significant increase in the importance of universal values with a decrease in the weight of traditional and modern values. At the same time, terminal values prevail over instrumental ones. The intergenerational axiological analysis also showed that freedom value was in the integrating core in the youth cohort.

The report of ***A.M. Isupov, S.A. Martyshkin, D.V. Prokhorov and D.M. Shabunin*** (Samara National Research University) emphasized the importance of studying socio-cultural characteristics of local communities. At the same time, the authors noted the difficulties of such a study: municipalities' selection, incompleteness or lack of statistical data. Nevertheless, the authors called for a closer examination of the regions' municipalities, believing that this would lead researchers to the micro-level of studying the regions, where the direct life activity of a person takes place. This, in turn, gave the opportunity to study the region in all its diversity, and above all in the diversity of life practices of population, as well as the state of modernization processes.

The speech of ***V.I. Mosin*** (Candidate of Sciences (Philology), Associate Professor, Tula Sociological Center) was devoted to the use of data obtained in specific sociological studies to compile ratings of outstanding people in the region: politicians, businessmen, and public figures. Tula sociologists were actively involved in the development of the "Rating of politicians who have made the greatest contribution to socio-economic development of the Tula Oblast", in the collection of data for the award of the independent business award in the Tula Oblast "Tula Business", as well as in the compilation of the "Rating of the 100 most influential natives of Tula". The obtained data on specific people quite expressively recreated the social, economic and political life of natives of Tula, and allowed getting useful information about the situation in the region.

V.M. Tslaf (Candidate of Sciences (Technology), Associate Professor, Samara National Research University) devoted his speech to rather acute questions about the manifestations of socio-cultural pathology of post-Soviet Russian society. Among the symptoms of socio-cultural pathology, he attributed disorganization, paternalistic attitudes, narcissism, abuse of rights, positions of the victim and the "hero", as well as the assessment of a person on the principle of "friend – foe". Historically determined factors, lifestyle, as well as the influence of foreign cultures were identified as the leading factors determining the pathogenesis of socio-cultural diseases. The author proposed the ideas of "treatment" of socio-cultural pathology, and also put forward a hypothesis about the autowave principle of spreading socio-cultural norms in society.

The report of ***V.T. Tarasov*** (Candidate of Sciences (Economics), Associate Professor, Cheboksary branch of the RANEPA) was devoted to trends in changes in the structure of income weights of population of federal districts and federal cities of Moscow and St. Petersburg in the context of three impersonal macrostrata of the decile distribution of population by per capita income – low-income, affluent and rich population for 2000–2019. The most intensive changes in the income level were recorded among the population of the capital of Russia. At the same time, by the beginning of the new century, a certain mode of distribution of per capita income was formed in most macro-regions of the country which almost did not change during the studied period. Based on the calculations, the author concluded that there was

a stable reproduction of economic inequality, the level of which exceeded the socially acceptable one. At the end of the speech, V.T. Tarasov put forward a proposal for a radical reform of distribution relations.

Summing up the results of the round table, N.I. Lapin expressed deep satisfaction with the work. He noted the importance of further development of the tools of "Socio-Cultural Portrait of the Russian Region", first of all, with regard to the expansion of qualitative methods for obtaining sociological information. He also stressed the importance of strengthening the interaction of the research "portrait" team with scientific foundations and with the country's citizens in the context of implementation of all-citizen education as an effective channel of socialization.

At the end of the conference, friends and colleagues from different years congratulated N.I. Lapin on his 90th anniversary. ***Yu.V. Sineokaya*** (Doctor of Sciences (Philosophy), RAS Corresponding Member, Deputy Director of the IP RAS for Science, Head of the Sector of History of Western Philosophy) made a congratulatory speech; she wished "inspiration and joy from communicating with colleagues of the "Great Philosophical House", whose borders do not end with Goncharnaya Street". ***V.A. Ilyin*** (RAS Corresponding Member, Doctor of Sciences (Economics), Professor, Scientific Supervisor, Vologda Research Center of RAS) noted his long-term acquaintance and various scientific and creative contacts with N.I. Lapin that "have been developing for more than 10 years, acquiring new shades of scientific activity". On behalf of the participants of the Program, A.A. Shabunova, L.A. Belyaeva, E.A. Kogai, G.F. Romashkina, V.A. Davydenko, D.M. Shabunin, E.V. Kargapolova, V.I. Mosin, V.M. Tslaf, R.H. Salakhutdinova, V.T. Tarasov made congratulations.

A.V. Smirnov (Doctor of Sciences (Philosophy), Professor, RAS Academician, Head of the Section "Logical and Semantic Research, History of Arab-Muslim Philosophy" of the Institute of Philosophy of RAS) expressed his impressions of how worthy and impressive the anniversary celebration was. The discussions that took place at the conference allowed concluding: "Nikolai Ivanovich, you are one of the pillars of our institute, this is absolutely true. You are actually the founder of a very serious, overgrown school of sociology, social philosophy, which conducts, on the one hand, field research, and on the other hand, brings you to the level of good philosophical understanding". ***E.Yu. Solovyov*** (Doctor of Sciences (Philosophy), Chief Researcher of the Institute of Philosophy of RAS), and ***B.V. Sazonov*** (Candidate of Sciences (Philosophy), Sociologist) joined the participants of the conference with their sincere and warm congratulations.

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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 a number of parameters of social well-being and socio-political moods of the region's population based on the results of the last "wave" of monitoring (August 2021) and for the period from October 2020 to August 2021 (last 6 polls).

We compare the results of the surveys with the data for 2000 (the first year of V. Putin's first presidential term), 2007 (the last year of V. Putin's second presidential term, when the assessment of the President's work was the highest), 2011 (the last year of Dmitry Medvedev's presidency), and 2012 (the first year of V. Putin's third presidential term).

We also provide yearly dynamics of the data for 2018–2020[2].

In June – August 2021, the level of approval of the work of the President of the Russian Federation did not change significantly. The share of positive assessments is 52–53%. The share of negative assessment increased slightly (within the sampling error) – by 3 p.p. (from 30 to 33%).

Over the past 6 polls (October 2020 – August 2021), the assessment of the head of state's activity has not changed: the share of positive judgments is 52%, negative – 33%[3].

During the same period, public opinion about the activities of the Prime Minister of the Russian Federation improved slightly: the share of positive assessments increased by 4 p.p. (from 39 to 43%), negative assessments decreased by 5 p.p. (from 41 to 36%).

In the dynamics of the assessment of the activities of the region's head for the period from October 2020 to August 2021, there are also minor (within the sampling error) positive changes: the level of approval increased by 3 p.p. (from 36 to 39%), the share of negative characteristics decreased by 3 p.p. (from 42 to 39%).

[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/

[2] In 2020, four "waves" of monitoring were conducted. Surveys in April and June 2020 were not conducted due to quarantine restrictions during the spread of Covid-19.

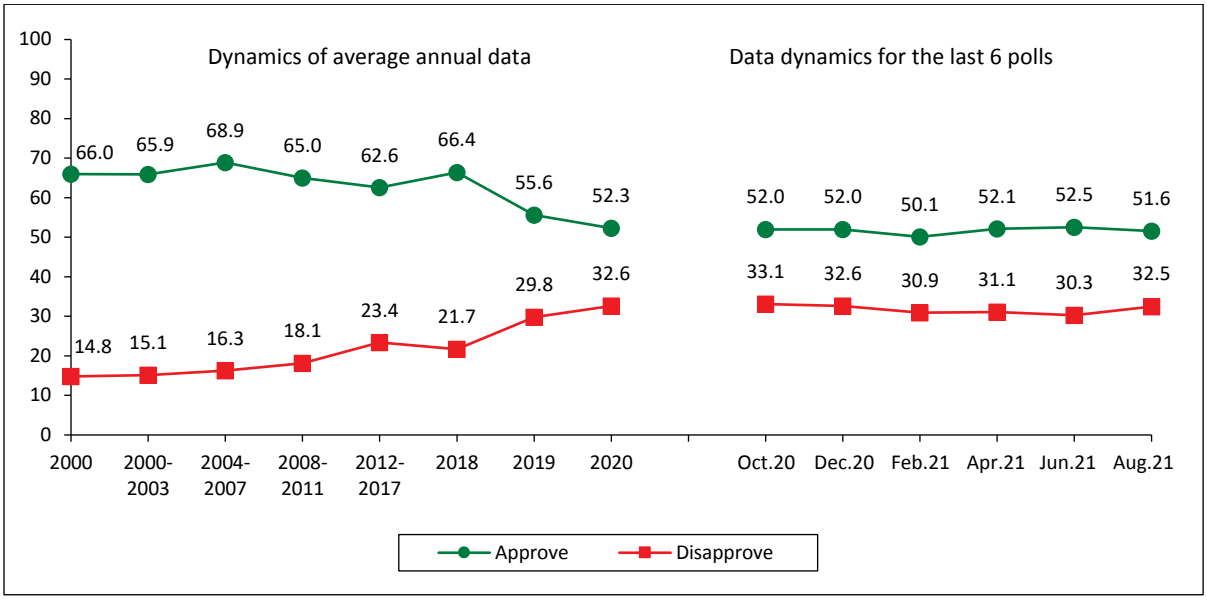
[3] Hereinafter, the results of a comparative analysis of survey data, conducted in August 2021, and the results of a last-year monitoring "wave", conducted in October 2020 (the last survey before pandemic restrictions), are given in the frame.

How do you assess the current performance of..? (% of respondents)

Respond option	Dynamics of average annual data							Data dynamics for the last 6 polls						Dynamics (+/-), Aug. 2021 to Oct. 2020
	2000	2007	2011	2012	2018	2019	2020	Oct. 2020	Dec. 202	Feb. 2021	Apr. 2021	June 2021	Aug. 2021	
RF President														
I approve	66.0	75.3	58.7	51.7	66.4	55.6	52.3	52.0	52.0	50.1	52.1	52.5	51.6	0
I disapprove	14.8	11.5	25.5	32.6	21.7	29.8	32.6	33.1	32.6	30.9	31.1	30.3	32.5	0
Chairman of the RF Government*														
I approve	-*	-*	59.3	49.6	48.0	41.1	38.7	38.8	39.1	37.6	38.8	42.2	42.7	+4
I disapprove	-	-	24.7	33.3	31.6	38.4	40.4	40.8	38.8	38.8	38.3	35.1	36.0	–5
Governor of the Oblast														
I approve	56.1	55.8	45.7	41.9	38.4	35.7	35.0	35.5	32.9	33.9	36.3	37.8	38.6	+3
I disapprove	19.3	22.2	30.5	33.3	37.6	40.2	42.5	42.1	44.2	42.4	41.3	38.4	38.5	–3

According to the research methodology, the sampling error does not exceed 3%, so hereinafter changes with a difference of 2 p.p. are not taken into account or are considered insignificant; they are highlighted in blue in the tables. Positive changes are highlighted in green, negative changes are highlighted in red.
* The question was first asked in 2008.

How do you assess the current performance of the President of Russia?
(% of respondents, FSBIS VolRC RAS data)



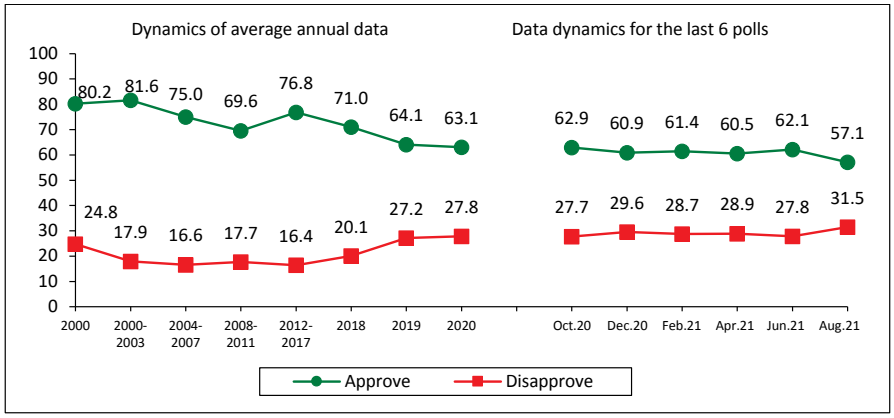
Hereinafter, all graphs show the average annual data for 2000, 2018, 2019, 2020, as well as the average annual data for the periods 2000–2003, 2004–2007, 2008–2011, 2012–2017, corresponding to the periods of presidential terms.

For reference:

According to VCIOM data, for the period from June to the beginning of August 2021, the level of approval of the Russian President's activities decreased by 5 p.p. (from 62 to 57%). The share of negative ratings increased by 4 p.p. (from 28 to 32%).

According to the latest data of the Levada-Center (July 2021), there are also minor negative changes in the dynamics of assessments of the activities of the head of state: the share of positive assessments decreased by 2 p.p. points (from 66 to 64%), negative assessments increased by 3 p.p. (from 32 to 35%).

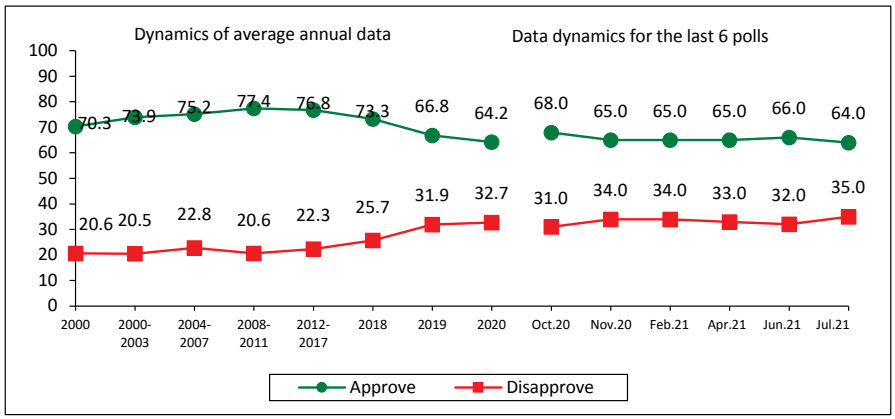
In general, do you approve or disapprove of the work of the President of the Russian Federation? (% of respondents; VCIOM data)



Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Approve	–6
Disapprove	+4

Question: "In general, do You approve or disapprove of the work of the President of the Russian Federation?"
Data for August 2021 – average value for two polls: conducted on August 1, 2021 and August 8, 2021.
Source: VCIOM data. Available at: https://wciom.ru/

In general, do you approve or disapprove of the work of V. Putin at the position of the President of Russia? (% of respondents; Levada-Center* data)



Annual dynamics (July 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Approve	–4
Disapprove	+4

Question: "In general, do You approve or disapprove of the work of V. Putin at the position of the President of Russia?"
Latest data – July 2021. Source: Levada-Center. Indicators. Available at: https://www.levada.ru/indikatory/
Source: Levada-Center* data. Available at: https://www.levada.ru/ (no data for December 2020).

* It is entered in the register of foreign agents.

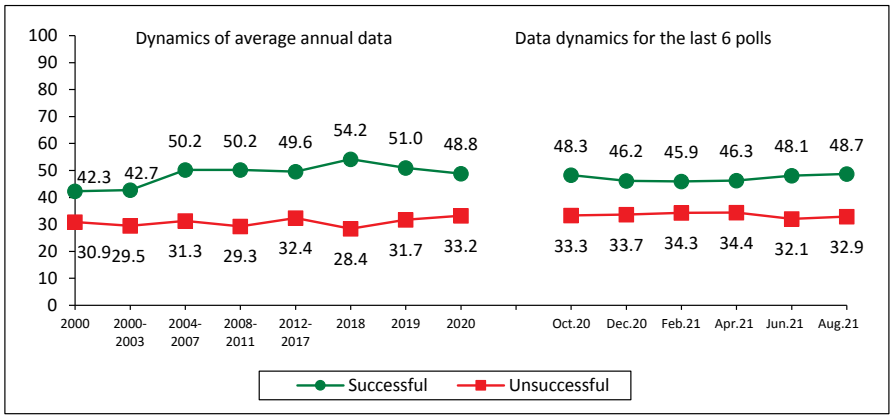
From June to August 2021, the opinion of the Vologda Oblast residents about the success of the Russian President's solution of the country's key problems has not changed significantly:

- ✓ 48–49% of respondents positively assess the activities of the head of state to strengthening Russia's international positions;
- ✓ 41–42% – imposing order in the country;
- ✓ 35% – protecting democracy and strengthening citizens' freedoms;
- ✓ 27% – economic recovery and increase in citizens' welfare.

From October 2020 to August 2021, there are no significant changes, except for a slight (within the sampling error) improvement in public opinion assessments regarding the success of the actions of the Russian President to boost the economy and increase citizens' welfare: the share of positive judgments increased by 3 p.p., from 24 to 27%.

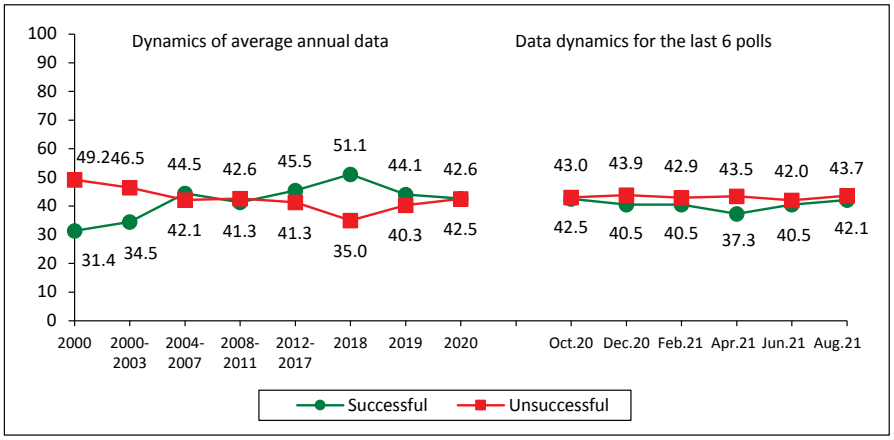
In your opinion, how successful is the RF President in coping with challenging issues..? (% of respondents; FSBIS VolRC RAS data)

Strengthening Russia's international position



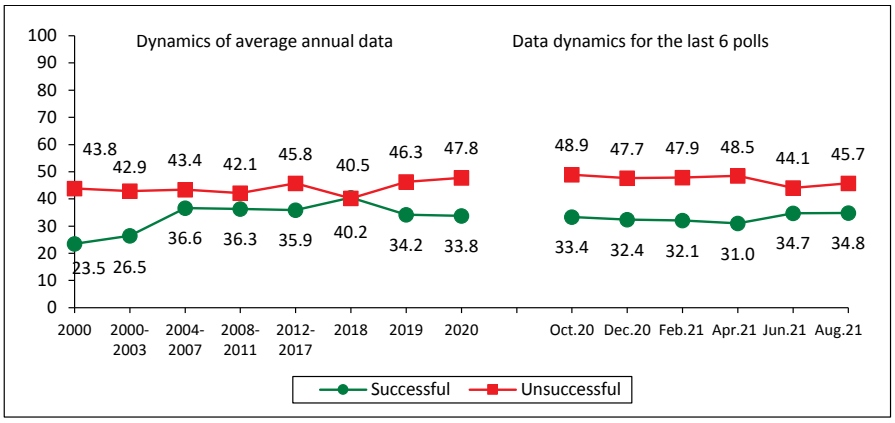
Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Successful	0
Unsuccessful	0

Imposing order in the country



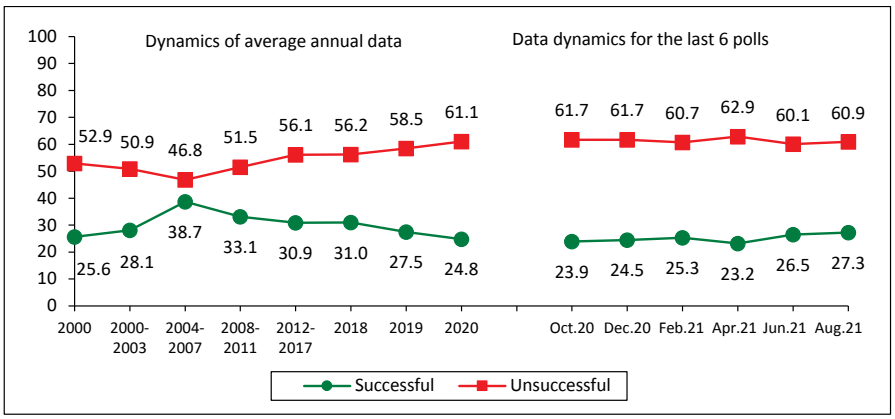
Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Successful	0
Unsuccessful	+1

Protecting democracy and strengthening citizens' freedoms



Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Successful	+1
Unsuccessful	–3

Economic recovery and increase in citizens' welfare



Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Successful	+3
Unsuccessful	–1

The structure of political preferences of the region's residents remains stable. It is still dominated by United Russia (the share of its supporters is 32%), the support of the other parties is much less: 9–10% – LDPR, 8–9% – KPRF, 4–5% – the Just Russia party.

More than the third of the region's population (34–35%) thinks that none of the political forces represented in the State Duma do not express their interests.

In general, a similar structure of political preferences was recorded in October 2020.

Which party expresses your interests? (%of respondents; FSBIS VolRC RAS data)

Party	Dynamics of average annual data										Data dynamics for the last 6 polls						Dynamics (+/–), Aug. 2021 to Oct. 2020
	2000	2007	2011	Election to the RF State Duma 2011, fact	2012	2016	Election to the RF State Duma 2016, fact	2018	2019	2020	Oct. 2020	Dec. 2020	Feb. 2021	Apr. 2021	June 2021	Aug. 2021	
United Russia	18.5	30.2	31.1	33.4	29.1	35.4	38.0	37.9	33.8	31.5	31.1	30.9	30.5	31.5	32.1	31.7	+1
KPRF	11.5	7.0	10.3	16.8	10.6	8.3	14.2	9.2	8.8	8.4	8.8	7.3	8.3	8.7	8.1	9.3	+1
LDPR	4.8	7.5	7.8	15.4	7.8	10.4	21.9	9.6	9.1	9.5	9.4	9.5	10.1	9.9	8.5	9.9	+1
Just Russia	-	7.8	5.6	27.2	6.6	4.2	10.8	2.9	3.4	4.7	4.3	5.0	3.6	2.6	4.1	5.3	+1
Other	0.9	1.8	1.9	–	2.1	0.3	–	0.7	0.3	0.5	0.3	0.7	0.2	0.1	0.1	0.2	0
None	29.6	17.8	29.4	–	31.3	29.4	–	28.5	33.7	34.2	33.8	35.3	35.9	36.4	35.4	34.1	0
Hesitate to respond	20.3	21.2	13.2	–	11.7	12.0	–	11.2	11.0	11.1	12.2	11.2	11.3	10.9	11.8	9.6	–3

In August 2021, the trend of improving assessments of public sentiment continued. Over the past two months, the share of people experiencing mainly positive emotions has increased from 66 to 68% (by 2 p.p.); the proportion of those who believe that "everything is not so bad and it is possible to live, it is difficult to live, but it is possible to stand it" has not changed significantly (77%).

The share of people who positively characterize their mood and have a high potential for patience is higher than in October 2020 (by 7 и 5 p. p. respectively).

The share of the Oblast residents who subjectively classify themselves as "poor and extremely poor" was 47% (as in June) in August 2021; the share of people of the "average income" was 41%.

It is worth noting that in the period from October 2020 to August 2021, the share of the Oblast residents, who subjectively classify themselves as middle-class, slightly increased (within the sampling error; by 3 p.p., from 38 to 41%), although it still remains lower than the proportion of "poor and extremely poor" (48%).

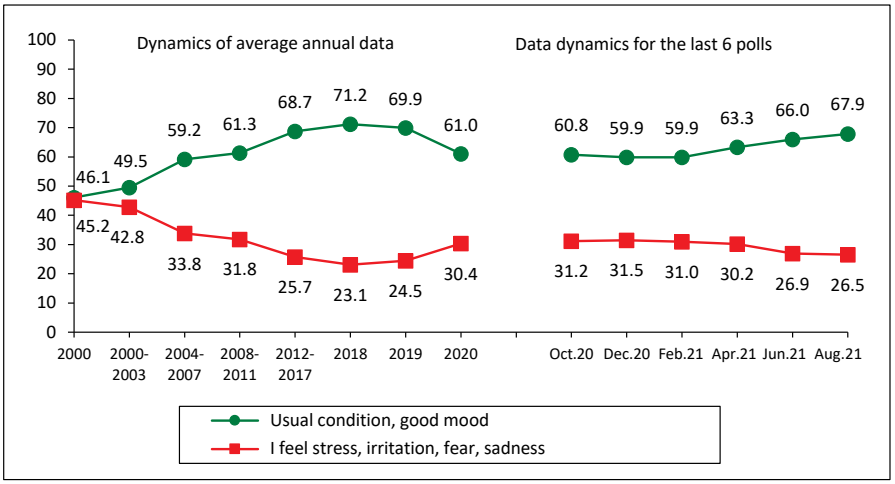
Consumer sentiment Index (CSI) reflecting people's forecasts regarding the prospects for economic development and their personal financial situation, as in June 2021, amounted to 83 points.

CSI is significantly lower than in October 2020 (86 p.), and it has not exceeded the mark of 100 points which means that pessimistic forecasts prevail in population estimates.

For reference: according to the Levada-Center, for the period from April to June 2021, the consumer sentiment index in Russia as a whole decreased by 3 points (from 78 to 75 points).*

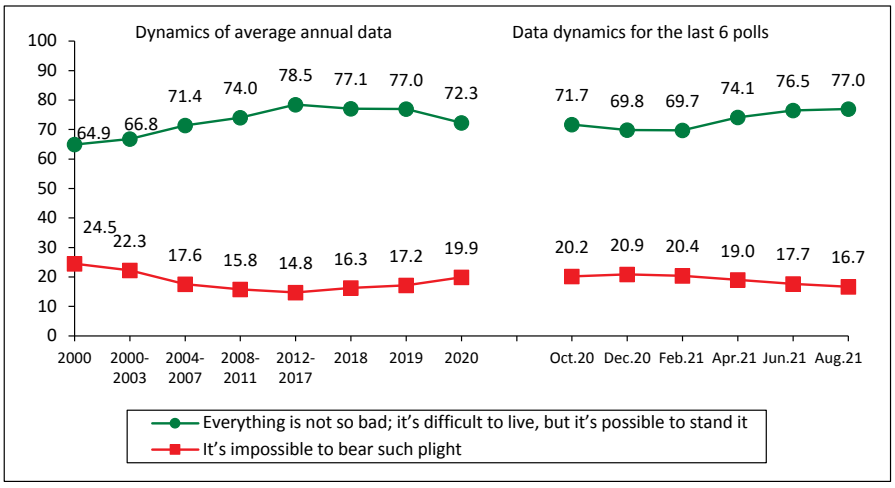
Estimation of social condition (% of respondents; FSBIS VolRC RAS data)

Social mood



Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Usual condition, good mood	+7
I feel stress, irritation, fear, sadness	–5

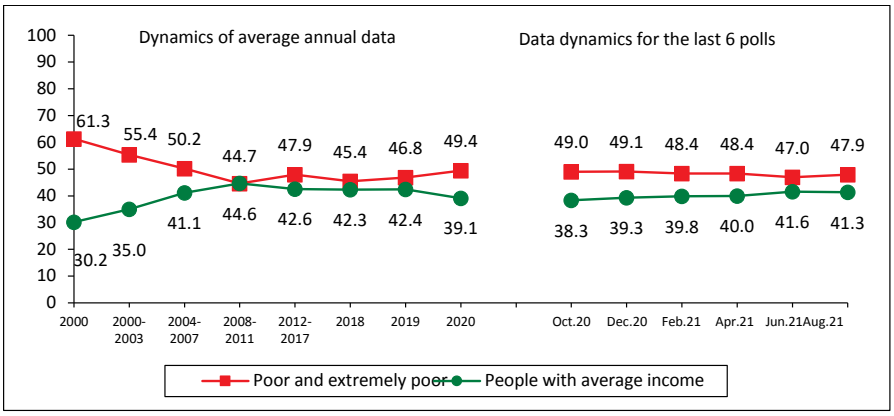
Stock of patience



Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
Everything is not so bad; it's difficult to live, but it's possible to stand it	+5
It's impossible to bear such plight	–4

* It is entered in the register of foreign agents.

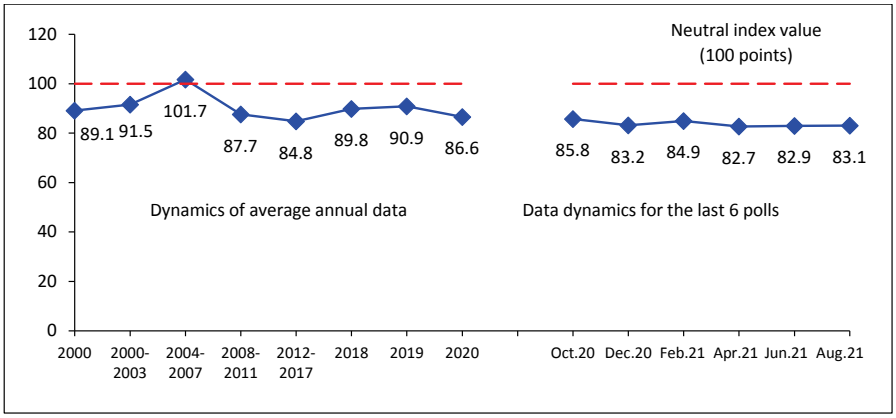
Social self-identification



Annual dynamics (August 2021 to October 2020)	
Respond option	Dynamics (+ / –)
People with average income	+3
Poor and extremely poor	–1

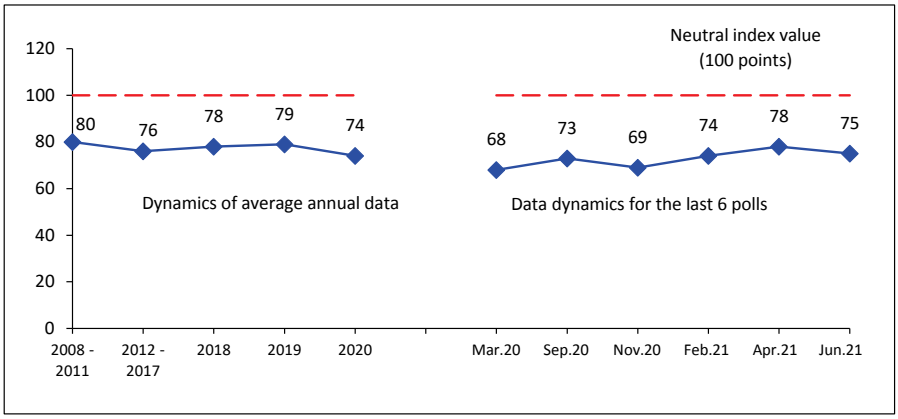
Question: “Which category do You belong to, in your opinion?”

Consumer Sentiment Index (CSI, points; data of FSBIS VolRC RAS for the Vologda Oblast)



Annual dynamics (August 2021 to October 2020)	
CSI	Dynamics (+ / –)
Index value, points	–3

Consumer Sentiment Index (CSI; Levada-Center* data for Russia)



Annual dynamics (June 2021 to October 2020)	
CSI	Dynamics (+ / –)
Index value, points	+7

Index is calculated since 2008

Source: Levada-Center* data. Available at: https://www.levada.ru/indikatory/sotsialno-ekonomicheskie-indikatory/

Latest data is for June 2021. There are no data for the period from April to August 2020.

* It is entered in the register of foreign agents.

Over the past two months, in 6 out of 14 of socio-demographic groups of population, the share of people who positively characterize their daily mood has increased, especially among people under the age of 30 (by 9 p. p., from 73 to 82%), as well as those who, according to self-estimates of their own income, belong to the category of 20% of the most wealthy residents of the Oblast (by 10 p. p., from 77 to 87%).

For the period from October 2020 to August 2021, positive changes in social mood are observed in all major socio-demographic groups of population, except the Vologda residents (there are no significant changes in the regional capital over the past 6 surveys: the share of positive assessments of social mood is 60–61%).

Social mood in different social groups (respond option "Wonderful mood, normal, stable condition", % of respondents; FSBIS VolRC RAS data)

Population group	Dynamics of average annual data							Data dynamics for the last 6 polls						Dynamics (+/–), Aug. 2021 to Oct. 2020
	2000	2007	2011	2012	2018	2019	2020	Oct. 2020	Dec. 2020	Feb. 2021	Apr. 2021	June 2021	Aug. 2021	
Gender														
Male	50.1	65.9	64.5	69.1	72.8	70.1	60.8	60.7	60.0	60.8	61.3	65.1	65.6	+5
Female	43.3	61.7	62.0	65.8	69.8	69.6	61.2	60.8	59.8	59.2	64.9	66.7	69.8	+9
Age														
Under 30	59.1	71.3	70.0	72.3	80.0	81.1	67.6	64.6	65.2	60.9	67.4	73.0	82.3	+18
30–55	44.2	64.8	62.5	67.9	72.6	71.2	61.8	62.5	60.9	64.4	65.5	70.0	71.4	+9
Over 55	37.4	54.8	58.3	62.1	65.2	63.3	57.4	56.9	56.5	54.1	59.1	58.3	58.1	+1
Education														
Secondary and incomplete secondary	41.7	58.4	57.4	57.2	64.8	63.2	56.1	56.9	52.6	56.2	56.9	62.5	63.2	+6
Secondary vocational	46.4	64.6	63.6	66.7	72.2	72.7	63.5	63.5	62.5	60.9	64.3	66.1	68.5	+5
Higher and incomplete higher	53.3	68.6	68.3	77.0	76.8	73.4	63.3	61.4	64.6	62.7	68.7	69.7	73.0	+12
Income groups														
Bottom 20%	28.4	51.6	45.3	51.5	57.3	53.2	43.4	46.0	38.9	44.3	49.8	54.2	55.0	+9
Middle 60%	45.5	62.9	65.3	68.7	71.9	71.4	62.6	61.9	63.3	60.1	65.8	67.0	68.9	+7
Top 20%	64.6	74.9	75.3	81.1	82.9	81.8	75.6	70.6	76.3	76.0	70.8	76.5	86.7	+16
Territories														
Vologda	49.2	63.1	67.1	73.6	71.0	68.6	60.9	61.0	58.7	55.8	57.0	59.4	59.7	–1
Cherepovets	50.8	68.1	71.2	76.2	75.8	71.2	60.4	59.3	60.7	64.4	68.1	70.8	72.3	+13
Districts	42.2	61.6	57.1	59.8	68.7	69.8	61.4	61.4	60.0	59.7	64.0	67.1	70.1	+9
Oblast	46.2	63.6	63.1	67.3	71.2	69.9	61.0	60.7	59.9	59.9	63.3	66.0	67.9	+7

CONCLUSIONS

Thus, the results of the next "wave" of public opinion monitoring, conducted in August 2021, showed that there were no significant changes in the dynamics of population estimates compared to the first summer months.

It is worth noting that, compared with the beginning of 2021, today there is a higher support level for all public authorities, more positive self-assessments of social mood and a reserve of patience. Against the background of the still urgent epidemiological threat caused by the spread of the coronavirus, as well as the accompanying large-scale socio-economic problems that have somehow affected the majority of Russians, maintaining a positive trend in the population's assessments of key indicators reflecting the state of society is an important achievement of the entire public administration system. Especially against the background of the upcoming elections to the State Duma, scheduled for September 17–19, 2021.

However, self-assessments of the current financial situation of people and pessimistic expectations regarding its development remain consistently low. The share of the Oblast residents who subjectively classify themselves as "poor and extremely poor" has not actually changed since the beginning of the year (48%) and is still more significant than the proportion of people of "average income" (41%). From February to August 2021, the consumer sentiment index fell from 85 to 83 points, which indicates an increase in people's anxiety about their well-being in the near future.

The continuing concern of population is explained by official statistics: for example, according to the Vologda Statistics Department data, for the period from January to May 2021, real wages in the region amounted to 97.1% compared to the corresponding period last year (it decreased by 3%). At the same time, the consumer price index for the second quarter of 2021 amounted to 101.8% compared to the second quarter of 2020, for food products, it was 102.1%[4].

It is quite possible that the current state of public opinion can largely be due to a seasonal factor (favorable climatic conditions, vacation time, summer worries, the period of reduction of housing and communal services tariffs), which has a complex positive impact on the psychological well-being of people pushing into the background issues related to the political situation in the country.

But whether it will be possible to maintain the emerging positive trends of public moods in the autumn-winter period (which, among other things, is likely to increase the burden on the health care system due to the seasonal exacerbation of viral diseases) is a question that remains open and requires maximum concentration of efforts at all levels of public power, especially after the parliamentary elections.

Materials were prepared by M.V. Morev, E.E. Leonidova, I.M. Bakhvalova

[4] Socio-Economic Situation of the Vologda Oblast in January-June 2021: Report. Vologda: Vologdastat, 2021. P 69.

AUTHOR GUIDELINES
for Submission of Manuscripts to the Editor of the Scientific Journal
Economic and Social Changes: Facts, Trends, Forecast

The Journal publishes original theoretical and experimental articles that fall within the scope of the journal. The manuscript should be of no less than 16 pages (30,000 characters with spaces). The maximum length of the paper submitted to publication is 25 pages (approximately 50,000 characters with spaces). Book reviews, information on scientific conferences, scientific chronicles are also submitted to publication. The papers should contain research findings of completed and methodologically proper works.

The decision for publication is made by the Journal's Editorial Staff on the basis of the reviewer's report. The novelty, scientific importance and relevance of submitted material are also taken into consideration. Articles rejected by the Editorial Staff will not be re-considered.

Requirements to the package of materials submitted

The following materials are submitted to the editorial office in electronic form:

1. A file containing the article in a Microsoft Word document, format .docx. The name of the file is typed in the Roman characters and reflects the author's last name (e.g.: Ivanova.docx).
2. Full information about the author on a separate page: full name, academic degree and title, place of work and position, contact information (postal address, telephone, e-mail – if available), ORCID, Researcher ID. The information should be arranged in a table.
3. Scanned copy of the commitment of the author not to publish the article in other publications.
4. A color photo of the author in the .jpeg / .jpg format of no less than 1 MB.

The package of materials is to be sent to the editor's email address: esc@volnc.ru.

Text design requirements

1. Margins

Right – 1 cm, others – 2 cm.

2. Font

Font size of the article's text – 14, type – Times New Roman (in case a special type font is needed, when typing Greek, Arab, etc. words, Windows default fonts are to be used). In case the paper contains seldom used fonts, they (font family) are to be submitted along with the file. Line interval – 1,5.

3. Indent – 1.25. Made automatically in MS Word.

4. Numbering

Page numbers are placed in the lower right corner of the page automatically with the use of MS Word tools.

5. First page of the article

In the upper right corner, the UDC is placed, under it, after the 1.5 spacing – the LBC, then – the symbol ©, indent (spacing), and the name and initials of the author in semi-bold. After the 2-spacing indent, the title of the article is given. Central alignment is used for the title of the article given in semi-bold. The abstract and key words are given below, after the 2-spacing indent, without a paragraph indent, in italics and aligned by width. Then, after the 2-spacing indent, the text of the article is placed.

6. Abstract

The abstract contains from 200 to 250 words. The abstract states the purpose of the research, points out its undoubted scientific novelty and its differences from similar works of other scientists; contains the methods used by the author and the main results of the work performed; identifies areas of application of the results of the study; briefly formulates the prospects for further research in this area.

Examples of good abstracts for different types of articles (reviews, scientific articles, conceptual articles, application articles) are available at: http://www.emeraldinsight.com/authors/guides/write/abstracts.htm?part=2&PHPSESSID=hdac5rtkb73ae013ofk4g8nrv1.

7. Key words

There should be not more than eight words or word combinations. Key words should reflect the content of the manuscript to the fullest extent. The number of words within a phrase should not exceed three.

8. Tables

The caption of the table and its number (if present) are given in normal font, without highlighting. The caption runs in bold and is center aligned.

Tables are inserted; drawing tools and AutoShapes are not allowed; column and cell alignment using spaces or tabs is not allowed. MS WORD table editor is used for tables. Each piece of data of the stub and head of the table correspond to discrete cell. Only editor standard tools are applied for creating and formatting tables, no pilcrows, spaces and extra blank lines for semantic breakdown and line adjustment are allowed.

9. Figures (schemes, graphs, diagrams)

The caption and its number are placed below the figure. The word "Figure" is in normal font (without highlighting). The caption runs in bold, center alignment, single-spaced.

MS EXCEL is to be used for creating charts, MS WORD, MS VISIO – for flow charts, MS Equation for formulas.

Figures and charts, created in MS WORD are to be grouped within one single object. No scanned, exported or taken from the Internet graphic materials are allowed in the article.

Algorithm of charts insertion from MS EXCEL to MS WORD:

1) in MS EXCEL select the chart, using the mouse, right click and select "copy" from the list of options;

2) in MS WORD right-click, select "paste" from the list of options, click on "paste special", "Microsoft Excel chart".

The title of the figure and its number are placed below the figure. The word "Fig." is in common type face. The caption is given in bold and is center aligned.

10. Bibliographic description of the sources under tables and figures

Write: either "Source", or "Compiled with the use of", or "Calculated with the use of", etc., after that – information about the source.

11. Page footnotes

Page footnotes are executed according to GOST R 7.0.5 – 2008.

12. References

The word "References" is given after a 1.5 spacing after the body of the article in lower-case letters, semi-bold italics, center alignment. Then, the list of references is given after the 1.5 spacing.

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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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