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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.

INTERNATIONAL TIES AND PROJECTS

VolRC RAS is actively developing its international activities. It is involved in joint international grant projects and regularly holds international conferences and workshops. The Center has Cooperation agreements and Memoranda of understanding with research organizations:

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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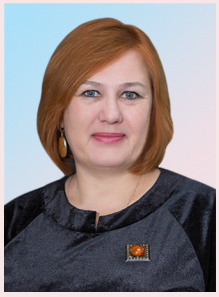
Demographic Studies in VolRC RAS: Formation of the Scientific School



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Abstract. The article describes main stages of the formation of the demographic studies school in the Vologda Research Center of RAS. We present the development of the system of thematic areas of employees' research historically: from its emergence until the present moment. The relevance of sociodemographic topics is related to the necessity to respond to demographic challenges of social development, such as depopulation, caused by low birth rates and relatively high mortality, population ageing, and the prevalence of poor health. Monitoring of trends and identification of determinants lead to a comprehensive understanding of the nature and causes of demographic dynamics, adding new knowledge to the demographic science. These studies help to find tools for preserving people in the country and in the region, strengthening public health, and adapting to the transformation of the population's age structure.

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The thematic topic of works covers all demographic processes: birth rate, mortality, marriage and divorce; patterns of the public health development and conditions for the formation of a healthy generation are studied, monitoring and evaluation of the demographic policy effectiveness are carried out. Due to the significance of behavioral factors of demographic development, the research of the population's demographic behavior is of special importance in the studies. VolRC RAS develops and implements the system of matrimonial, reproductive, self-preservation, and migration behavior monitoring using sociological methods. Despite depopulation, studies on the health formation, first of all, among children are still relevant. At the current stage of Russia's social development, social status of a family, the level of pedagogical competence and medical activity act as important health determinants together with external socio-economic conditions. The purpose of this work is to review socio-demographic studies which have been conducted by employees of the Vologda Research Center of RAS for the past 30 years.

Key words: demographic studies, depopulation, public health, children's health, population ageing, demographic policy.

Introduction

People began to be considered a core value and key resource of social development during humanization – the key trend of the late 20–early 21st centuries. Special focus on a number and quality features of population during this period could also be explained by the current demographic situation. A sharp decline of the birth rate with a simultaneous high mortality rate (including premature mortality) in Russia in the 1960s led to depopulation and ageing of population. These were demographic challenges that became obvious after the emergence of labor resources shortage and growing economic burden on able-bodied citizens.

At the same time, there were no systematic demographic studies after the closure of the institutions of demography in the 1930s[1], and demographic staff was not trained. In other words, there was no database with relevant information – especially about demographic process' determinants – which could be the basis for efficient demographic policy. The "demographic thaw" happened only in the 1960s, when it was dangerous to ignore occurring changes. The Lomonosov Moscow State University was among the first institutions to start demographic research again. In 1965, it established a laboratory for the study of population; in 1967 – the Department of Population at the Faculty of Economics was established. In 1968, they were merged into the Education and Research Center for Studying Population Issues under the leadership of D.I. Valentey. Well-known Russian demographers A.Ya. Kavsha, V.V. Elizarov, V.A. Iontsev, N.V. Zvereva, V.N. Arkhangelsky, and others have worked and still work at the Center.

It is impossible to ignore L.E. Darsky's contribution to the revival of Russia's demography who began research on marriage, fertility, and family formation in 1964 at the Central Statistical Administration (RI CSA USSR), where he later headed one of the laboratories of the Demography Department[2]. Later, other well-known structures emerged. It includes the establishment of N.M. Rimashevskaya Institute of Socio-Economic Studies of Population in 1988[3] and the Center

[1] In 1934, the Institute of Demography in Leningrad was closed, and in 1939 – in Kiev. The main reason – unsatisfactory results of the 1937 population census, which showed losses during the period of collectivization and famine. For details, see, for exapmle, an interview with A.S. Vishnevsky "Demographic studies in Russia: history, state, and prospects". Available at: http://www.demoscope.ru/weekly/2006/0249/analit01.php#1

[2] A creative career of L.E. Darsky. Available at: http://www.demoscope.ru/weekly/2002/085/nauka01.php

[3] Available at: http://www.isesp-ras.ru/

of Demography and Human Ecology of the Institute of Economic Forecasting of RAS – a predecessor of the Institute of Demography of NRU HSE (IDEM), which started work in 2007 under the leadership of A.G. Vishnevsky[4]. L.L. Rybakovsky has been heading the Department of Social Demography at the Institute of Socio-Political Research since 1974. In 2020, the Institute for Demographic Research of FCTAS RAS was created – it was the most anticipated event among the demographic research community[5]. This is, undoubtedly, the accomplishment of its director – RAS Corresponding Member, Doctor of Sciences (Economics) S.V. Ryazantsev and his colleagues, Director of FCTAS RAS, Academician M.K. Gorshkov, who understands the strategic importance of demography for Russia's socio-economic development.

In the 2000s, there were many regional researchers dealing with demographic issues. We would like to mention the Ural school of demographers: A.I. Kuzmin – associate of the Ural Demographic Forum, A.M. Ilyshev, A.P. Bagirova, etc.; colleagues from the Republic of Bashkortostan (Bashkir branch of FCTAS RAS) who were among the first to start preparing a regional demographic report – R.M. Valiakhmetov, F.B. Burkhanova, etc. The demographic research is conducted by specialists of the Institute of Social, Economic, and Energy Problems of the North of Komi SC UrB RAS under the leadership of L.A. Popov. Scientists of the Family and Demography Center of the Tatarstan Academy of Sciences successfully monitor the demographic situation and its determinants in the region under the guidance of Ch.I. Ildarkhanova.

The Vologda Research Center of RAS is also among regional research organizations. In it, with the assistance and full support of the scientific supervisor, RAS Corresponding Member, Doctor of Sciences (Economics), Professor V.A. Ilyin, the scientific school of Demographer, Doctor of Sciences (Economics) A. A. Shabunova was formed. VolRC RAS has been conducting demographic and socio-demographic studies since 1995.

The article presents an overview of studies on various aspects of the demographic development, carried out by scientists of the Vologda Research Center of RAS.

There were children first…

The history of demographic research at VolRC RAS began with the implementation of a unique idea to organize a longitudinal cohort monitoring of conditions for the formation of health among children. In 1980, Natalia M. Rimashevskaya – Doctor of Economics, Professor, RAS Corresponding Member, Honored Scientist of the Russian Federation – first expressed the idea that there is the need to conduct a study similar to the children's health and development research (NCDS) started by the UK National Child Development Study Center (NCB) in 1958 and continued by the Centre for Longitudinal Studies (CLS) in 1985 [1]. Her idea was accepted for the implementation in the Vologda Oblast by **Vladimir A. Ilyin.** In May 1995, the Vologda Research Center of RAS (previously named VSCC CEMI RAS) together with the Institute of Socio-Economic Studies of Population of RAS and support of the Vologda Oblast Government started a longitudinal (long-term) panel study of socio-economic and medical factors affecting the health and development of children [1] according to a special program, which included assessment of children's health status, process of their physical and intellectual development, parents' social status, their level of education, income, living conditions, etc. [2; 3]. Scientific consulting of the monitoring on the basis of ISESP RAS was carried out by Doctor of Sciences (Economics), Professor Elena B. Breeva for a long time. She repeatedly emphasized the scientific value of the methodological approach used to analyze and predict the child population's

[4] Available at: https://www.hse.ru/demo/
[5] Available at: https://idrras.ru/

Cohorts participating in the study

Cohort, year of birth	Year of cohort observation completion	Number of families at the start of the observation	Number of families at the end of the observation	Exclusion, %
1995	2013	101	64	37.6
1998	2016	199	22	89.0
2001	2019	250	33	86.8
2004	2022	265	-	-
2014	2032	370	-	-
2020	2038	379	-	-

health in real time. The study is currently being conducted (*Table*) under the supervision of **Alexandra A. Shabunova**. The analysis of children's health [4; 5] revealed periods of its noticeable deterioration (critical points) – the first year of life, the period of entering school, and in the transition from primary to secondary school [6; 7] – and the determinants of children's health [8–10]. The study showed that each age period is characterized by a specific set of factors that determine health. In infancy and early childhood, influence of medical, biological, and social factors prevails (poor health of parents; low hemoglobin during pregnancy; mother's smoking during pregnancy; working conditions of an expectant mother that do not meet sanitary standards; nature of infant feeding). In preschool and early school age, environmental factors, lifestyle, and a family's living standards become more significant (a family's living standards, comfort of housing conditions, environmental conditions in an area of permanent residence, level of social and hygienic literacy, and health-preserving activity of parents) [11; 12]. The concentration of risk factors (low level of medical activity, unfavorable environmental conditions, unfavorable housing conditions, poor health of a woman during pregnancy, single-parent family) occurs in low-income families [7].

The study showed that stability of the economy, social well-being, and systematic progressive development of the social sphere are the key to family well-being and children's health. The opposite situation leads to destruction of the institution of family, decrease of child population, and decline of its quality characteristics. The child's health is affected by parents' lifestyle, conditions of upbringing, material well-being, medical activity, diet, housing conditions, and environmental situation [13].

In 2014, the study was supported by a grant from the Russian Science Foundation (RSF), which allowed monitoring a new cohort of newborns 10 years later. For the first time, there was no record of deterioration of newborns' health that had been previously observed from one cohort to another. Positive trends of socio-economic development during the reform of the economy and social sphere were reflected in living conditions of families with children, level of satisfaction with their health, state of newborns' health, and main indicators of the maternity care system [5; 11; 14].

Much attention is paid to the state of health and neuropsychiatric development of school-aged children. This period is very important for health preservation and formation of a healthy lifestyle among younger generation. The role of educational organizations, families, and healthcare is shown in the studies of VolRC RAS, and importance of their interaction in solving this problem is justified [15–18].

Children's health determines the country's potential in the future; it serves as an important indicator of the state policy efficiency and the nation's well-being. Due to a rapid economic, political, socio-cultural, and other transformations taking place in post-Soviet Russia, the study of children's health will be strategically relevant.

The findings and results of child health monitoring served as the basis for new research projects. Thus, the study subject was the ***reproductive health*** of adult population and young people – future parents. This idea was proposed by I.P. Katkova – Doctor of Sciences (Medicine), Senior Researcher at ISESP RAS – who conducted its active scientific consulting since the beginning. Under the guidance of A.A. Shabunova, *M.A. Lastochkina (Kopeikina)* carried out an assessment of reproductive health and constructed an economic and mathematical model of reproductive potential, including groups of medical, demographic, and socio-demographic indicators [19–23]. Her works proved the importance of male reproductive health in the formation of reproductive potential; it is revealed that reproductive attitudes determine a number of children in a family by 50%.

Later, an approach to an assessment of reproductive health, based on its definition by the World Health Organization, was proposed, supplemented by a set of parameters of the parental health potential (*A.A. Shabunova, O.N. Kalachikova*). The analysis shows the success of obstetric services, which provided a reduction in infant and maternal mortality, premature births, and some improvement of newborns' health. A possibility of pregnancy planning also has positive aspects: a number of abortions decreases, use of contraceptives increases, and incidence of sexually transmitted diseases declines, which increases a possibility of safe sexual relations. At the same time, there are strong negative trends: continued growth of genitourinary system diseases, gynecological morbidity, infertility, and the incidence of pregnant women. This indicates a low level of not only the health potential among the population, but also an insufficient responsibility of parents for the health of future children [24].

In the late 1990s, the Center began studying ***the state and behavioral factors of public health*** in the form of annual monitoring, which has been conducted in the Vologda Oblast for about 20 years (*A.A. Shabunova, K.A. Gulin, G.V. Tikhomirova, N.A. Rybakova, N.A. Malanicheva*). According to the author's methodology, a self-assessment health index is calculated, indicating the relationship between the dynamics of health and social development. The research program includes such parameters as the self-assessment of population's health, responsibility for their own health, prevalence of bad habits, medical and physical activity, satisfaction with the quality of medical care, issues in activities of medical institutions, sources of information about health [25–28]. Health factors were systematized, a high importance of lifestyle was revealed [29], which led to the formation of its own methodology for studying self-preservation behavior of the population with the allocation of attitudes, motives, and actions implemented in relation to bad habits, physical activity, work and rest, medical activity, nutrition, sexual behavior, stressful situations (*A.A. Shabunova, O.N. Kalachikova, P.S. Korchagina*) [30; 31]. The main problem of self-preservation behavior of the population is a contradictory awareness about a healthy lifestyle and implemented behavioral practices, which are clearly harmful to health, or neglect of useful ones.

The study assesses the health of certain socio-demographic population groups (youth, urban residents, elderly people, women, etc.) [32–35]. Gradually, the methods of actual demographic analysis are being mastered, including forecasting (*M.A. Lastochkina, A.O. Bogatyrev, E.A. Rossoshanskaya (Chekmareva), N.A. Kondakova*) [36–39]. A methodology for assessing mental and social health of the population has been developed, which allows assessing social well-being, prevalence level of anxiety, depression, and neuroses [40; 41].

The accumulated base of studies on physical, reproductive, and mental health of the population, and child health became the basis for the formation of the public health concept developed by **A.A. Shabunova** [42–44]. In the context of the theory of socio-economic systems sustainability,

public health is considered a property of the population of a certain territory that ensures demographic development, a maximum possible life expectancy and labor activity, which is formed under the complex influence of biological, socio-economic, socio-cultural, and environmental factors. Public health is measured at the macro and micro levels, taking into account behavioral and subjective assessments, using statistical and sociological methods of data collection. Public health factors are grouped into biomedical, socio-economic, and lifestyle factors. The extent of ill health and its impact on the economic development are evaluated using the method of lost profits and the burden of disease [45]. The results of health research found practical application in the work of the health system – especially the assessment of functioning and development of proposals to improve efficiency of its activities, which is the subject of *K.N. Kalashnikov's* dissertation (supervisor – V.A. Ilyin) [46].

Studies of the dynamics and determinants of birth [47] and mortality rates [48] of the population became systematic within the research work "*Reproduction of territories' population: trends and reserves*" in 2012, and, in 2015, a laboratory for the study of problems in the social sphere was established. Socio-demographic research has become one of the key areas of its activity.

The main objective of the research activity of demographers of VolRC RAS is to monitor, forecast, and analyze information about the demographic development, taking into account the population's behavior: birth rate, reproductive and marital behavior, mortality, health and self-preservation behavior, migration and migration mobility, as well as the dynamics of the population structure – first of all, age (population ageing) – and the demographic policy assessment.

With the evolution of research area, the arsenal of methods also expanded. The index method was used to assess the contribution of structural and behavioral factors to the change in the population's birth rate, which allowed stating the efficiency of demographic policy during the implementation of new measures after 2006. It is proved that the increase of the birth rate during the period of the demographic policy intensification (2006–2011) was mostly (by 74%) caused by an increase in the intensity of births, i.e., a reaction to the introduction of new measures [49]. In 2014, a methodology for assessing demographic security was developed (*O.N. Kalachikova, A.V. Korolenko*). To evaluate the current situation in the RF regions, the authors used an indicative method to analyze ***demographic security*** in four blocks of indicators: "Reproduction and reproductive attitudes of the population", "Gender, age, marital, and family structure of the population", "The state of health of the population and the health system", "Mechanical movement of the population and spatial structure". There is a pronounced polarization of the main indicators in the context of entities of the Russian Federation. The most favorable situation in terms of population reproduction, parameters of gender, age, marital and family structure has developed in the North Caucasus regions, remote regions of Siberia and the Far East. The leading demographic threats to these territories are negative characteristics of the population's health status, a low density of its location, and depopulation of the territories. In the central Russian regions, with obvious successes in the migration policy and healthcare areas, existing parameters of the population reproduction, transformation of gender, age, marriage and family structure, and traditional family values are of concern [50].

Territorial features of the demographic development are also studied in the context of individual demographic processes. The multidimensional grouping method was used to analyze the differentiation of mortality in Russian regions [51], regional differences of the family institution features were estimated using the cluster analysis [52], and a statistical analysis of children's health was carried out [10; 12].

Using mathematical methods (regression analysis of panel data), ***demographic development factors*** were estimated. It was revealed that the birth rate during the analyzed period was significantly affected by the population's living standards, amount of funding for healthcare, physical education and sports, as well as the state of infants' health. The greatest contribution to the population's life expectancy was made by morbidity factors for several classes and reasons, well-being level, increased prices for goods and services, mental health of society, and safety of working conditions. Factors of the population's living standards, economic development, and innovation played a significant role in determining migration processes [53].

O.N. Kalachikova's dissertation (academic supervisor – A.A. Shabunova) presents the author's approach to the study of the population's reproductive behavior and identifies modern trends of ***reproductive behavior*** – small number of children and the ageing of motherhood, lengthening of the protogenetic interval, ignorant contraceptive behavior, and a decrease in abortion practices. The key reasons for a small number of children are a decrease in the need for children; in case of non-implementation of reproductive plans – unfavorable financial conditions [54]. Using the objective tree method, models of reproductive [55] and self-preservation behavior of the population were constructed [56].

An increase in the share of older people in a total population remains one of the most significant trends in the development of modern society. This is an important factor of social transformations, which can impact society directly and indirectly. ***Population ageing*** causes radical changes in the demographic and social structure of society, systems of production, distribution, and consumption, and it ultimately affects the situation in all social groups and strata. It was the basis of *V.N. Barsukov's* dissertation research (academic supervisor – A.A. Shabunova). The analysis of demographic ageing trends in Russia and individual entities of the Federation, based on the calculation of demographic ageing indicators (ageing coefficient, ageing index, demographic burden at the expense of elderly people, age indicators of ageing), allows concluding that most ageing indicators of Russian population get closer to those of developed countries, and the ageing process "levels" [57]. The ageing of population is typical for all entities of the Federation, and the differentiation of its indicators is relatively small (compared to fertility and mortality indicators) [58]. Factors of active longevity have also been studied [59].

Under the leadership of A.A. Shabunova, monitoring of the conditions for the formation of the children's generation constantly develop. Studies of school children's health [60], children's neuropsychiatric health [61; 62], and identification and development of gifted children [63] are updated (*I.N. Razvarina, L.N. Natsun (Fakhradova)*). It was revealed that most parents do not have adequate knowledge about children's health and development, which poses the question of improving the efficiency of health and hygiene counseling, as well as education in general. The necessity of effective interdepartmental interaction between a family, healthcare, and education is established.

In order to deepen research on extreme manifestations of ill health and assess the potential of the group, *L.N. Natsun* studies disability among population, extent of disability, and its consequences (academic supervisor – A.A. Shabunova). In a number of scientific papers, the author's tools for assessing the quality of life of disabled people are proposed and tested. It is proved that employment of unemployed people with disabilities is an option to improve their quality of life, and the economic effect, which can be obtained by creating jobs for these people, exceeds the costs. The key barriers to social participation of disabled people were identified, conceptual foundations of social policy in relation to these people were analyzed, and management tools for improving their quality of life were proposed [64–68].

The researcher also studied current urgent challenges of public health – spread of HIV infections [69], malignant tumors [70], mortality of children in the perinatal period [71], bad habits [72; 73].

Negative manifestations of demographic development are explored considering their impact on the economic development. Reproductive losses [74], premature mortality [75; 76], infant mortality [77], disease burden [78], and disability [79] were assessed.

A methodology for assessing migration was developed in accordance with the concept of L.L. Rybakovsky's three-stage migration process (*A.P. Budilov, academic supervisor – O.N. Kalachikova*). The proposed approach includes a set of parameters and their indicators at the stage of the formation of migration attitudes – an actual movement and adaptation of migrants [80]. The analysis of internal migration flows [81] and the migration policy in Russia [82] is carried out.

Studies on the state of the institute of family and marriage, parenthood are presented in the works of *O.N. Kalachikova, M.A. Gruzdeva, V.N. Barsukov* [83–87]. At the current development stage, the family institution is characterized by a nearly accomplished legitimation of cohabitation, a few children in a family, nuclearization, changes of the age model in marriage and fertility [88], and increasing "fashion" for responsible parenthood – most of all, active involved fatherhood.

A separate block of independent studies is devoted to the analysis and evaluation of the demographic policy effectiveness in the area of birth control [89–91] and the formation of public and children's health [92–95]. According to V.A. Borisov's method, the index of a hypothe-tical minimum natural birth rate was calculated and a degree of its implementation was determined. Calculations showed that there is a potential for increasing the birth rate, the population is labile to the demographic policy, and the need to use information and propaganda tools along with material and institutional measures to stimulate the birth rate is justified [96–98].

Currently, a methodology has been developed, and demographic processes with their determinants are being monitored at the level of the country, macro-regions, and Russian regions. There is a database of statistical information on demographic development and an array of sociological data on the demographic behavior of the population of the Vologda Oblast, and proposals to improve the effectiveness of the demographic policy were developed [99]. In 2020, the first regional demographic report of the Vologda Oblast was prepared under the leadership of A.A. Shabunova with the assistance of the VolRC RAS Scientific Director, RAS Corresponding Member, Doctor of Sciences (Economics) V.A. Ilyin. The region is a territory with downward demographic dynamics, natural and migration decline. The key areas of the population stabilization are the reduction of mortality, especially preventable one, and stimulation of the birth rate, the intensity of which can be achieved by increasing a number of children in families. A wide range of measures to support families with children is being implemented in the region, but their nature allows attributing most of them to social policies aimed at reducing inequality (monetary and non-monetary) – not to demographic objectives [100].

There are active collaborative studies with scientists from different Russian regions. A.A. Shabu-nova and O.N. Kalachikova are active members of the Academic Council "Demographic and Migration Issues in Russia" at the Department for Social Sciences of RAS, which provides methodological support for the national project "Demography".

On prospects of the scientific development

The demographic agenda is becoming more relevant: especially for Russia with its vast territory and unpopulated space. A science-based approach

is increasingly needed to address emerging issues. Understanding of causes and consequences of demographic changes is the key to efficient demographic and social policy: it is indicated by international and Russian studies.

How to build a policy? How to maintain a balance between a natural movement of the population and migration? What to do with centripetal migration, which leads to the depopulation of territories? How to form a health-preserving behavior? To answer these questions, an in-depth research, new methodological approaches, and an analysis at the regional, and even municipal, level are required. In this regard, the promising areas are development and deepening of current research, development of new methods of the demographic analysis, forecasting and modeling, interdisciplinary search for conceptual foundations that explain current trends in demographic development, and regular monitoring of the demographic development.

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EDITORIAL

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V.A. Ilyin – Journal Editor-in-Chief – Celebrates His 80th Anniversary

On January 19, 2021, V.A. Ilyin – Scientific Director of the Vologda Research Center of the Russian Academy of Sciences, RAS Corresponding Member, Honored Scientist of the Russian Federation, Editor-in-Chief of the journal "Economic and Social Changes: Facts, Trends, Forecast" – celebrates his 80th anniversary.

The scientific and expert community knows him as a talented manager, the founder of the first subdivision of the Russian Academy of Sciences in Vologda, and a person with a huge life experience, who can predict promising things and correctly set priorities, combine and direct efforts to achieve an intended goal.

V.A. Ilyin's path to science was predestined by twists of fate that guided him from a small Ural town, where he finished school, to Leningrad and then to Vologda. After toughening work at the Leningrad Optical Mechanical Association (LOMO) and gaining experience in a Komsomol

organization as a deputy secretary of the Komsomol Committee, he went through several stages of the production process management in 20 years and became a deputy head of the planning and production department of a large enterprise. As a member of the LOMO administration, he came on a business trip to coordinate work with the Vologda Optical and Mechanical Plant and stayed in Vologda. V.A. Ilyin was the director of the VOMZ production association for more than ten years. In the first 30 years of work in the defense industry, he managed to build a great career – from a worker to a head of a large production association. V.A. Ilyin learned to think in economic categories, build an effective management system, create a favorable psychological climate in a large team, and, most importantly, work systematically. This backgroud turned out to be useful when V. A. Ilyin founded and headed a scientific organization in December 1990, which initially was a regional subdivision and later became an independent institute, reorganized into a research center – VolRC RAS.

He is a founder and a supervisor of the Scientific School "Problems of the comprehensive study of economic and social processes". Members of the school prepared and defended 30 dissertations in 2006–2020: V.A. Ilyin scientifically supervised four of them. He actively works on the integration of scientific and educational activities. He was an initiator of a unique project – Research Educational Center created at ISEDT RAS (now – FSBIS VolRC RAS) that implements an integrated education system for school children, master students, postgraduates, which provides training of highly qualified specialists for science, education, and economics.

V.A. Ilyin prepared or supervised more than 380 published academic works. The scope of his research interests is determined by regional problems with a special focus on social issues. He is actively engaged in a study and search for solutions to problems of improving public administration efficiency, reserves for revenue growth in federal, regional, and local budgets, rationalizing their revenues, increasing the role of leading industrial corporations in strengthening all budgets, regional and national security. V.A. Ilyin's articles and monographs always include constructive thoughts on the acceleration of the growth rate of self-organization in the domestic economy. They clearly show the author's concern that the current development of the socio-economic situation in the country threatens the processes of Russian society's real democratization.

The key feature of VolRC RAS is the only regional information base in Russia that includes a set of socio-metric indicators for nearly 20 years. It emerged due to the residents' public opinion monitoring, initiated by V.A. Ilyin, about the country and region's socio-economic transformations.

The professor founded several academic journals published in the Vologda Research Center of RAS. He has been an Editor-in-Chief of the journal "Problems of Territory's Development" for more than 20 years. He also supervised the publishing of the online journal "Territorial Development Issues". However, V.A. Ilyin's key publication is the journal "Economic and Social Changes: Facts, Trends, Forecast": he has been its Editor-in-Chief since 2008. A topic of the journal is selected in accordance with the requirements of the time. The issues for various years have become some kind of a chronicle, showing key milestones of the economic and social development of Russian and several foreign regions. In 2015, it became the first Russian economic journal to be included in the international scientometric database Web of Science: it was selected for the new Emerging Sources Citation Index, which covers the most important regional journals.

V.A. Ilyin is an organizer and ideological inspirer of most scientific studies in VolRC RAS, but his personal work, a form of expression of his point of

view on a wide range of processes taking place in the world, the country, and the region, is the "Editorial" section which is included in each issue of "Economic and Social Changes: Facts, Trends, Forecast".

Editor-in-Chief's articles of the leading periodical of VolRC RAS represent the quintessence, a concise form of presentation of ideas, thoughts, and observations that emerge in a critical analysis of the country's socio-political and socio-economic situation. Despite the fact that V.A. Ilyin is the author of these articles, they represent a conceptual opinion of the journal's Editorial Board and the entire researcher center.

It is a view of not just a scientist, but a person who himself "lives" through the entire spectrum of a current socio-political agenda and experiences personal feelings about it. That is why the "Editorial" section is much more than a general series of academic articles. As many respected Russian science experts noted, it is "a new genre for academic social science periodicals; a diary of a scientist and a person deeply concerned with not only understanding a complex social fabric of the country in an era of rapid social and economic changes, but also with a desire to influence these ongoing changes".

Moreover, we can name three more "success components", which are the foundation of the "Editorial" section:

first, a wide, but, at the same time, very precise range of thematic aspects, raised by the author, which, in each new material, touches upon the most acute current problems of public administration effectiveness, interaction between society and government in Russia, and complex issues related to the national and cultural characteristics of Russian society, its history, the specifics of international political relations, and, in general, global trends in the world civilization development;

second, a scrupulous approach to the selection of information sources, the purpose of which is to achieve the most objective view on the current situation in the country and the world; for this purpose, we use assessments of independent experts from various fields, official speeches and legislative initiatives of decision-makers, as well as data of international, national, and regional sociological studies that represent their point of view about society;

finally, publishing regularity of "Editorial" articles is also important (5 times a year); it allows the author to "keep his eyes on the ball" of global events and processes and act as the "all-Russian watchman" discussing the problems of political governance in the country" (as it was once mentioned in a review of his publication).

In conclusion, more than 50 articles about the most resonant events, published in the "Editorial" section over the past 8 years, provided a comprehensive, scientifically based, and, most importantly, ideological picture of the current trends in the development of Russia and the world. It was also reflected in the publication form – two volumes of "Public Management Efficiency: Editor-in-Chief's Opinion", which was rightfully called a "monument and chronicle of the era" by the reviewers.

Directorate, Trade Union Committee, Editorial Board of the journal, and entire staff of the Vologda Research Center of RAS wish the anniversary celebrant strong health, great mood, infinite creative energy, and new bright victories!

Dear Vladimir Alexandrovich! We express our deep gratitude to You for all the years of keeping a competitive spirit and creative potential of our team, purposefully passing on your unique experience and knowledge to young people. You have a lot of grateful students! Let your excellent scientific and organizational talent contribute to the economic science development for many years to come!

Director of VolRC RAS,
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Return on Equity as an Economic Growth Driver*

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Abstract. The article presents a simple model of economic growth based on the description of the dynamics of fixed capital formation. The main characteristic of the obtained fundamental equation of economic growth consists in an explicit link between the indicators of the GDP growth rate and the level of return on equity which allows not only obtaining the T. Piketty inequality, but also strictly determining the conditions for its implementation. The peculiarity of the fundamental equation of economic growth is in the postulation of the primacy of the capital circulation process which can provide an economic growth regime under certain conditions. The main difference between the author's model and earlier constructions is the aggregation of most growth factors into one parameter. It is the profit rate (return on equity) which acts as the main driver of economic expansion. To strengthen the explanatory power of the fundamental equation of economic growth, the author considers two economic sectors – ordinary (with a low return on equity) and special (with a very high return on equity). This approach allows dividing the economic growth regime into early and mature stages which differ radically in the values of the macroeconomic parameters. The article shows that the early stage is typical for the period of the economy's exit from the Malthusian trap and the transition from the industrial depression to sustainable growth. Experimental calculations based on the model proves that, in order to overcome the poverty trap, it is necessary to have a special sector in the national economy with the annual return on equity of hundreds percent. This result is consistent with the available historical data on the profitability of economic operations at

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a critical development stage – the change of the feudal system intto the capitalist one. The calculations also demonstrate that, for the mature stage of economic growth, such high requirements for business profitability are not imposed, and the thesis about the need for a special sector loses its significance. Moreover, the fundamental equation of economic growth allows outlining the final stage contours of the capitalist management mode.

Key words: economic growth, return on equity, Malthusian trap.

Introduction

It is hardly an exaggeration to say that modern economic science is mostly devoted to studying the economic growth, which, in turn, is identified with civilizational development. This significance of the economic growth phenomenon is associated with many reasons. Among them is the fact that it is not an "inherent" natural mode of mankind existence, but it has lasted for 250–300 years maximum. Before that, for about 10 thousand years, humanity had been in the so-called Malthusian, or the poverty, trap. Thus, the change of the economic regime itself is an extraordinary phenomenon. In this regard, there is a very appropriate statement by D. North: "Economic growth was the exception, while stagnation and decline were the rule..." [1, p. 193].

North's words obviously suggest that humanity is likely to return to stagnation in the future. However, other researchers share his opinion. For example, R. Lucas states that "Modern theories of sustainable growth ... abstract from studying land supply and limited resources. Such theories can and do explain long economic series well enough, but it cannot last long"; "It is becoming increasingly clear that the legacy of inequality – a by-product of growth – is historically transitory"[1]. T. Piketty is even more adamant: he believes that the idea of the economic growth's "normality" with a 3–4% annual rate is a typical "illusion from a historical and logical point of view" [2, p. 107]. Consequently, many prominent economists of our time express doubts about the continuation of a long and intensive growth of global production. Recently, a research area related to the "end of growth" has been gaining momentum. For example, R. Heinberg proves that the economic growth has reached a physical limit, and there are three insurmountable obstacles in its path: depletion of important natural resources; deterioration of environment; over-accumulation of state and non-state debt [3]. Thus, society is on the brink of a completely different economic development mode, which involves not a quantitative increase of the mass of goods, but their qualitative improvement.

Considering this, the purpose of the paper is to study a simple macro-model of the economic growth that will help to understand the mechanism of escaping the Malthusian trap and moving to the economic growth regime, as well as to identify the problems that humanity will have to face while returning to the economic stability. These issues are related to sources and conditions of the growth that allow launching accelerated economic development. The novelty of the proposed approach is to review the economic growth as a consequence of the capital circulation process. An important advantage of the constructed model is an explicit correlation of the economic growth rates with a value of return on equity.

Description of economic growth: overview of key ideas

Studies on economic growth are so numerous and diverse that it is impossible to take them all into account. Instead, we will focus only on some aspects of this problem that are related to further model constructions.

[1] Lukas R.E. *Lectures on Economic Growth*. Moscow: Gaidar Institute Publishers, 2013. 288 p. Pp. 253, 256.

Economic growth factors

A common policy of studies on the economic growth factors was set by R. Solow back in 1956 by a model where total output depended on capital volume, labor resources, and technological progress [4]. Subsequent generations of economists refined the Solow model by introducing human capital factor [5], research and development costs [6], degree of a country's involvement in global economy [7], and so on.

The study of the contribution of the main production factors to the economy's growth led to the realization of the importance of labor replacement's elasticity by capital as a measure of the development level of the entire economic system [8]. In particular, scale of this parameter's influence was used to explain the variance of average per capita income [9], differences in the level of countries' economic development [10], as well as an area of technological modernization [11]. In general, according to the neoclassical tradition, economic growth is a consequence of fixed capital accumulation [12]. In a sample of the world's largest economies for the 1870–1979 period, it was revealed that the greatest effect of accelerated capital accumulation was recorded in catching development, when abundant funds are required to launch new industries [13].

We emphasize that the early Solow model was based on the so-called identity for gross investments, which, in turn, allowed us to establish *the golden rule for accumulation*, depending on the size of the capital-labor ratio. Based on data on the American economy for 1909–1949. Solow showed that the GDP growth in this period was determined by technological progress and capital growth [14]. Thus, the tradition of describing economic growth goes back to taking into account the dynamics of fixed capital accumulation. This thesis will be used as a starting point in the following study.

Accounting of technological progress

The postulate of the dependence of labor productivity on capital-labor ratio was introduced in the earliest growth models [15; 16; 17]. Moreover, this functional dependence had a power form with a coefficient less than 1. One of the empirical confirmations of this approach is a comparison of the dynamics of the US and UK economies: in 1840–1910, while maintaining nearly equal country values of total factor productivity, the US experienced faster growth of labor productivity, which is explained by their almost one-and-a-half superiority in the volume of capital-labor ratio [18].

Later, the one-factor model was successfully used in applied studies. In particular, it was used for clustering the branches of the Chinese economy on the principle of capital-labor ratio adequacy [19]. Similarly, the dynamics of the dependence of labor productivity on capital-labor ratio was shown using the case-study of China at different time intervals [20]. A similar model, taking into account the flow rather than the stock of capital resources, was used to estimate periods of overinvestment for the Moroccan economy between the 1970s and the early 2010s [21]. Thus, the simplicity of the one-factor model does not detract from its diagnostic value and allows obtaining meaningful results.

Subsequently, the Aghion-Howitt model of endogenous technological progress became very popular. It provided a theoretical description for the process of changing different technological generations [22; 23]. At the same time, the power function is preserved, but a special operator of technological progress is additionally introduced, taking into account the change of generations of production technologies [22].

Another empirical test of the hypothesis of a nonlinear relationship between labor productivity and capital-labor ratio was undertaken in 2020. It showed that only in Canada, the US, Russia, France, and Finland, a desired power factor

significantly exceeds 1. This indicates the presence of *technological economies of scale* in them; in other countries, included in the sample, this effect was not recorded [24]. Consequently, the tradition of describing economic growth also implies the idea of a power dependence of labor productivity on technological equipment of a workplace, i.e., on capital-labor of production. Next, this thesis will be taken into account.

Escaping the Malthusian trap

In addition to modeling the economic growth itself, the process of transition from a centuries-old permanent depression to the economic growth regime is of particular interest. Thus, one of the first models to study the stages of the Malthusian trap and conditions for exiting it, based on the analysis of the relationship between labor resources and real wages, was proposed in 1980 [25]. Subsequently, it was expanded and refined [26; 27; 28; 29]. However, the most fundamental work in this area might be the Artzrouni–Komlos model, which takes into account mutually dependent demographic and economic development of the World-System over the past 10 thousand years. Escape from the Malthusian trap, according to its authors, became possible as a result of the industrial revolution, sufficient capital accumulation (growth rate of which exceeded 5% per decade) and a slowdown of population growth (no more than 5% per decade) [30].

Subsequently, the modeling of the escape from the Malthusian trap was continued in the works of foreign [31; 32, etc.] and domestic researchers [33; 34, etc.]. In this regard, we can consider the work [35], written in 2012, a landmark, in which the author speaks about a possibility of two ways for overcoming the Malthusian trap: Western countries achieved this by destroying traditional institutions (communities) and moving to more efficient individualistic institutions, while Asian countries were able *to preserve* collective values and institutions through their competent modernization. This interpretation of the transition to the growth allows the author to make an intriguing forecast: countries that will show successful catching development in the future include Turkey, Iran, Egypt, and India, while Russia, Latin America, and sub-Saharan Africa will lag behind [35]. In another paper, the author proposes an equation of the economic growth that explicitly links the GDP growth rate with the return on equity (rate of return) [36]. Experimental calculations, carried out by the authors, showed that, in order to obtain positive growth rates, it is necessary to have *a special sector* in the economy that has extremely high profitability, calculated in hundreds and thousands of percent. This provision is called the *special sector theorem*, where *special* refers to a sector of the economy with a profitability exceeding 100% per annum. Subsequently, this thesis was empirically confirmed by a large number of stylized examples from the Modern history [37]. Thus, we can speak of a tradition of building the economic growth models that would simultaneously reveal the mechanism and conditions for the emergence of the growth itself. This principle will be used in further constructions.

Economic growth and return on equity

Heterogeneity of the national economy has been studied from different angles. In particular, this purpose is served by a huge variety of diffusion models designed to describe the creation and dissemination of innovations. Today, it is assumed to distinguish between two types of participants in the innovation market: *innovator firms* (leaders who create innovations) and *imitator firms* (ones that borrow an innovation that had previously appeared on the market). However, limitations of diffusion models are related to the empirical fact that different technologies co-exist in the economy and certain industries, and there is no complete transition toward the newest technologies. To explain this fact, the Polterovich–Khenkin model was proposed in 1988 [38]. Subsequently, it was not just generalized [39; 40] and modified [41], but also used for applied

calculations based on data on the profitability of the USSR ferrous metallurgy enterprises for 1976–1988 [42]. The Polterovich–Khenkin model was a landmark achievement, because it made it possible to combine the process of the economic growth and technological progress within a relatively simple equation, taking into account the factor of different profitability of different enterprise groups.

The problem of the connection between the economic growth and return on equity was raised to a new level in T. Piketty's scientific bestseller [2]. He offered the following inequality: $g < r$, where g is the economic growth rate, and r is the rate of return (return on equity). Piketty calls this inequality *the third law of capitalism*, which means that the recapitalization of capital (property), accumulated in the past, proceeds faster than production increases, which ultimately leads to the deepening of social inequality in all its forms. Thanks to this interpretation, the Piketty effect turns, according to D. McCloskey's figure of speech, into "the main inequality about inequality" [43]. It has been actively discussed in the scientific literature (for an overview of Piketty's criticism, see [44]). In particular, J. Galbraith expressed his opinion that the Piketty's law will disappear as quickly as it appeared [45]; moreover, he tried to "refine" Piketty's inequality as follows: $g < r\,(1 - u) - h$, where u is a capital gains tax; h is the share of a capitalist's income allocated to charitable purposes. However, more recent constructions allowed obtaining a simple model in which the economic growth rate is explicitly related to the return on equity and does not violate general macroeconomic logic. In addition, Piketty's inequality emerges from the constructed model as an obvious consequence, which proves its validity [36; 44]. As for Piketty's observation that the return on equity was 10–20 times higher than the growth rate of production throughout the world history before 1700, [2], experimental calculations showed its validity, and fears about an excessive nature of such a gap in economic values were exaggerated [44; 46].

Thus, we can state the tradition of linking the rates of economic growth in model constructions with the return on equity, which will be continued in further calculations.

Four aspects of the economic growth modeling, discussed earlier, define a coordinate system that allows carrying out analytical constructions within the established traditions without contradicting them.

Fundamental equation of capital accumulation

To obtain a simple equation that relates to the rate of the economic growth and return on equity, we use the balance identity of fixed capital accumulation:

$$K_t = (1 - v)K_{t-1} + I_t, \qquad (1)$$

where: t is a time period (year); K_t and K_{t-1} is a volume of fixed capital in the national economy in a year t and $t - 1$, accordingly; I_t is a volume of investments in a fixed capital in a year t; v is a fixed capital retirement coefficient (assumed to be constant).

Now let us use the traditional assumption that an annual investment volume I is determined by an average propensity to accumulation (investment) s (assumed to be constant) and the income received Y. With the latter, we assume a traditional GDP aggregate, which, according to the system of national accounts, can be determined by income sources and consists of gross profit π, wage costs W, and net taxes on products and imports T. Therefore, we can write the following equation:

$$I_t = sY_t = s(\pi_t + W_t + T_t). \qquad (2)$$

For convenience, let us assume that the GDP structure is stable over time. In this regard, by putting the structural coefficients $\beta = W_t/\pi_t$ and $\gamma = T_t/\pi_t$, we rewrite the equation (2):

$$I_t = s\pi_t(1 + \beta + \gamma). \qquad (3)$$

Now we put the formula (3) in (1) and divide the resulting expression by K_{t-1}. If you put the designation for the rate of accumulation of fixed

capital $\lambda = K_t/K_{t-1} - 1$ and the rate of return on equity $r = \pi_t/K_{t-1}$, as well as assume that these two variables remain unchanged over time, we will end up with the expression that we will later call the *fundamental equation of capital accumulation* (hereinafter – FECA):

$$\lambda = -\nu + sr(1 + \beta + \gamma). \quad (4)$$

As far as we know, the dynamics of capital has not been described in this form before.

The value of the FECA consists in the explicit combination of the rate of fixed capital accumulation with its profitability and propensity to investment. It is this form of the equation (4) that allows it to be used in the future when modeling the economic growth.

Fundamental equation of economic growth

The next step to the economic growth modeling is to consider a single-factor production function:

$$Y_t = f_t K_t, \quad (5)$$

where: f_t is the capital return, the efficiency of the production of fixed capital.

At the first glance, the function (5) seems somewhat limited due to its univariance, but if we use the identity $f = P/k$, where $P = Y/L$ and $k = K/L$, L is a number of people employed in the economy, P is an average labor productivity, k is the capital-labor ratio, then the description (5) will automatically take into account the labor efficiency (P) and the technological equipment of a workplace *(k)*:

$$Y_t = (P_t/k_t)K_t, \quad (6)$$

which in dynamic form, taking into account the FECA, can be represented as follows:

$$\mathrm{g} = \omega - \sigma - \nu + sr(1 + \beta + \gamma), \quad (7)$$

where: g, ω and σ are the growth rates of output, labor productivity, and capital-labor ratio, respectively.

Hereinafter, the ratio (7) will be called the *fundamental equation of economic growth* (hereinafter – FEEG). Its significance consists of an explicit link between the economic growth rate (g), return on equity (r), investment activity (s), and parameters of technological progress (ω and σ), which was our ultimate purpose. Let us note that the constructed model (7) implies the primacy of the capital accumulation process, and the economic growth becomes its consequence. In other words, an initial phenomenon is the circulation of capital, which, under certain conditions, can generate the economic growth regime.

It should be noted that similar calculations were made in earlier works [36; 44], but they considered less successful forms of accounting for a received income and a profit rate and also did not take into account technological progress in the production sector.

It is easy to see that the Piketty's inequality $g < r$ goes from the equation (7) as a special case, but its implementation requires a compliance with certain conditions, and it is not automatic and trivial. At the same time, it should be recognized that the Piketty's inequality almost always works with realistic values of macroeconomic parameters in the FEEG.

Conditions for escaping the Malthusian trap

Although the FEEG (7) can lead to the Piketty's inequality, it is only a byproduct of the analysis. More important is the definition of conditions under which positive rates of economic growth are ensured at the initial stages of capitalism. The Malthusian trap, strictly speaking, takes place if $q = 0$, where q is per capita GDP growth rate $Q = Y/N$, N is population size. If we put the population growth rate n, then the equality is valid:

$$q = \mathrm{g} - n. \quad (8)$$

This is sufficient to study the conditions that provide a way out of the Malthusian trap when $q > 0$. To do this, we will use a number of simplifying assumptions that reflect the specifics of the period between two epochs – the Middle Ages and

Modern Times. We will assume that technological progress in this period was still absent as a systemic phenomenon, i.e. $\omega = \sigma = 0$. Another assumption is related to the lack of population growth, i.e. $n = 0$. The third postulate is based on the absence of a labor market and the phenomenon of wages, i.e. $W \to 0$ and $\beta = 0$. Indeed, the feudal economy assumed that each of its participants acted as an entrepreneur and lived not on wages, but on the income of their enterprise. This does not mean that there was no wage at all in the feudal system, but its existence was extremely local and limited. For example, the class of sailors. They received a certain salary, but the navigation itself often changed, for example, into a pirate fishery, which was a form of a collective enterprise and assumed a share of each participant in total amount of production – income from a business campaign. This example clearly shows that, in the Middle Ages, wages mostly took a form of the net income of an artisan or a peasant. Thus, the condition for the escape from the Malthusian trap takes an extremely simple form: $r > v/s\ (1 + \gamma)$. In other words, economic growth implies a certain minimum level of return on equity.

To understand a degree of rigidity of the resulting constraint, let us perform an elementary estimation of the parameters included in it. For example, for the Russian economy in 2008–2018, an average rate of retirement of fixed capital was 10.5% [46, p. 78]; it is unlikely that this indicator was any different in the feudal era[2]. According to available data, the accumulation rate in England before 1760 had not exceeded 6% [35, p. 46]. It is possible to make different hypotheses about the parameter γ, however, given that its value for Russia was 30% in 2011–2019, and, in the Middle Ages, there were many excise taxes and customs duties in addition to church tithes, it is quite legitimate to proceed from the value $\gamma = 50–70\%$[3]. Then, as the calculations show, the return on equity should exceed 116.7 and 102.9%, respectively. It is reasonable to assume that, in the late feudal economy when commodity-money transactions were already actively carried out, such a large average return on equity is unrealistic.

The only way to eliminate the contradiction between theoretical and actual figures is to consider two sectors of the economy: normal one with a profit margin $r^{**} \approx 5\%$, which has been typical for the history of mankind since 1700 [2], and special one with a profit margin far exceeding $r^* > 100\%$ per annum [37]. Accordingly, the share of fixed capital in the special sector is small, and it amounts to $\zeta = K^*/K$, whereas the normal sector takes up the rest of the economy – $1–\zeta$: $r = \zeta r^* + r^{**}(1–\zeta)$; $r^* = \pi^*_t/K^*_{t-1}$; $r^{**} = \pi^{**}_t/K^{**}_{t-1}$; $K = K^* + K^{**}$, where K^* and K^{**} are the volume of fixed capital in special and normal sectors, respectively. In this case, FECA becomes:

$$\lambda = -v + s(1 + \beta + \gamma)[r^*\zeta + r^{**}(1 - \zeta)]. \quad (9)$$

While FEEG generalization is as follows:

$$q = V + s(1 + \beta + \gamma)[r^*\zeta + r^{**}(1 - \zeta)], \quad (10)$$

where the designation $V = \omega–\sigma–v–n$ is used.

The statement about the necessity of the existence of a special (super-profitable) sector of the economy for the transition from the Malthusian development regime to the economic growth is the content of *the special sector theorem* [36]. As previously mentioned, a closer examination of the Modern history showed that such sector really existed [37].

[2] Concept, and even accounting, of the average rate of fixed capital retirement did not exist in medieval economy. In this way, we can talk about a proxy variable, which is a value inverse to an average service life of farmers and artisans' production equipment.

[3] Since there were no subsidies for production and import of certain goods in feudal economy, and taxes were regularly withdrawn on the background of low profits, it could be assumed that, in the Middle Ages, the parameter y was noticeably higher than in the past. Due to lack of such reporting data, we take the most realistic interval value of the parameter γ.

This circumstance is of great importance.

First, it clearly shows that the transition to the economic growth regime required an opportunity of obtaining super-profits *as a necessary condition*. This requirement is extremely serious, but due to a unique combination of circumstances – great geographical discoveries era, brutal colonization of the New and Old World by Europeans, a series of important technological innovations, etc. – it was fulfilled. However, apparently, a sufficient condition for a final destruction of the Malthusian trap included Europeans' personal qualities, which W. Sombart united into the *commercial spirit*. It includes various human qualities – ingenuity, religious zeal, flexible logic, greed for profit, aggressiveness and cruelty, ability to count and save, etc. [47, p. 125]. *An objective possibility* and *a subjective desire* to enrich coincided at the turn of the epochs for the European peoples. One without the other has repeatedly occurred in history, but it has not led to anything. Without assessing this circumstance, we will only mention immeasurable social sacrifices that Europe required to build capitalism [48].

Second, the FEEG (10) shows that the economic growth history has two fundamentally different phases – *initial* one, when initial accumulation of capital occurs, and the growth spiral begins, and *mature* one, when all macroeconomic processes reach their normal value. To show the strictness of the FEEG requirements for amounts of the return rate at different growth phases, we will perform the simplest calculations. Thus, the component $s\ (1 + \beta + \gamma)$ at the initial phase ($s = 6\%$, $\beta = 0$, $\gamma = 50\%$) is 0.09, while at the mature phase ($s = 45\%$, $\beta = 1.12$, $\gamma = 0.30$) – 1.089. Therefore, this component increases by 12 times during the transition from the first phase to the second one, which indicates a radical change of the entire macroeconomic climate and requires an average return on equity of the national economy of only 9.6%, rather than 116.7%. It is the transition period to the growth regime that represents a large-scale historical problem, while maintenance of the steady growth no longer requires too much effort. If we take into account that, in the mature growth phase, technological progress is "turned on" ($\omega > 0$), then the requirements for maintaining the national economy on an exponential trajectory are even more sparing.

While discussing the FEEG (10), it is necessary to note the following. Strictly speaking, this model reflects the *potential* growth of the economy, since it does not take into account the demand for manufactured products, which can reduce the estimated figures. Nevertheless, the equation (10) is sufficient to understand the main economic growth drivers. At the same time, we would like to emphasize that, at the initial stages of establishing the production growth regime, all abnormally low macroeconomic parameters are compensated by the value of the return on equity, which is the basis of the special economic sector theorem. With the growth of other macro parameters, "load" on the rate of profit gradually decreases, and more natural proportions are established in the national economy, allowing to maintain a long-term steady growth without internal stress natural for the initial phase.

Escaping the Malthusian trap: technological economies of scale and population growth

The FEEG (10) is designed in such a way that demographic growth and labor productivity growth act as exogenous factors. To reflect the existing feedbacks in the social system in, at least, the most general way, we introduce two simple assumptions: population growth depends non-linearly on the level of its well-being (per capita GDP), and labor productivity depends non-linearly on the level of capital-labor of production. Then the following relations are valid:

$$P(t) = A[k(t)]^{\theta}, \quad (11)$$

$$N(t) = B[Q(t)]^{\alpha}, \quad (12)$$

where $Q = Y/N$; A, B, α and θ are constant parameters.

(11) and (12) assume that $\omega = (\theta - 1)\sigma$ and $n = \alpha q$, and the FEEG (10) is specified as follows:

$$q = \frac{[r^*\zeta + r^{**}(1-\zeta)](1+\beta+\gamma)s + (\theta-1)\sigma - \nu}{1+\alpha}. \quad (13)$$

Two important conclusions emerge from the formula (13). The first one is obvious, and it consists of the fact that the population growth itself, as production increases (i.e., $\alpha > 0$), does not affect the economic growth, but prevents the escape from their Malthusian trap; accelerated population growth (i.e., $\alpha > 1$) very strongly (by more than two times) inhibits the increase of per capita income. The second conclusion is less obvious, and it means that the dynamics of production depend on the "maturity" of technological progress: if there is a technological effect of scale (i.e. $\theta > 1$), then technological progress has a stimulating effect on the economic growth; otherwise, it acts as a slowdown factor. The latter statement seems paradoxical, but its interpretation is quite simple in reality: fixed capital flow stimulates the economic growth, provided that the rate of a workplace price increase does not exceed the rate of labor productivity growth ($\omega > \sigma$). Violation of this condition means inefficiency of investments in fixed capital or, to be more precise, cost of improving a workplace is not recouped by the scale of labor cost savings; applied calculations have shown that, today, not all countries have technological economies of scale ($\theta > 1$) [24].

This suggests that, at the stage of overcoming the Malthusian trap, introduced technological innovations should lead to a mass displacement of production workers, just like, for example, in the implementation of various modifications of a loom. Moreover, it is desirable that, at this moment, there would be no demographic pressure, for which it is necessary to "unload" the labor market. In European countries, it was achieved by strict laws and actions of the authorities (for more information, see [48]).

Thus, theoretical constructions show that the way out of the Malthusian trap implied tough measures of the emerging bourgeois class against the masses of people and a high rate of exploitation of a man by a man. It was this state of affairs that ensured ultra-high profitability of economic operations and allowed us to maintain the intensity of capital accumulation sufficient to launch the economic growth.

An important element of the constructed model is its monocausal nature. For example, there are a lot of works in which the process of the transition from depression to growth is explained by the generation and spread of production technologies, as well as human capital growth in the process of this activity[4] [49]. The idea of considering distribution of wealth among population groups and the resulting political conflict has become popular [50; 51]. At the same time, in nearly all models, impulse to change development regime follows the presence of many (at least two) heterogeneous economic sectors or social groups that differ by many parameters (wealth, amount of human capital, economic efficiency, etc.). According to this idea, heterogeneity of economic segments initiates a large-scale diffusion of resources in an area of more efficient elements of a system. Unlike this approach, the FEEG seems to put all differences between structural elements into one integral indicator for the transition process – return on equity. As for the economy's heterogeneity factor, it is taken into account in the FEEG in the easiest way – by introducing two sectors with different profitability, and the interaction between them is not explicitly assumed.

Results of model calculations

To test the sensitivity of the national economy to various parameters, to a particular sector's profitability first of all, we consider 10 scenarios

[4] See: Veselov D.A. *Transition from stagnation to development in the theory of economic growth with human capital: diss.* ... Cand. of Sci. (Econ.). Moscow: NRU HSE, 2012.

Results of experimental calculations based on the model (13)

Scenario of experimental calculations	Model parameters						
	α	β	θ	σ	s	ζ	r*, %
Initial capitalism phase							
Scenario No. 1	1.0	0.00	1.02	0.00	0.06	0.1	1814.0
Scenario No. 2	0.0	0.00	1.02	0.00	0.06	0.1	1607.6
Scenario No. 3	0.0	0.00	1.02	0.00	0.06	0.2	806.3
Scenario No. 4	0.0	0.00	1.02	0.00	0.06	0.3	539.2
Scenario No. 5	0.0	0.00	1.02	0.00	0.06	0.4	405.6
Mature capitalism phase							
Scenario No. 6	0.0	0.00	1.02	0.00	0.15	0.3	218.7
Scenario No. 7	0.0	0.00	1.02	0.00	0.30	0.3	111.8
Scenario No. 8	0.0	0.00	1.02	0.00	0.45	0.3	76.2
Scenario No. 9	0.0	1.12	1.02	0.00	0.30	0.3	62.4
Scenario No. 10	1.0	1.12	1.40	0.03	0.35	0.3	57.3

based on experimental calculations using the formula (13) with the r^* balancing variable. In this case, we will consider four parameters unchanged: $\gamma = 30.0\%$; $v = 10.5\%$; $q = 2.0\%$; $r^{**} = 5.0\%$. The remaining parameters change in ways that allow us to determine the scale of the studied phenomenon *(Table)*.

Scenario No. 1 captures the most unfavorable development option: there is no technological progress and the wage sector, but there is demographic pressure, negligible investment activity, and a strictly limited size of the special sector. In this case, the return on equity in the special sector should reach four digits in percentage terms (see table). Scenario No. 2 shows that the sole removal of demographic pressure cannot fundamentally change a particular sector's profitability requirements, but the increase of its relative size lowers the bottom threshold to three-digit values.

Scenarios No. 4 and No. 5 seem to best fit the situation when the British economy was on the eve of universal capitalization. As the calculations show, existence of a fairly solid economic sector with a hundred percent profitability is the main requirement for escaping the Malthusian trap at the initial phase of the capitalist system. We shall recall that the special sector is understood as an economic segment with a profitability exceeding 100% per annum; available historical facts confirm the emergence of many types of businesses with fantastic profit rates in Modern times [37].

Scenarios No. 6–8 show that, in the mature capitalism phase which is characterized by a significant increase of the accumulation rate, the requirement for a special sector's profitability is significantly reduced – up to the loss of the special sector's meaning, when its profitability falls to double-digit values. If we add a developed labor sector and modest technological progress to moderately high investment activity, then, as scenarios 9–10 show, even population growth leaves a realistic requirement for profitability of a small part of the economy. Despite this, today, there is still a fairly extensive market segment, where production profitability reaches three digits [37]. In general, at the stage of the mature capitalism phase, the bottom threshold of the economy's profitability decreases noticeably in comparison with the initial phase.

Growth model for a multi-sector economy

Calculated FEEG (10) is of great importance, since it shows that the heterogeneity of the national economy itself can act as a factor of the economic growth. However, in the equation (10), only two sectors were considered for simplicity – low- and high-profit ones. In fact, the real economy's

sectors (industries, enterprises, etc.) form a certain hierarchical sequence, depending on the level of their efficiency. Moreover, as shown in [38; 39], a steady distribution persists for an indefinite period. In this regard, the equation (10) assumes an obvious generalization, which looks like this in a discrete form:

$$q = V + s(1 + \beta + \gamma) \sum_{i=1}^{m} r_i \zeta_i, \qquad (14)$$

where: r_i is the return on equity of the i-sector of the economy; ζ_i is the share of fixed capital in the i-sector of the economy; m is a number of sectors in the national economy.

In a continuous form, the equation (14) will look similar:

$$q = V + s(1 + \beta + \gamma) \int_1^m r(i)\zeta(i)di, \qquad (15)$$

where similar designations are used.

In this form, the FEEG allows us to link an uneven development of the economy with the economic growth rate. Moreover, the bottom threshold of the economy's profitability, which provides a positive GDP growth rate, and the bottom threshold of low-profit industries automatically set the lower level of uneven development of individual sectors. The main advantage of equations (14) and (15) is that they allow us to represent the national economy as a multi-level system, in which each level has its own characteristics of efficiency and scale.

Economic growth driver in early stages of society's development

According to the FEEG in the form (14) and (15), the national economy is a hierarchical system, which allows us to look at the economic growth's sources in a new way. In particular, the formation of capitalism led to the consolidation of the return on equity or the rate of profit (percentage), which is the same thing, as the main measure and criterion for success of any economic activity. However, interest in various forms had existed long before capitalism, but it did not contribute to the launch of the economic growth. This fact needs a systematic explanation, which can be given in terms of the equation (14).

So, a general provision emerges from the equation (7): only *a sufficiently large* average rate of return can provide positive rates of the economic growth. Only when the quantity changes to quality, this parameter begins to act as a driver of total production growth. However, a sufficiently high return on capital not just provides the investment flow necessary to support economic growth, but also acts as an *incentive* for a lot of people to take on risky activities. This point is a key one for the *psychology of an entrepreneur*: you need super-profit, not just profit, to generate an unquenchable interest in business among large groups of population and force them to move to active actions – despite possible threats and obstacles.

It is super-profit that causes a thirst for profit, which, in turn, acts as a driver of business activity. It is unlikely that the conquistadors' conquests would have taken place with the capital income of 10-15% per annum at stake. Only a fabulous interest of capital by current standards could ignite the spirit of entrepreneurship among people. However, a clarifying point, which goes from the equation (14), is that fabulous wealth is possible only in some business types, while other industries are forced to settle for much more modest incomes. For example, the spice trade with a profit rate of 600-700% per annum encourages shipbuilding, and it requires the construction of ports and warehouses, etc. In other words, business impulses diverge across all other sectors of the economy – from the most profitable activity up to routine and unprofitable industries. Thus, if there is a profitability level hierarchy of economic sectors, a certain multiplier effect arises. Because of it, business activity spreads throughout the economy from top to bottom – from super-profitable activities to non-profitable enterprises.

Once again, we emphasize that, in the feudal economy, even usurers and speculators of city bonds could count on tens of percent of profitability from their investments at best, while the era of great geographical discoveries, combined with early industrialization, allowed the emergence of production and trade types with the profitability reaching hundreds and thousands of percent [37].

The fact that the phenomenon of business super-profitability was widespread in the early capitalist economy is no less important. It was a desire of large groups of people for rapid enrichment that acted as an economic growth driver. Consequently, a struggle to maintain a monopoly on super-profitable niches of the economy was the direct cause of numerous cruelties and abuses of Europeans in relation to each other and other peoples. As G. Arrighi showed, from that point on, control of the profit rate became the main task of the capitalist management system [52].

Conclusion

History shows that the phenomenon of the economic growth, capitalist system, steady technological progress, and civilized institution of private property, including intellectual property, emerged simultaneously. This suggests that the collapse of this four-component system would also occur simultaneously and mean the end of capitalism. The FEEG, obtained in the previous sections, contains the parameters of all these phenomena and, thus, shows essential aspects of the economic growth. In addition, the equation (7) implies not only the Piketty's inequality, but also strict conditions for its fulfillment.

This, among other things, allows a constructive discussion of the final phase of capitalism. For example, existing over-accumulation of capital and decline of its profitability, up to the introduction of negative interest rates by banking systems in many countries, is a big problem for maintaining economic growth. There has never been such a capital impairment before. In addition, the United States and European countries introduce laws that allow homeless people to occupy someone else's empty house. Such a denial of the fundamental right for private property has never been observed before. If we assume that Piketty's fears about the impending zero return on capital are correct, then, according to the equation (7), the economic growth can only be achieved by very intensive increases of labor productivity and increased service life of production equipment. Such a development means a rapid robotization of production, which, apparently, represents the final phase of capitalism. We should not discount the fact that the economic growth has almost reached its physical limit when its preservation is fraught with the complete destruction of a human habitat. If we take into account that the primacy of capital, economic growth, technological progress, and property rights are intertwined and do not exist without each other, then we can talk about emerging signs of the end of the capitalist system.

It is unlikely that capitalism has exhausted itself, and humanity is ready for a completely different social model of existence. However, if this happens, we can only wonder what a new driver of further economic development will be.

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SPATIAL ASPECTS OF TERRITORIAL DEVELOPMENT

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Impact of Trade Mega-Formats in the APR on Russian Export

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Abstract. The purpose of the research is a quantitative assessment of indirect effects from the Russian export because Russia does not participate in the APR mega-formats. We show that modern processes of trade and economic cooperation in the APR are manifested in the creation of trade mega-formats: the Regional Comprehensive Economic Partnership and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership were signed, and the expansion of the CPTPP for the USA, as well as the creation of a free trade zone within the APEC, was considered a promising area. The authors prove that the lack of motivation of the Russian side in joining the APR trade mega-formats is caused by a low level of tariffs on Russian commodities from the APR countries, and the risks of Russian goods replacement are not considered. After evaluating indirect effects, it was defined that there might be a slight negative impact on Russian export due to Russia not participating in the APR mega-formats. On the other hand, the competitiveness of Russian products on the market of the sub-global region may decrease in the following product groups: food products, goods of chemical industry, metallurgy, and mechanical engineering. The obtained estimates suggest that the integration processes in the Asia-Pacific Region will indirectly contribute to the weakening of the product diversification of Russian exports on the market of the sub-global region by shifting it toward a single-product raw material specialization. We show in this work that the formation of relationships of the APR mega-formats with third countries, depending on their closed or open configuration, will have a fundamental importance for Russia. The creation of closed trade blocks in the APR might mean an active substitution of Russian products and decline of the amounts of Russia's

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exports on the APR market. However, if open trade blocks are created, then the discrimination toward Russian goods would not be that clear.

Key words: export, import, product group, trade diversion effect, import duty, partial equilibrium model, trade mega-format, free trade area, APR, APEC, RCEP, CPTPP, USA, Russia.

Introduction

Within the Asia-Pacific Region, intraregional trade has significantly increased over the previous three decades due to the reduction of various types of barriers. This happened both because of the accession of almost all countries of the sub-global region to the World Trade Organization, and because of the network expansion of bilateral and multilateral free trade areas (FTA)[1] that is the main integration format within the framework of the "new regionalism" model. The massive conclusion of bilateral trade agreements has contributed to the "domino" effect. It means the expansion of bilateral or multilateral trade agreements at the expense of new member countries in order to offset the negative consequences of non-participation in this association. Due to the presence of political, systemic, and institutional constraints in the APR for the development of the "traditional" format of integration processes, which presupposes the desire to create a full economic union on the basis of existing trade agreements, mainly implemented in the FTA form, the processes of "fragmentation" of the economic space in the sub-global region inevitably began manifesting themselves [1].

In the context of a number of restrictions that prevent the creation of more mature integration forms in the APR, the attempts to absorb a large number of bilateral and multilateral FTA into large trade and economic formats or mega-formats have become a logical step for further intensification of trade and economic interactions [2; 3]. As a result, the prerequisite for the formation of trade mega-formats in the APR was a common understanding of the need to give dynamism to integration processes in the sub-global economy by harmonizing signed agreements and developing a common policy to further deepen trade and economic relations and quickly resolve various contradictions.

The dynamic and structural characteristics of trade mega-formats in the APR depend mainly on the interests of the three largest economies in the world: the United States, China and Japan. The increased role of the USA contributed to the signing of the Trans-Pacific Partnership Agreement by twelve APR countries[2] in the integration processes in the sub-global region in 2016. It involved the gradual and significant liberalization of trade and investment, setting standards for the protection of intellectual property rights and employees; compliance with environmental standards, the regime of non-discriminatory access to national markets; stricter rules for determining the origin of goods; restrictions on subsidizing the export of state-owned enterprises [4]. In 2017, the United States suspended participation in the Trans-Pacific Partnership, and the remaining eleven countries in 2018 concluded a trade mega-format Comprehensive and Progressive Agreement of the Trans-Pacific Partnership (CPTPP) in the form of FTA+ with the unconditional leadership of the Japanese economy [5].

The concept statement for the creation of the second APR mega-format, the Comprehensive Regional Economic Partnership (RCEP), is based on the expansion of trade and economic coopera-

[1] FTA implies significant trade liberalization between participating countries in terms of reducing tariff measures and non-tariff restrictions, as well as the right to determine the trade regime in relation to third countries.

[2] Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam, and the United States.

tion within the framework of the existing FTA of ASEAN+6, covering sixteen countries[3]. In November 2020, there was signed an agreement on the creation of a trade mega-format between RCEP countries[4], except India. This country has still many issues related to further liberalization of foreign trade regulation, while the conditions for joining RCEP contain fewer requirements in comparison with CPTPP. A possible reason for the conclusion of this format for countries, that are also CPTPP members, is the US withdrawal from the Trans-Pacific Partnership which revealed the need to increase trade with other markets (the largest of them is China).

Another APR mega-format is being negotiated between the participating countries: the FTA creation within the framework of the Asia-Pacific Economic Cooperation (APEC) Forum, covering twenty-one countries/economies of the sub-global region to which Russia belongs[5]. In 2006, APEC countries began developing a common trade agreement. They also approved the directions to be followed when concluding a free trade zone between the countries: creating conditions for the free and open movement of goods and capital, easing non-tariff restrictions and other trade barriers[6].

Since the second half of the 2010s, a number of developed countries have imposed the restrictions and prohibited the import of certain commodity groups to the Russian market. At that time, the policy of import substitution and protectionism has become widespread in Russia. It can decrease the consumers' well-being and reduce the competitiveness of domestic industries that are more or less integrated with the global economy. At the same time, world experience shows [6] that transformations are necessary to contribute to its greater involvement in the international labor division and increase the intensification of its trade interactions with the global economy. Such transformations increase the growth rate of the national economy mainly due to the introduction of additional production factors and the efficiency of their use.

For Russia, there is an objective need to overcome various short-term motives that limit trade interactions with the global economy, as well as to diversify foreign trade in favor of countries and associations interested in supplying domestic products and offering goods that meet Russian consumer and investment demand. The traditional largest market for Russian products is the countries of the European Union, the further expansion of exports to which has visible restrictions. In the future, an increase in exports from Russia is possible due to meeting the demand from the APR countries which implies the need to actively promote Russian products in the market of this sub-global region with the creation of conditions for mutually beneficial economic cooperation.

Despite this, the Russian side continues taking a very differentiated and unhurried approach to the geographical expansion of trade liberalization limited only to some countries of the post-Soviet space. Within the APR framework, the Russian side, as a member of the Eurasian Economic Union (EAEU), signed an agreement on the establishment of two FTA with the countries of Southeast Asia: in 2015 it was with Vietnam, in 2019 – with Singapore. At the same time, exports from Russia to the APR countries are mainly focused on the three largest markets in Northeast Asia – China, Japan and the Republic of Korea.

[3] Brunei, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Japan, the Republic of Korea, India, New Zealand, and Australia.

[4] See: *Overview: Regional Comprehensive Economic Partnership (RCEP*). Australian Government, November 15, 2020. Available at: https://www.dfat.gov.au/sites/default/files/rcep-overview.pdf

[5] In addition to Russia, APEC includes: Hong Kong, Taiwan, Papua New Guinea, Indonesia, China, the Republic of Korea, Thailand, the Philippines, Australia, Brunei, Vietnam, Canada, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, Chile and Japan.

[6] See: *Action Plans of Asia-Pacific Economic Cooperation*. Available at: https://www.apec.org/About-Us/How-APEC-Operates/Action-Plans

The reduction of trade barriers can be characterized by both positive and negative effects which are traditionally assessed on the basis of the reaction of mutual commodity flows to changes in the tariff burden or import duties. Ultimately, this allows determining the comparative effects for the countries involved in this process on the basis of complex models of general and partial equilibrium [7; 8; 9]. While general economic equilibrium models are usually used to obtain long-term aggregate estimates of the economy as a whole, including labor and capital markets, as well as trade by economic sector, partial equilibrium models focus on short- and medium-term effects in the context of specific commodity groups of exports and imports.

Currently, enough arguments have been accumulated about the positive effects for the Russian economy from the reduction of mutual barriers to trade with the APR countries which are classified as trade mega-formats of the sub-global region. Based on the obtained estimates, using the general equilibrium, the long-term increase of Russia's real GDP was determined – up to 1.0% in case of EAEU countries joining RCEP [10] and CPTPP + the United States [11; 12]. As for the effects of creating a FTA between Russia and APEC countries, the country's real GDP may increase to 5.4% [13]. But some studies show more modest results for the Russian economy: in particular, the increase in real exports may amount to 1.3% [14]. Application of the partial equilibrium model [15; 16] in the case of levelling the tariff burden and reducing some non-tariff barriers to assess the effects in the medium prospects, pointed to the overall effectiveness of the FTA creation between Russia and the countries classified as RCEP, CPTPP + USA, and APEC, especially in terms of increasing Russian exports of raw materials.

Despite the different conditions for joining the RCEP and CPTPP formats, more than half of the countries are declared as participants in these two mega-formats at once. In the future, while maintaining the current USA position, it is possible to converge these mega-formats in terms of extending the practices of reducing the institutional barriers of CPTPP to RCEP. It cannot be excluded that, due to a mutual reduction of trade and non-trade barriers in the APR countries, the world's largest trade and economic association can be created, characterized by close technological, institutional, and structural interactions. Reduction of the barriers that hinder cooperation can create conditions for rapid economic growth in a number of the APR countries with their subsequent achievement of the developed economies' level. This measurement will lead to a divergence between countries integrated into trade and economic formats and countries developing in the conditions of peripheral autarky. At the same time, the business of non-aligned countries is likely to experience discrimination in the APR. Currently, Russia belongs to such countries, and it means that there are prerequisites for its further isolation in the markets of goods, capital, and technology. Under unfavorable circumstances, it may face restrictions on the product export to the APR countries due to the substitution of traditional goods for Russian exports.

From this point of view, it is important to obtain indirect estimates for the Russian economy in general and Russian exports in particular from non-participation in the integration processes in the APR. In the framework of the general equilibrium model, on the one hand, the research assumes that, in the long term, Russia's non-participation will practically not affect its economy in the APR integration processes [10; 17]. Probably, insufficient substitution of Russian products by suppliers from other countries, classified as the APR trade mega-formats, is taken into account. On the other hand, estimates indicate a gradual negative impact on the Russian economy from its self-isolation in the APR [18], manifested in a gradual replacement of

Russian products in the market of the APR trade mega-formats which will definitely contribute to a reduction in exports from Russia to the countries of the sub-global region [19].

At the same time, the question remains open about the commodity groups of Russian exports. The groups may be in the most vulnerable position in the event of a close rapprochement of the APR countries within the framework of trade mega-formats. For Russia, the change in exports is a key parameter that affects the possible dynamics of other macroeconomic indicators. On the basis of the general equilibrium model, indirect effects for Russian exports are estimated only in relation to aggregated economic sectors which makes it impossible to obtain an estimate at the level of specific commodity groups of Russian exports to the APR. In this case, the partial equilibrium model can be applied. It provides more detailed estimates of the indirect effects of trade integration for third countries at the level of specific product groups for which exports may change.

Thus, the purpose of the research is to quantify indirect effects on Russian exports at the level of commodity groups due to Russia's non-participation in the APR trade mega-formats. The tasks are: 1) to form a data set and to group them by the APR trade mega-formats, to adapt the partial equilibrium model for assessing indirect effects on the exports of third countries that are not members of trade associations, in the context of commodity groups; 2) to analyze the commodity structure of Russian exports and the tariff burden on goods import from Russia to countries classified as the APR trade mega-formats; 3) to assess changes in Russian exports in the context of commodity groups due to Russia's non-participation in the APR integration processes.

Assessment method and data

At the level of commodity groups, possible changes in Russian exports are estimated on the basis of the partial equilibrium model in terms of calculating the indirect effects of the conclusion of the APR trade mega-formats for third countries to which Russia belongs. As we have already mentioned, the assessment of indirect effects for Russian exports from the levelling of the tariff burden on trade imports between countries, classified as the APR trade mega-formats, is based on the partial equilibrium model. In this model, the demand function for country j for goods i produced in country k is expressed as follows [20; 21]:

$$M_{ijk} = f(Y_j, P_{ij}, P_{ik}), \quad (1)$$

where: M_{ijk} – import of goods i to country j from country k; Y_j – national income j; P_{ij} – product price i in country's domestic market j (importing market); P_{ik} – product price i from country k.

In turn, the export offer functions of country k for product i is represented by the following expression:

$$X_{ikj} = f(P_{ikj}). \quad (2)$$

where: X_{ikj} – export flow of goods i from country k to country j; P_{ikj} – product price i from country k, exported to the market of country j, excluding payment of import duty in country j.

The trade balance between countries j and k is achieved as follows:

$$M_{ijk} = X_{ikj}. \quad (3)$$

Under the conditions of free exchange of goods which implies a reduction in customs duties on imports, price of goods i on importing market j will be equal to the export price of delivery from country k. In this case, product price i will increase by an amount equivalent to the amount of the import duty, i.e.:

$$P_{ijk} = P_{ikj} \times (1 + t_{ijk}), \quad (4)$$

where: P_{ijk} – product price i from country k in country's domestic market j; t_{ijk} – the amount of import duty in ad valorem equivalent in country j to product i from country k.

When taking into account the qualitative differences of traded product *i*, the Armington assumption [22] is used in the equilibrium model to simulate the demand behavior for imports of country *j* which assumes imperfect competition between similar products (in terms of the coincidence of their codes within the harmonized system) imported into market *j* from different countries. Accordingly, this circumstance implies the presence of imperfect substitutes elasticity between different suppliers (countries) of product *i* in market *j*:

$$M_{ij} = b_{ij}^{\sigma_i} \times M_i \left(\frac{P_{ij}}{P_i}\right)^{-\sigma_i}, \quad (5)$$

where: σ_i – substitutes elasticity in product market *i*, imported from different countries to the market of country *j*; b_{ij} – constant; P_{ij} – average price of imported goods *i* on the market of country *j*; P_i – average product price *i* in the market.

As the purpose of the research is to assess the indirect effects on the national economy that is not included in the integration association, the effect of trade creation is not of interest and, accordingly, will not be reflected in this study. The effect involves the reorientation of the national market from a less efficient source of supply of goods to a more efficient import of the country or association of countries with which trade liberalization is carried out. Determining the indirect effects for the national economy (in our case is the Russian one) from the conclusion of a large trade association by third countries is possible when assessing the *trade diversion effect*. It means the national market reorientation (the country that joined the trade association as a full participant) from the purchase of a certain number of goods on the world market to the purchase of products from the country with which the trade agreement is concluded [23]. In contrast to the creating trade effect, the total trade turnover with the outside world does not increase due to the diversion effect for a country that has joined a trade association, as it manifests itself in a shift in the supply of goods from one country with which a trade liberalization agreement has not been signed (a third country) to another that has signed a trade agreement. In other words, the trade diversion effect increases only the value of the bilateral trade turnover of the countries participating in the trade association with no increasing their total trade turnover with the outside world.

In the framework of the equilibrium model, the trade diversion effect is calculated in the framework of the expression (6):

$$TD_{ijk} = \frac{M_{ijk}}{\sum_k M_{ijk}} \times \frac{\sum_k M_{ijk} \times \sum_K M_{ijK} \times \frac{\Delta(P_{ijk}/P_{ijK})}{P_{ijk}/P_{ijK}} \times \sigma_i}{\sum_k M_{ijk} + \sum_K M_{ijK} + \sum_k M_{ijk} \times \frac{\Delta(P_{ijk}/P_{ijK})}{P_{ijk}/P_{ijK}} \times \sigma_i}, \quad (6)$$

where: TD_{ijk} – trade diversion effect of product *i*, imported to the market of country *j* from country *k*; *K* – group of other countries exporting product *i* to the market of country *j*; Δ – a change.

Maximization of the countries' welfare that reduce import duties is modeled by two-stage optimization: based on the general price index and the import demand elasticity, the optimal expenditure level on consumption of the aggregated product is selected at the price; the selected expenditure level between different types of aggregated goods is fixed depending on their relative prices.

We consider four configurations of the participating countries that form the trade mega-formats of APR. First, it is the CPTPP format signed by the participating countries. Secondly, it is necessary to proceed from the fact that the new US administration can contribute to the accelerated accession of the US economy to CPTPP[7], therefore, taking into account this circumstance, the study will consider CPTPP + the US format. Third, the RCEP format signed by the fifteen countries will also include India, as the Indian economy cannot

[7] Thus expanding the CPTPP trade mega-format to the scale of the previously existing Trans-Pacific Partnership.

be excluded from joining this trade mega-format on special terms in the medium prospects. Fourth, the APEC format consists of twenty countries, except Russia. Each configuration of the APR trade mega-formats assumes that there will be a FTA that provides for leveling the mutual tariff burden on imports.

According to the research, for each product group *i*, expression (6) can be expressed as follows:

$$TD^{FTA} = \frac{M^{FTA} \times M^{ROW} \times [(1+t_{FTA})-1] \times \sigma_M}{M^{FTA}+M^{ROW}+M^{FTA} \times [(1+t_{FTA})-1] \times \sigma_M} \equiv -\Delta X^{ROW}, \quad (7)$$

where: *FTA* – a group of countries classified as the FTA members under the mega-trade format in the APR (RCEP, CPTPP, CPTPP + USA, APEC); *ROW* – the rest of the world (which includes Russia); TD^{FTA} – trade diversion effect for *FTA* countries; M^{FTA} – commodity exchange between *FTA* countries; M^{ROW} – flow of goods to *FTA* countries from ROW countries; t_{FTA} – the import duty amount in ad valorem equivalent between *FTA* countries; σ_M – the substitutes elasticity between the goods involved in the exchange between *FTA* countries and the goods imported from *ROW* countries to *FTA* countries.

Expression (7) is used to obtain separate results for the rest of the world's exporting countries which include Russia. As the trade diversion effect is reflected in the shift of goods supplies from *ROW* countries to FTA countries, the total values of TD^{FTA} are equivalent in modulus to the change (reduction) in the export flow from *ROW* countries to *FTA* countries – ΔX^{ROW}. In addition, the results can be summarized for one group and further distributed among the members of the alternative group of supplier countries according to their previous share of imports from this group. Accordingly, at the level of commodity markets, the change in supplies from the *ROW* countries to the *FTA* countries is adjusted by a proportional reduction in the share of goods from the *ROW* countries in the markets of the *FTA* countries.

The impact magnitude on the consumption of different types of goods, depending on the relative price, is expressed in terms of the imperfect substitutes elasticity between the consumption of goods from different countries. The imperfect substitutes elasticity (σ_M) can be estimated or specified exogenously. In addition to the tariff barriers that import duties present, as a result of the conclusion of a trade agreement, the parties can also level various non-tariff barriers. Their size can be estimated in ad valorem equivalent and included in the equilibrium model as a "surcharge" to the tariff load. However, for a wide range of trading partner countries, obtaining these estimates is quite laborious, and the impact assessment of the trade diversion effect can be significantly simplified by changing the replacement elasticity values ($\sigma_M > 0$) setting them exogenously. We have selected two parameters σ_M to reflect the range of the trade diversion effect values for countries participating in a trade agreement on third-country exports: 1.5 and 5. The parameter 1.5 is close to the singular substitutes elasticity and, from this point of view, reflects the conservative consumers' behavior on changes in the product price which means their restrained preference in choosing products from countries that have concluded a trade agreement, compared with goods from third countries. On the contrary, for the parameter $\sigma_M = 5$, consumer preferences are shifted in favor of the goods of the concluded trade association. In accordance with the previous studies [24], in terms of the obtained values of the overall trade effect, the authors have found that the introduction of an exogenous substitutes elasticity parameter equal to 5 is equivalent to the case of evaluating a model that took into account non-tariff barriers for each product in ad valorem equivalent.

Along with the exogenous values of the σ_M parameter, in order to obtain less abstract estimates in trade between the economies belonging to CPTPP, CPTPP + USA, CREP and APEC, the

study selectively estimates the substitutes elasticity values between traded goods for the commodity groups that form the basis of Russian exports to these groups of countries in 2018 in relation to 2017 using the expression [20; 25]:

$$\sigma_M = \frac{\Delta(\sum M_{ijFTA}/\sum M_{ijROW})/(\sum M_{ijFTA}/\sum M_{ijROW})}{\Delta(\sum P_{ijFTA}/\sum P_{ijROW})/(\sum P_{ijFTA}/\sum P_{ijROW})}, \quad (8)$$

where: j – mega-format member country; M_{ijFTA} – import of product i to country j from a country classified as a trade mega-format; M_{ijROW} – import of product i to country j from a third country (country not included in the trade mega-format);

P_{ijFTA} – product price i from a country classified as a trade mega-format to the market of country j; P_{ijROW} – product price i from a third country in the market of country j. Due to the limited array of the used statistical data, the estimation of substitutes elasticity for a number of product groups is carried out only for the macro level [26].

The assessment basis is the statistics of the tariff burden, cost and physical indicators of mutual import flows for 267 countries and economic territories. Their array was formed from specialized databases of the World Bank, WTO, Mac Map, CEIC and UN UNCTAD. Due to the lack of statistical data on the dynamics of the wholesale prices for imported goods in the markets of countries classified as the APR trade mega-formats, the price parameter, used in the data set, includes only the export price taking into account transport and insurance costs, i.e. it is reflected in CIF price excluding VAT and consumption taxes.

As a result, all other things being equal, this model describes the change in Russian exports to countries that are a part of the APR trade mega-formats by leveling the import tariff burden (import duties) between them, reduced to the ad valorem equivalent. The conversion of specific and combined import duties to the ad valorem equivalent was carried out on the basis of the algorithms of the WTO and the World Bank [27; 28]. The leveling of export restrictions, which is practiced by some APR countries, is not considered in this model statement. We assume that the countries participating in the trade agreement can fully increase supplies, import duties for which will be reduced, i.e. the elasticity of supply at the price is close to perfect values. The base year for model calculations was 2018. The World Bank model is a computational complex for obtaining estimates within the partial equilibrium framework [29].

Trade interactions between countries and economic territories are represented in the framework of the harmonized system[8] by a six-digit code, and subsequently reduced to a two-digit code to decrease the original array dimension. Further, for the clarity of the obtained estimates, the paper enlarges the product groups of Russian exports according to the following codes of the harmonized system: 01–24 – food products and raw materials; 25–26 – mineral products; 27 – fuel and energy products; 28–40 – chemical industry products, raw rubber; 41–43 – leather raw materials, furs and products; 44–49 – wood and pulp and paper products; 50–67 – textiles, textile goods and footwear; 68–71 – precious, semi-precious stones, metals, and glass; 72–83 – metals and products made from them; 84–90 – engineering products; 91–97 – other goods.

Assessment results

Before proceeding to the obtained estimates, it is necessary to analyze the commodity structure of Russian exports to the APR trade mega-formats, and the tariff burden level on Russia's goods, imported to the market of the countries classified as corresponding mega-formats. Such an analysis will help to explain to some extent the lack of visible actions on trade liberalization with the APR on the Russian side.

[8] *Harmonized System Codes (HS Code)*. Available at: https://www.foreign-trade.com/reference/hscode.htm

The results of the commodity structure analysis of Russia's exports to the countries, classified as the APR trade mega-formats, indicate the dominance of raw materials, as of 2018. Among them, fuel and energy products stand out which accounted for more than half of Russian supplies to the countries of the sub-global region. Also notable commodity groups of Russian exports were metals and products made from them; chemical industry products; food products and raw materials (represented mainly by fish, seafood and agricultural crops); precious, semi-precious stones, metals and glass (mainly products of the diamonds factory and precious metals; *Tab. 1*).

Import duties on some commodities, used in the food industry, remain high in a number of the APR countries. In particular, the import duty on food products and raw materials, imported from Russia, is characterized by high values in China, India, and some developing countries of Southeast Asia. Several CPTPP countries, in particular the Republic of Korea and Japan, practice prohibitive duties on imports from abroad of certain agricultural products, as well as non-tariff restrictions on the import of processed fish products.

The total tariff burden on exports from Russia to these groups of countries is also not characterized by high values, especially for the countries of CPTPP + USA and CPTPP. It happens as the main commodity group of Russian exports is fuel and energy products, and the average weighted import duty of the APR countries on these products is low. Of the APR countries, only China, Russia's largest trading partner, levies import duties on fuel and energy products, mainly imported crude oil, low-grade refined petroleum products, and certain types of coal. In this regard, when China is assigned to RCEP and APEC, the total tariff burden increases on Russian goods import into these trade mega-formats.

Russian low-value-added goods are practically not exported to resource-surplus and remote APR countries. At the same time, some resource-deficient APR countries (Taiwan, a number of ASEAN countries, Japan, and partly the Republic of Korea) practically do not impose import duties on most low-value-added goods from Russia: fuel and energy goods (crude oil, liquefied natural gas, coal); wood with a minor degree of processing; fish and seafood; ferrous and non-ferrous metal ores;

Table 1. Commodity structure of Russian exports to APR mega-formats and average weighted import duty on Russian products, 2018, %

Enlarged export product group	RCEP		CPTPP		CPTPP + USA		APEC	
	I	II	I	II	I	II	I	II
Total	100.0	3.27	100.0	1.41	100.0	1.23	100.0	2.48
Food products and raw materials	6.07	13.60	7.19	6.26	6.12	5.48	6.76	11.60
Mineral products	2.67	0.47	0.64	0.35	0.95	0.43	2.09	0.44
Fuel and energy products	67.21	2.39	65.25	0.58	47.97	0.52	58.98	1.84
Chemical industry products, raw rubber	5.34	3.74	6.41	0.90	11.19	0.89	7.50	2.24
Leather raw materials, furs and products	0.04	6.88	0.00	3.12	0.01	2.19	0.03	3.00
Wood and pulp and paper products	3.02	0.86	1.46	0.00	1.12	0.01	2.34	0.13
Textiles, textile goods and footwear	0.06	6.43	0.06	6.12	0.07	8.14	0.05	7.70
Precious, semi-precious stones, metals and glass	5.51	4.79	4.52	1.88	8.22	1.85	4.49	2.68
Metals and products made from them	8.19	4.53	12.47	2.99	20.18	2.36	14.62	2.73
Engineering products	1.83	4.14	1.92	1.82	3.11	1.38	2.64	2.54
Other goods	0.08	5.80	0.09	2.95	1.06	1.21	0.50	3.13

Note: I – commodity structure of Russian exports to the APR mega-formats; II – average weighted import duty on Russian goods levied by countries that are classified as the APR mega-format.
Source: own calculations based on data of the World Bank and WTO.

ferrous and non-ferrous metal scrap. In turn, in Russia, export duties are levied on these goods, as well as quotas and, in some cases, prohibitive measures for their export abroad are practiced.

To some extent, these circumstances explain the reluctance of the Russian side to level the mutual barriers of trade interactions with the APR countries, as the tariff burden on Russian raw materials in the sub-global region is not significant. In other words, the reduction of duties on Russian products will not lead to a significant increase in exports from Russia to the APR countries. From this point of view, the reluctance of the Russian side to integrate closely with the APR seems quite reasonable at first glance, if we do not take into account the risks of gradual replacement of goods from Russia within the framework of the signed and promising APR trade mega-formats.

Calculations within the framework of the partial equilibrium model prove that, for Russian exports, indirect effects of levelling import duties between countries classified as the APR trade mega-formats will generally be negative and comparable with some obtained estimates on the basis of the general equilibrium model, if the effects obtained accumulate over the long term *(Tab. 2, 3)*.

Small negative impact is expected from the trade diversion effect in favor of the countries of a particular APR trade mega-format: no more than 1.0% of the value of Russian exports to countries that have concluded or intend to conclude broad-based trade agreements. According to estimates, levelling the tariff burden within the framework of the APR trade mega-formats can lead to a reduction in Russian exports: up to 0.04 billion dollars for CPTPP, up to 0.12 – for CPTPP + USA, up to 0.43 – for APEC and up to 0.87 billion dollars for APEC. At the same time, the creation of prerequisites for leveling tariff barriers between APEC countries can only be considered in the long prospects. Based on this, the negative indirect effects of the trade and economic rapprochement of the APR with each other are not critical at first glance for Russian exports in the medium prospects. However, at the level of individual commodity groups of Russian exports to the APR, the situation may significantly differ from the cumulative indirect trade diversion effect.

Table 2. Commodity structure changes of Russian exports to the signed APR trade mega-formats

Enlarged commodity group of Russian exports	RCEP				CPTPP			
	σ_M = 1,5		σ_M = 5		σ_M = 1,5		σ_M = 5	
	bil. dol.	%	bil. dol.	%	bil. dol.	%	bil. dol.	%
Total	-143.3	-0.18	-427.1	-0.56	-18.0	-0.07	-41.6	-0.17
Food products and raw materials	-31.7	-0.67	-83.6	**-1.74**	-10.7	-0.58	-14.9	-0.84
Mineral products	-0.3	-0.01	-1.0	-0.05	0.0	0.00	0.0	0.00
Fuel and energy products	-14.8	-0.03	-46.3	-0.09	-1.6	-0.01	-5.4	-0.03
Chemical industry products, raw rubber	-38.5	-0.93	-122.3	**-3.06**	-1.0	-0.06	-3.2	-0.18
Leather raw materials, furs, and products	-0.5	**-1.42**	-1.4	**-4.89**	0.0	-0.54	0.0	-0.29
Wood and pulp, and paper products	-8.4	-0.36	-26.5	**-1.15**	-0.3	-0.09	-0.5	-0.15
Textiles, textile goods, and footwear	-1.8	**-4.21**	-5.8	**-14.98**	0.0	-0.13	-0.1	-0.39
Precious, semi-precious stones, metals, and glass	-9.1	-0.21	-15.7	-0.64	0.0	0.00	0.0	0.00
Metals and products made from them	-20.1	-0.31	-67.5	**-1.07**	-0.2	-0.01	-0.6	-0.02
Engineering products	-18.0	**-1.27**	-56.4	**-4.37**	-4.1	-0.84	-16.7	**-3.34**
Other goods	-0.2	-0.32	-0.6	**-1.08**	-0.1	-0.25	-0.2	-0.76

Note: Hereinafter, the calculations are based on the countries' trade interactions in 2018. In the table, a negative sign indicates a decrease in the value of Russian exports (mil. dol.), as well as a relative decrease in supplies from Russia to countries classified as the APR trade mega-formats including within the enlarged export product groups (%).
Source: own calculations.

Table 3. Commodity structure changes of Russian exports to promising APR trade mega-formats

Enlarged commodity group of Russian exports	CPTPP + USA				APEC			
	σ_M = 1,5		σ_M = 5		σ_M = 1,5		σ_M = 5	
	bil. dol.	%	bil. dol.	%	bil. dol.	%	bil. dol.	%
Total	-36.9	-0.10	-117.0	-0.35	-294.8	-0.34	-864.7	-1.00
Food products and raw materials	-17.3	-0.80	-55.2	**-2.39**	-135.5	**-2.30**	-401.4	**-6.82**
Mineral products	0.0	0.00	0.0	0.00	-0.3	-0.02	-0.8	-0.05
Fuel and energy products	-0.6	0.00	-2.1	-0.01	-17.5	-0.03	-51.6	-0.10
Chemical industry products, raw rubber	-2.8	-0.07	-8.1	-0.20	-54.3	-0.83	-152.1	**-2.33**
Leather raw materials, furs, and products	0.0	-0.08	0.0	-0.60	-0.4	**-1.56**	-1.2	**-4.18**
Wood and pulp, and paper products	-0.5	-0.13	-1.9	-0.48	-11.1	-0.54	-31.9	**-1.56**
Textiles, textile goods, and footwear	-0.1	-0.38	-0.4	**-1.36**	-1.5	**-3.89**	-4.5	**-11.30**
Precious, semi-precious stones, metals and glass	-0.1	0.00	-0.2	-0.01	-5.2	-0.13	-14.9	-0.38
Metals and products made from them	-11.4	-0.16	-32.2	-0.59	-44.8	-0.35	-133.9	**-1.05**
Engineering products	-4.3	-0.37	-16.9	**-1.75**	-22.8	-0.99	-68.2	**-2.97**
Other goods	-0.1	-0.02	-0.2	-0.15	-1.3	-0.30	-4.1	-0.95
Source: own calculations.								

In case of leveling the tariff load within the CPTPP framework (see Tab. 2) in the context of the enlarged commodity groups of Russian exports, there may be a slight reduction in the value volumes of deliveries from Russia of engineering products (land transport vehicles) which are mainly focused on the Vietnamese market, as well as food products and raw materials (cereals). The relative decline in Russian exports to CPTPP countries within the product groups may be greatest for engineering products which will be replaced by supplies from developed countries of this large trade association. All other things being equal, for the remaining commodity groups of Russian exports, there may be either invariance or a slight reduction in their value volumes, as the developed CPTPP countries practically do not impose import duties on raw materials and import from Russia insignificant value volumes of goods with high added value.

When expanding the CPTPP format at the expense of the American economy (CPTPP + USA), i.e. giving it a form of the originally created Trans-Pacific Partnership (see Tab. 3), when levelling import duties between the countries that are members of this prospective association, we can expect mainly an additional decrease in the value of Russian exports of food products and raw materials (fish, crustaceans and shellfish), as well as metals and products made from them (other base metals, mainly titanium and products made from it).

In case of the conclusion of a FTA between APEC countries except Russia (see Tab. 3), the largest reduction in the value of Russian exports (almost half of the decline) can be recorded for food products (fish, crustaceans, and shellfish; cereals; soybeans; meat and food by-products of poultry; animal and vegetable fats; tobacco products). A visible reduction in Russian exports to the APEC countries may also occur at the expense of chemical industry products (organic and inorganic chemistry products; fertilizers; plastics, raw rubber, rubber and products made of them), metals and products made of them (ferrous metals; aluminum and products made of it; nickel and products made of it; other base metals; other products made of base metals) and engineering products (steam boilers; turbines; electric machines and equipment; tools; land transport vehicles). The largest relative decline in exports of Russian products to APEC countries may occur for the supply of light and leather industries, as well as food products and raw materials.

Conclusion

The integration processes in the global and sub-global economy significantly helped to expand trade relations between the APR countries. Modern processes of trade and economic cooperation in the APR are manifested in the creation of large integration forms: trade mega-formats generated by the interests of the three largest world's economies: the United States, China and Japan. Currently, two mega-formats have been signed in the APR: RCEP and CPTPP. In the future, we can expect the CPTPP expansion at the expense of the United States, as well as the creation of a FTA between the APEC countries.

Russia is slowly approaching the geographical expansion of trade liberalization in APR, and Russian exports are mainly raw materials to the sub-global region. The analysis pointed to low values of the tariff burden on Russian commodities on the part of the APR countries. It explains the lack of motivation for the Russian side to reduce mutual barriers to trade interactions with the countries of the sub-global region. However, this circumstance does not take into account the risks of gradual replacement of goods from Russia within the emerging APR trade mega-formats.

In the framework of the partial equilibrium model, the assessment of the trade diversion effect for third countries shows that, in the medium prospects, there may be a relatively small negative impact on exports from Russia directed to the emerging trade mega-formats of the sub-global region, in case of Russian non-participation: the least negative impact is expected from the leveling of restrictions within the CPTPP framework, the greatest impact is expected when creating a FTA between the APEC countries, with the exception of the Russian economy. Despite a small negative impact on Russian exports in case of Russia's non-participation in the APR mega-formats, the competitiveness of Russian products in the sub-global region market may decrease within the following product groups: food products, chemical products, metallurgy, and mechanical engineering. In fact, this circumstance indicates that the integration processes in the APR will indirectly contribute to the weakening of the product diversification of exports from Russia to the market of the sub-global region, shifting it toward the supply of fuel and energy goods.

Despite a relatively small possible reduction of exports from Russia to the APR countries in the medium prospects within the framework of the considered configurations of trade mega-formats of the sub-global region, in the long term, risks for the promotion of Russian products in the APR market in the context of the presented product groups may accumulate. In this regard, the further development of relations between the APR trade mega-formats with third countries including Russia will be of fundamental importance. For third countries, long-term consequences depend on the nature of concluded trade mega-formats in the APR in terms of their classification as closed or open types of trade blocks [30].

When creating closed trade blocs in the APR, the member countries will liberalize trade and economic interactions only among themselves and increase barriers to third countries. Based on this, at the level of some product groups, a visible reduction in the value of Russian exports may occur in the medium prospects in case of leveling the tariff burden on imports within the APR mega-formats and shifting consumer preferences in favor of goods distributed within the designated formats. The prerequisites for the development of such events are the policy of reducing various barriers to the promotion of commodity exports to the APR by the United States, Canada, Australia, New Zealand, Chile, and some countries of Southeast Asia which are members of CPTPP and RCEP. In fact, this circumstance may mean a subsequent replacement of Russian products with goods from these countries in the Asia-Pacific market within the framework

of the considered trade mega-formats. In such conditions, with a natural advantage associated with territorial proximity to the resource-deficient states of Northeast Asia, Russia will continue focusing its products on the Chinese market without diversifying supplies to other APR countries, facing negative monopsony effects from being tied to the Chinese economy.

In case of the creation of open trade blocs in the APR, it is likely that barriers between the participating countries will be leveled and restrictions on interaction with third countries will be reduced to a certain extent, based on the WTO mechanisms [31]. They presuppose the absence of discrimination, application of the most-favored-nation regime, and connectedness of the tariff burden[9]. In this scenario, discrimination against Russian goods in the APR will not be expressed explicitly. However, even in this case, it cannot be excluded that, as a result of the continuation of the current trends of declining prices for traditional Russian exports due to the slowdown in the global economy, as well as the sanctions restrictions practiced since 2014, the Russian economy risks to face discrimination in the promotion of its products in the European and APR markets in the medium prospects. It will be difficult to overcome it through the WTO mechanisms.

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Strategic Priorities of Small and Medium Towns' Development*

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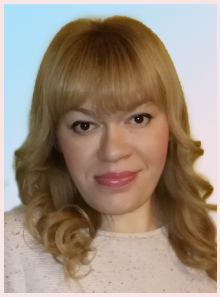

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Abstract. The current trends of population concentration in large cities and agglomerations lead to an imbalance in spatial development. These trends are among the main threats to the national security of the state. The problems of socio-economic development are particularly acute for small and medium towns, as local centers of adjacent territories. In this regard, the choice of ways and directions to improve the efficiency of the management of these localities becomes particularly relevant. The purpose of the research is to find and scientifically substantiate new priorities of strategic management of the development of small and medium towns taking into account the diversity of their types. The article presents the views of leading Russian researchers on the problem of managing small and medium towns. Based on the scientific literature analysis and survey results of heads of administrations of small and medium towns of the Vologda Oblast, the authors identify the main factors that hinder the construction of an

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effective management system. The paper proves the expediency of working out regional strategies for the development of small and medium towns, based on the settlements' typology according to the economic profile and position in the urbanized system. The work shows the approaches to the definition of the town's specialization: 1) based on the current economic structure; 2) based on the "smart specialization" concept. The information basis of the study is data of official statistics and scientific works of domestic and foreign researchers on the studied subject. In the paper, the authors use the methods of expert survey, monographic, economic and statistical, tabular and graphical methods of data visualization. The research results can be used in the activities of regional and municipal authorities in the working out strategic planning documents for managing the development of small and medium towns.

Key words: small and medium towns, strategy, spatial development, regional policy, towns' typology.

Introduction

For Russia, as the largest country area in the world, the problem of developing local territories is particularly acute. The presence of interregional and intraregional differentiation has a negative impact on the socio-economic and spatial development of the state. The market reforms of the 1990s changed the administrative and economic foundations of most settlements, particularly affecting small and medium towns. Most of the latter were created according to the plan in the period of large-scale industrialization, when each city played a certain role in the country's economic space and was connected by production chains with other territories. With the transition to the market, there was a break in the established ties, and most small and medium towns were not able to fully adapt to the new economic conditions.

Currently, the category of small and medium towns is still the most numerous among urban settlements. As of January 1, 2019, out of 1,115 Russian towns, 945 (85%) were classified as small and medium ones. In Russia as a whole, more than 26.3 million people, or almost 18% of the country's population, live in such settlements. Over the past 30 years, total population of towns has grown by more than 8%, but these trends have affected only large cities and megacities. Small and medium towns, on the contrary, lost more than 780 thousand inhabitants (*Tab. 1*).

Urbanization is quite a natural and integral stage of the country's development, and the centripetal processes of settlement are not an exclusive Russian feature. At the same time, many scientists focus on the possible threats that these trends carry in the development of the economic space [1; 2; 3].

The migration outflow from small and medium towns is largely due to the people's desire for a higher level and living standards that a large city can provide. However, not everything is so clear. In the post-reform period, a significant part of social, industrial, economic, and urban development facilities was being liquidated everywhere – in small and medium towns and in large rural settlements. Bank branches, tax offices, small schools, and university branches were being closed, and a number of district cultural and health institutions was reduced. This "optimization" had the most negative impact on the living standards and directly affected the economic life of the Russian province [4].

If we take into account the depth of the problems accumulated in small and medium towns, the issues of finding ways to improve the efficiency of managing their development become particularly relevant. At the same time, with the formal independence of local self-government authorities, it turns out in practice that it is difficult to carry

Table 1. Russia's population in 1989 and 2019

Indicator	1989	2019	Growth rate	
			Units., thou. people.	%, p. p.
Total population, thou. people	147400,5	146780.7	-619.8	99.6
Total number of towns, units	1,037	1,115	78	107.5
Population living in towns, thou. people	94450.0	102311.3	7861.3	108.3
Population living in towns, %	64.1	69.7	-	5.6
Number of small and medium towns, units	872	945	73	108.4
Population living in small and medium towns, thou. people	27089.0	26300.2	-788.8	97.1
Share of population living in small and medium towns in total population of the country, %	18.4	17.9	-	-0.5
Source: own calculations according to Rosstat data.				

out any significant changes in small and medium towns with no assistance of federal and regional authorities.

The Spatial Development Strategy of the Russian Federation through up 2025[1] was adopted in 2019. This strategy does not ignore the problem of towns' depopulation with a population of less than 100 thousand people. First, the document focuses on the need to increase the sustainability of the settlement system through the towns' socio-economic development that have the status of single-industry municipalities, historical settlements, and science towns. Secondly, as one of the directions of solving the spatial development problems, it is proposed to develop small and medium towns' as inter-municipal service centers for rural areas, providing the population and entrepreneurs with social, information, consulting, and other services.

If the Strategy contains some right decisions, it is necessary to agree with the critical comments of leading Russian economists about this document. For example, according to the RAS Academician P.A. Minakir, the Spatial Development Strategy of the Russian Federation only legitimizes the redistribution of limited budget resources in favor of the largest urban agglomerations. It leads to an even greater increase in spatial asymmetry [1]. Professor, Doctor of Sciences (History), N.V. Zubarevich notes that the document pays little attention to the topics and tools for the peripheral territories' development, and it mostly focuses on the fact that territories outside agglomerations should develop on their own [2].

The importance and significance of the implementation of the state policy measures for small and medium towns' development has been repeatedly noted in many works of modern researchers and economists. At the same time, the question of how to manage all the existing variety of their types remains open.

The *purpose* of the work is to find and scientifically substantiate new priorities for strategic management of small and medium towns' development considering large variety of their types.

Achieving this goal involves solving the following tasks:

1. To study theoretical and methodological approaches to managing small and medium towns' development.

2. To identify factors which hinder the construction of an effective management system for small and medium towns' development including regional level.

3. To search for approaches to the selection of promising areas for further development of various types of small and medium towns taking into account their economic specialization.

[1] The Spatial Development Strategy of the Russian Federation, approved by the Government Decree of the Russian Federation, dated February 13, 2019, no. 207-r "On Approval of the Spatial Development Strategy of the Russian Federation through to 2025".

Research theoretical aspects

In recent years, there has been an increased interest in studying features and problems of small and medium towns' development by the Russian scientific community. The collective monograph [5] deals with socio-economic development problems of these settlements, analyzes their occurrence causes. The researchers note the presence of a large variety of small and medium towns, while providing specific examples of the complex development of various types of settlements that differ in geographical location and economic situation.

In the social space, the small towns' development issues are the subject of many studies of the Federal Research Sociological Center of the Russian Academy of Sciences (FRSC RAS) [4]. The researchers analyze the problems of these settlements using the tools for social modeling of spatial development in case of specific towns typical for Russia which are distinguished by the criteria of their current socio-economic situation, macro-regional and industry affiliation.

Small and medium towns are studied not only by economists and sociologists, but also by researchers from a related field of economic geography. For instance, [6] presents the results of a comprehensive socio-economic and geographical study of all medium towns in non-metropolitan regions of Central Russia. We should pay special attention to the methodological methods proposed by the author for studying the economic-geographical and socio-economic situation of localities, as well as the methodology for identifying inter-district functions of medium towns.

Turning to foreign experience, it is necessary to pay attention to the fact that one of the leading research areas is the study of these settlements' problems in the context of territories' sustainable development [7; 8; 9]. This concept implies a balanced development of small and medium towns in three areas: economic, social, and environmental. A popular research topic is the interaction of small and medium towns and rural areas [10; 11].

Quite many foreign works are devoted to the problems of the so-called "shrinking city" [12; 13]. Among other things, they include some small and medium towns. Research on this topic has gained sufficient popularity, especially in the United States and Germany. In Russia, this trend is not that common, but there are widely presented works devoted to the study of towns with a single-industry economy [14; 15], where there is a rapid decline in the population, mainly characteristic of the Russian northern territories.

The issues of managing the small and medium towns' development (including strategic ones) are also among popular topics of modern domestic and foreign studies. For example, the works of E.M. Buchwal'd and O.N. Valentik [16], M.S. Oborin and M.Yu. Sheresheva [17], V.V. Didyk [18], N.A. Lebedeva and V.O. Rusetskaya [19] analyze various tools and methods of strategic planning in small and medium towns. With all the variety of existing approaches, it is necessary to note that most of the works somehow address the issue of the need for a typology of these localities. This is primarily caused by the fact that it is impossible to practically apply one variant of strategic management for the entire variety of small and medium Russian towns.

In the works of foreign authors, the emphasis is also placed on strategic planning, but their main distinguishing feature is just a high level of practical orientation. In particular, in the EU countries, it is possible to observe a very close interaction of researchers and regional and municipal authorities in creating urban development programs and in the territory's spatial planning [20; 21].

In recent years, Russian scientists' works have also become more practical. For example, the ICSER "Leontief Center" has developed a brochure on strategic planning in small towns which contains practical recommendations for local governments [22].

Thus, the analysis of modern works on small and medium towns' development confirms the relevance of the chosen research topic. The problem of finding effective approaches to management which, on the one hand, could be applicable to a wide range of municipalities and, on the other hand, would take into account the features and specifics of various types of settlements remains open.

Materials and methods

The methodological basis of the research is based on the works of leading Russian economists in the field of studying modern approaches, methods, mechanisms, and tools for managing small and medium towns' development. There were also used methods of synthesis and generalization, expert assessments, monographic, statistical, retrospective, qualitative and quantitative data processing.

As sources of information, the authors use official Rosstat data, database of indicators of municipalities, information contained on official websites of state and municipal authorities. Also, information basis of the work includes the survey results of administration heads of all small towns of the Vologda Oblast, conducted in May 2020. Its purpose is to study the representatives' views of local self-government authorities on the prospects for the settlements' development, and to identify the main problems in the field of management. Twelve out of thirteen heads of small towns in the region took part in the survey which indicates a fairly good level of representativeness of data.

Main research results

Currently, the basis for the management of small and medium towns is the system of local government (LGS) which is the lowest level of government in the country and is a form of self-organization and citizens' participation in the management of the local territories' development. Russia has gone through a difficult path of formation and development of local self-government, with the most significant changes occurring in the post-Soviet period.

Since January 1, 2009[2], the Federal Law no. 131-FZ[3] has been fully implemented. It formed a two-level system of municipal administration with the division of financial and economic powers between municipal districts and their urban and rural settlements. Most small and medium towns currently belong to urban settlements from the legislative point of view. For example, in the Northwestern Federal District, only one third of small and medium towns (44 out of 136) have the status of urban districts. The difference between these two categories is that a town claiming the status of an urban district leaves a municipal district, and, secondly, a town district, as a new municipality, acquires the right to exercise separate state powers.

Professor, Doctor of Sciences (Economics) E.M. Buchwald notes that this factor significantly affects the investment attractiveness of small and medium towns. They have the status of urban settlements, "as any investor is fully aware of the informal dependence of the municipal authorities of urban settlements on the district authorities within the framework of the two-level model of local self-government that is mandatory for districts" [23].

The high subsidization level of town budgets is one of the main obstacles for small and medium towns to enter the self-development path [4; 5; 16; 22; 24]. In the current conditions, small and medium towns simply cannot be considered full-fledged economic entities and economic activities. We should note that this problem has appeared earlier, and the reform of local self-government was just supposed to break the current situation. However, at present, unfortunately, it is

[2] In a number of regions since January 1, 2006.

[3] On general principles of the organization of local self-government in the Russian Federation Federal: Law no. 131-FZ, dated October 6, 2003 (hereinafter referred to as "131-FZ").

Table 2. Factors impeding the effective management of small and medium towns, % of a number of respondents

Factor	Significance level		
	Very significant	Significant to some extent	Insignificant
Deficit of own sources of budget revenue	91.7	8.3	0.0
Insufficient financial support from regional authorities	66.7	33.3	0.0
Local population's passivity	58.3	41.7	0.0
Insufficient staffing of local self-government authorities with qualified personnel	50.0	50.0	0.0
Inconsistency of strategic (program) documents at the federal, regional, and local levels	50.0	33.3	16.7
Dependence on state authorities	33.3	50.0	16.7
Lack of effective cooperation with a municipal district's authorities	25.0	58.3	16.7
Exaggerated state control	25.0	50.0	25.0
Source: own calculations based on the survey of administration heads of small towns of the Vologda Oblast.			

unnecessary to talk about the independence and financial autonomy of small and medium towns. Essentially, the purpose of forming a self-sufficient and independent level of local self-government has not been fully achieved.

The relevance of these problems is confirmed by the survey results of administration heads of small towns of the Vologda Oblast. The majority of respondents (more than 90% of respondents) noted the deficit problem of their own sources of budget revenue as the main factor hindering the effective management of a town's development *(Tab. 2)*. In addition, two thirds of representatives of local self-government authorities consider the volume of financial support provided by regional authorities to be insufficient.

An analysis of small towns' budgets in the Vologda Oblast for 2018 definitely shows that only in three urban settlements out of 13 (Gryazovets, Babaevo, and Nikolsk), more than three quarters of the budget revenue consists of their own tax and non-tax revenues *(Tab. 3)*. Only in the budget of one municipality (Gryazovets), the amount of coverage of expenses with their own income exceeded 90%.

Table 3. Local budgets of small towns of the Vologda Oblast in 2018, thou. rub.

Urban settlement	Total income, thou. rub.	Share of own (tax and non-tax) revenues in the budget, %	Expenses, thou. rub.	Budget deficit / surplus, thou. rub.	Coverage of expenses by own income*, %
Gryazovetskoe	47709	91.1	46320	1389	93.8
Babaevo	66788	75.6	59333	7455	85.1
Nikolsk	30639	79.6	31786	-1147	76.7
Veliky Ustyug	102786	71.4	100129	2657	73.3
Ustyuzhna	31,331	65.4	30982	349	66.1
Kharovsk	41247.7	62.5	41038	209.7	62.8
Belozersk	44473	52.4	43377	1096	53.7
Kirillov	41561.4	50.6	40553.9	1007.5	51.8
Vytegra	62227.1	51.7	62789.4	-562.3	51.3
Tot'ma	49963.4	47.5	46466.2	3497.2	51.1
Sokol	211867	42.2	204550	7317	43.7
Krasavino	34493	39.5	34475	18	39.5
Kadnikov	44040.9	31.6	43914.8	126.1	31.7
* Share of own income covering budget expenses. Source: own calculations based on Rosstat data.					

The issues of ensuring the financial independence of small and medium towns and the need to amend the current tax legislation of the Russian Federation have repeatedly been the subject of scientific discussions. According to the researchers of the Center for Regional Sociology and Conflictology Studies of the Institute of Sociology of the Russian Academy of Sciences, "in order to strengthen the financial base of a small town, it is necessary to change the current state's fiscal policy from the centralization of financial resources in the federal budget to a policy that encourages local governments to increase their own revenue base" [4]. The paper [25] focuses on principal importance of differential strengthening of the revenue base of local budgets which considers the features, trends and historical management traditions of various types of local territories. For instant, in relation to small and medium towns, where there is a rich property base, it is advisable to assign property taxes to local governments.

Among the most significant factors hindering the construction of an effective management system, according to the heads of administrations of small towns of the Vologda Oblast, it is also necessary to highlight the passivity of the local population and the lack of qualified personnel in local self-government authorities. Half of the surveyed representatives of local self-government authorities of small towns in the region drew attention to the problem of inconsistency of strategic and program documents at the state and municipal levels. Their basis is often caused by insufficient communication with regional authorities. The relevance of the identified problems is also confirmed by the research of the Center for Regional Sociology and Conflictology Studies of IS RAS, based on the results of an expert survey conducted in 16 small Russia's towns [26]. In the current socio-economic conditions, the idea of transition of small and medium towns to the path of self-development with no help of state authorities looks difficult to implement.

In Russia, the federal level has not adopted a document for the comprehensive long-term socio-economic development of small and medium towns. At the same time, we should note that earlier attempts of state authorities to develop and implement such strategic documents were repeatedly made[4], but they were hardly successful. The lack of a long-term vision of the future of small and medium towns, focusing only on solving current issues, does not allow determining the promising directions for the development of these settlements and, as a result, to choose the most effective management tools and methods.

The survey results of heads of local self-government authorities can also prove a low effectiveness level of the implemented state and regional policies in relation to small and medium towns to some extent. These results indicate that most of the tools are ineffective or insufficiently implemented. For example, in the Vologda Oblast, less than half of the respondents recognized the effectiveness of the majority of state programs operating in small towns *(Tab. 4)*.

According to three quarters of respondents, the most effective tool includes programs for the improvement and formation of a comfortable urban area. The federal project "Creating a Comfortable

[4] In 1996, the Federal Comprehensive Program for Small and Medium Towns' Development of the Russian Federation in the Context of Economic Reform was adopted (Government Decree of the Russian Federation no. 762, dated June 28, 1996). In 2013, the program development "Socio-economic development of small Towns of the Russian Federation in 2015–2020" was carried out which was to become part of the state program "Regional Policy and Federal Relations" through to 2020 (Government Decree of the Russian Federation no. 307, dated April 15, 2014). The final version of the state program did not include the development and support of small towns, and, after the liquidation of the Ministry of Regional Development of Russia in September 2014, it was completely discontinued.

Table 4. Implementation of state and regional policy instruments for the small towns' development in the Vologda Oblast, % of the respondents' number

State and regional policy instruments for small and medium towns' development	Being implemented	Including:	
		Ineffective or insufficiently applied	Effective
Programs for the improvement and formation of a comfortable urban environment	100.0	25.0	75.0
Programs for housing construction, housing and communal services, citizens' relocation from emergency housing	100.0	58.3	41.7
Programs for the construction and repair of local roads	100.0	58.3	41.7
Programs for professional development of personnel of local self-government authorities	91.7	66.7	25.0
Tourism development programs	75.0	50.0	25.0
Tax incentives, subsidies, loans for new businesses	75.0	75.0	0.0
Investment in infrastructure development	66.7	41.7	25.0
Consulting and methodological assistance, dissemination of the best practices of municipal management from the experience of the region and other regions	66.7	41.7	25.0
Small and medium business support programs	66.7	58.3	8.3
Business Support Institutes (Vologda Region Development Corporation, ADBI "My Business", Business Incubator)	58.3	50.0	8.3
Formation of production clusters	41.7	25.0	16.7
Public investment in manufacturing and services	41.7	25.0	16.7
Programs for the development of single-industry towns	16.7	8.3	8.3
Source: own calculations based on the survey of administration heads of small towns of the Vologda Oblast.			

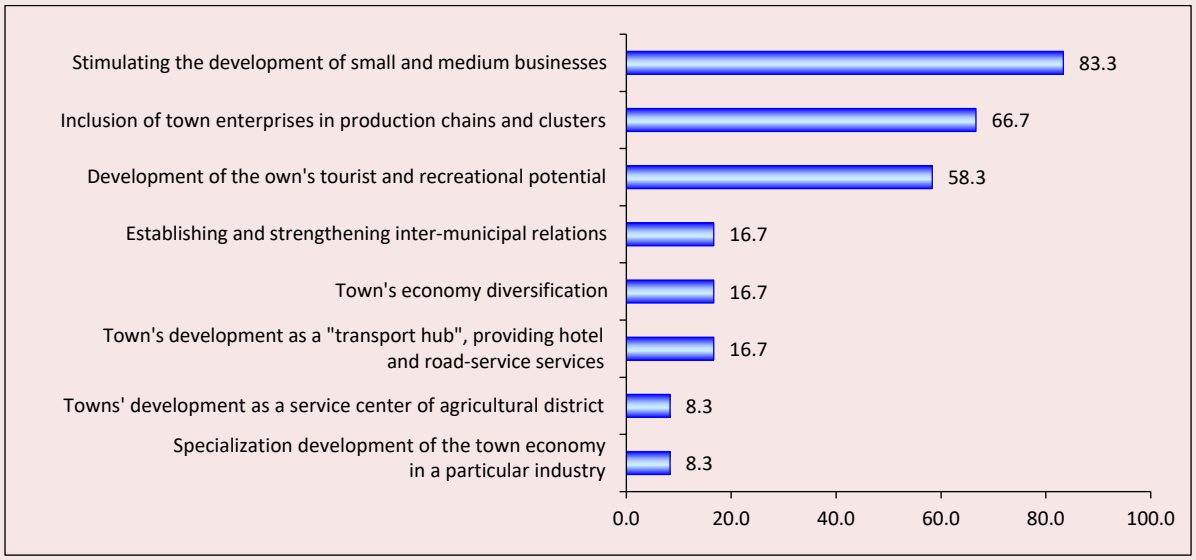
Urban Area" has recently been, perhaps, one of the most successful in terms of improving the courtyards and public areas of settlements. Every year, a number of small towns participating in the project increases, and the amount of allocated funding increases. For example, in the Vologda Oblast in 2019, out of 685.1 million rubles allocated for the project's implementation, 68.7 million rubles were given in the form of grants to the winners of the "All-Russian competition of projects for creating a comfortable urban area in small towns and historical settlements": 55 million rubles for Vytegra (2018 winner) and 13.7 million rubles for Tot'ma and Ustyuzhna (2019 competition winners)[5].

An important area of urban economic development is the stimulation of the development of small and medium businesses. Most survey participants proved it (83.3%). Two out of three representatives of local governments associate the town's development with the inclusion of urban enterprises in production chains and clusters *(Figure)*. However, according to the survey, investments in production or services are made in just over half of towns. The research of the Institute of Regional Economics [27, p. 120] also emphasizes the importance of implementing these measures, especially for towns with a single-industry economy.

Along with the choice of directions for the further development of small and medium towns, the definition of management approaches is no less important. In this issue, the opinions of leading researchers agree on the choice of strategic planning as the optimal and effective approach. The transition to it represents not only a new level of "quality" for the entire system of state and municipal administration, but also a more successful solution to the urgent problems of territories' spatial development [16].

[5] *Official website of the Vologda Oblast Government*. Available at: https://vologda-oblast.ru/grazhdanam/zhkh/gorodskaya_sreda/ (accessed: January 25, 2021).

Responses' distribution of the heads of administration of small towns of the Vologda Oblast to the question "In your opinion, what should be emphasized when choosing directions for your further town development?", % of the respondents' number



At the same time, as practice shows, despite the already noticeable effect by a number of municipalities from the introduction of strategic planning tools in the government authorities' activities, currently not all small and medium towns actively use this approach. As a result of a large-scale study conducted at the International Center for Socio-Economic Research "Leontief Center" [22], it was revealed that the main constraints are the lack of financial resources, the lack of experience and knowledge of local authorities, as well as a low level of implementation of strategic planning tools in small and medium towns. The last point is largely caused by the fact that, in 172-FZ "On Strategic Planning in the Russian Federation" [6], there is no clear indication of the need and obligation to develop strategic documents at the municipal level.

The survey results of administration heads of small towns of the Vologda Oblast indicate that the municipal authorities understand and recognize the importance of strategic planning: all the respondents noted the importance and necessity of creating a strategy for the small and medium towns' development. At the same time, more than half of the survey participants (58%) believe that this is primarily the task of regional government authorities. Every fourth respondent support the opinion that these issues are the competence of federal authorities. Only 17% of respondents noted the need to adopt a strategy at the municipal level.

The idea of creating and implementing a federal program or strategy for small and medium towns' development has been repeatedly voiced in the Russian researchers' works. However, it is necessary to note that the Russian territories are characterized by a high differentiation level. In addition, small and medium towns are the most numerous categories of towns; each one has its own personality, and, therefore, when creating a truly working federal program, it is necessary to consider the specifics of this category of localities. It is fundamentally important to pay attention to the economic and

[6] On strategic planning in the Russian Federation: Federal Law no. 172-FZ, dated June 28, 2014.

geographical features of the region in which they are located. All this will constrain the strategic planning process. Consequently, the strategies' development at the regional level seems to be a more effective tool for managing small and medium towns' development.

Due to the high intraregional differentiation, it is also advisable to determine the priorities for the settlements' development depending on their type. It is established in accordance with the town's position in the settlement system and its economic profile. The choice of these criteria is substantiated by the fact that they are characterized by a high stability degree and allow identifying potential growth points of the urban economy, determining promising areas of town's development as an integral part of the country's economic space.

Depending on the position in the settlement system, the main principle of assigning a town to a particular type is its inclusion in the existing or potential urban agglomerations, and in accordance with this, the directions of its further development are established. For small and medium towns that are part of agglomerations, one of the main strategic priorities should be to strengthen socio-economic ties with other settlements that are also part of it. The relocation of some industrial enterprises located in large cities or the creation of their divisions in small and medium towns will help to expand the labor market and increase employment. Also, small and medium towns can be considered recreational areas by people living in cities.

The priorities for small and medium towns' development, located outside urban agglomerations, may be inter-municipal interaction with adjacent rural areas. Moreover, it is important to focus not only on stimulating the agro-industrial complex, which is traditionally characteristic of rural areas, but also on the development of non-agricultural industries [28].

If, in terms of determining a town's position in the settlement system, the principle of assigning a locality to a particular type is transparent and clear, then, while justifying the economic profile, everything is not so clear. In our opinion, there are two main options for solving this problem. The first variant is the development of already existing and most potential branches of the town's economic specialization; the second is the choice and development of new priority areas of the urban economy. However, in practice, the implementation of both options has several features and difficulties that need to be taken into account.

Choosing the first option, the main question is how to determine the town's specialization. In this case, the main source of information is statistical data on the volume of products shipped and the average number of organizations' employees. At the same time, for small and medium towns, the indicators that characterize the employment structure in the context of the Russian National Classifier of Types of Economic Activity sections are completer and more accessible [29]. Additional information sources, when assigning a town to a particular type, are data from municipalities' official websites, as well as the expert community's opinions.

Based on this methodology, we have identified seven different types of towns depending on their economic profile:

- agricultural and timber industry;
- mining (raw materials);
- industrial;
- transport;
- tourist;
- non-specialized;
- diversified [29].

Using the example of the Russian North's regions, we tested the typology of small and medium towns according to two criteria: a locality's position

Table 5. Small and medium towns' distribution in the Russian North's regions depending on a town's type

Town's place in the settlement system Town's specialization	Towns included in agglomeration	Towns-local centers of adjacent territories
Agricultural and timber	Kadnikov, Gryazovets	Vel'sk, Onega, Shenkursk
Mining (raw materials)	Olenegorsk	Kovdor, Vorkuta, Inta, Buktyl, Kostomuksha
Industrial	Sokol, Koryazhma, Novodvinsk, Polyarnye Zori, Monchegorsk, Kondopoga	Zapolyarnyi, Pechora, Segezha, Medvezh'egorsk, Kem'
Transport	Kotlas	Babaeva, Nyandoma, Mezen', Mikun'
Tourist	–	Velikii Ustyug, Tot'ma, Kirillov, Ustyuzhna, Kargopol', Sol'vychegodsk
Non-specialized	Kola, Gadzhievo, Polyarnyi, Snezhnogorsk, Severomorsk	Nikol'sk, Kharovsk, Krasavino, Sortavala, Pudozh, Olonets, Lakhdenpokh'ya, Mirnyi, Ostrovnoi, Zaozersk
Diversified	Apatity, Kirovsk, Ukhta, Sosnogorsk	Belozersk, Vytegra, Nar'yan-Mar, Kandalaksha, Usinsk, Emva, Belomorsk, Pitkyaranta, Suoyarvi
Source: own calculations.		

in the settlement system and a town's economic profile, identified on the basis of its economic specialization *(Tab. 5)*.

The presented definition version of a town's economic profile allows clearly identifying the most developed specialization branches based on the current economic structure. However, its main disadvantage is that it does not take into account new, potentially promising development areas. In fact, we only get a retrospective view of the small and medium towns' specializations. Focusing only on the past, it is impossible to exclude a possibility that the current towns' economic structure may become a brake on their further development. The infusion of financial resources into already outdated economic sectors in some cases will only lead to a senseless budget expense.

However, using this method of identifying promising specialization areas will make sense if we use an innovative approach to their development. For example, for agricultural small and medium towns, one of the directions may be the allocation of subsidies for agricultural enterprises' modernization including the digital technologies adoption, artificial intelligence, and artificial neural networks [30]. For small and medium mining towns, whose economy is based on the development of natural deposits, the raw material factor plays a key role. On the one hand, the resource base availability is an incentive for their development, and, on the other hand, it carries great risks. The situation, when raw materials are no longer in demand, becomes a serious problem for the town. Similar examples were recorded in the times of the Russian Empire and in the post-Soviet period. For example, Olonets and Ustyuzhna were major industrial centers in the 16–17th centuries due to the extraction of marsh iron ore. However, with the beginning of the deposits' development of Ural iron ores, marsh iron practically ceased to be used, as a result, both towns lost their former importance.

In the post-Soviet era, a typical example of such a situation is the single-industry towns of the Komi Republic, specializing in coal mining: Vorkuta and Inta. Currently, one of the few promising options for the mining industry's development can be the new products' creation based on traditional raw materials. For example, in China, coal is used to produce motor fuel[7]. Accordingly, one of the

[7] Grachev S. *Extraction of the Strongest. How to Survive for the Coal Industry Enterprises.* Available at: https://www.forbes.ru/biznes/352135-dobycha-silneyshih-kak-vyzhit-predpriyatiyam-ugolnoy-promyshlennosti (accessed: February 1, 2021).

key economic areas of mining towns should be investments in the introduction of new technologies for deep processing of raw materials.

There are similar examples for other towns' types identified on the basis of the analysis of their existing economic structure. It is important to understand that, when using this approach to determining the directions of small and medium towns' development, the main task is not only to choose the key specialization areas, but also how to develop them, what technologies and tools to use.

The second variant for developing the economic "core" of small and medium towns is to identify and develop new specialization areas. In this case, the main question is how to choose them and what should serve as the basis. In recent foreign and Russian studies, the concept development of "smart specialization" has been of the greatest interest [31–35, etc.]. As one of the works has noted, the interest in smart specialization is largely due to "the spread of managerial fashion on certain innovative topics, technologies, projects based on the industry structure that has developed in the regions, and not on its prospective changes". The main difference between the "smart" specialization and the traditional one is that it does not select individual industries as growth points but defines a set of economic activities in relation to regional competencies [32]. The basis for the economic development in this case will be "a fuzzy, blurred core of regional scientific and technological knowledge and technologies around which other branches of the regional economy are grouped". One of the advantages of this concept is that smart specialization can be used in different regions' types, not just high-tech ones.

However, in relation to small and medium towns, this approach implementation has several methodological difficulties. An urgent task is to identify for each locality the types of economic activities related to its "smart specialization". The basis for determining the key components of its integrated assessment can be already existing developments in relation to the region [36].

Discussion on the results and conclusion

Currently, Russian small and medium towns are of great and clearly underestimated importance in the country's spatial development and the formation of a balanced settlement system. The transition to market relations has had a negative impact on the development of these localities. At the same time, the reform of local self-government was supposed to help solve the accumulated problems, but, in fact, it did not change much. The high level of subsidized budgets, the low level of qualification of local management personnel, and the dependence on higher authorities are still relevant for the vast majority of small and medium towns.

In the current situation, it is at least unreasonable and pointless to place the solution of the problems that have accumulated over more than a quarter of a century on the shoulders of local self-government authorities and expect changes for the better. The fact that many small and medium towns will not be able to embark on the path of sustainable socio-economic development without federal and regional assistance is recognized not only in scientific circles, but also among state authorities. In this context, the question of who and how should implement policies for small and medium towns' development remains debatable. The problem of choosing promising directions for the development of urban economic sectors also comes to the fore.

It is increasingly obvious that the definition of the economic specialization of municipalities on the old, formed in the Soviet era approaches with a high degree of probability will only lead to an empty expenditure of resources and budget funds. The concept of "smart specialization" in this case looks quite promising, but for the full use of this

approach, there are currently several limitations due to insufficient elaboration from a scientific and practical point of view.

The scientific significance of the research is to substantiate the need to develop new approaches to managing the small and medium towns' development, considering a wide variety of their types. The basis for determining the future irections of the town's development should be its position in the settlement system, as well as economic specialization. The choice of the priority economic sectors, in turn, should be based either on the current economic structure, a town considering innovative development, or the "smart specialization" concept.

The practical significance of the research is a possibility of using the results by federal or regional authorities in the development of priority areas for the small and medium towns' development. The task of the next research stage on this topic will be to develop a methodological approach to determining the "smart" specialization of municipalities, based on the balance of interests of government, business, and population.

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Creating a Comfortable Urban Environment: Problems of Interaction between Society and Government in the Implementation of Priority Projects at the Management Municipal Level*

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Abstract. The federal program on the formation of comfortable urban environment was initiated in Russia in 2017. Its aim is to improve local and public territories. The program implies the active involvement of citizens, which is taken into account in the Urban Environment Quality Index. On the basis of an empirical study, conducted using mass survey and expert interview methods in the towns of the Arkhangelsk Oblast, the authors analyze a degree of civic participation of residents in the implementation of projects to create a comfortable urban environment and assess the efficiency of existing mechanisms of interaction between society and government. We assume the theoretical provision that a social activity is the citizens' work to transform the environment, carried out under the influence of external and internal factors. External factors include activities of municipal authorities to inform town residents about the program for creating a comfortable urban environment and to involve them in the implementation of projects. Internal factors are citizens' personal interest and their meaningful participation in the program. The results of the sociological survey indicate a high potential for citizens' social activity, which is a necessary condition for effective interaction between government and society and a successful implementation of the program. However, practical participation of urban residents remains weak. The main reasons are the lack of citizens' awareness about the implemented program, the lack of clear ways of interaction between government and society, as well as an understanding of the program's fundamental principles, which, in turn, leads to passivity and distrust toward the authorities. The authors conclude that, in order to increase civic engagement, we need a system of measures, which would allow adjusting the existing communication means between government and society and increasing the effectiveness of the program on the formation of a comfortable urban environment.

Key words: civic participation, urban resident, comfortable urban environment, engagement, public communication, municipal administration, urban community.

Introduction

A city is an environment that includes the nature cultivated by man and the artificial space created by man. The urban environment is a set of various factors and conditions that control an individual and are controlled by an individual. Studies on the influence of the urban environment on people have been conducted since antiquity, but the scientific basis of urbanism was laid only at the turn of the 19th–20th centuries.

In the first quarter of the 20th century, research on the urban environment was developing within the framework of the Chicago School of Sociology (R. Park, E. Burgess, L. Wirth). The latter pointed out that "nowhere has the human race strayed so far from organic nature as in the living conditions typical of a large city" [1, p. 170]. Spatial and temporal disunity of certain types of daily activities is a distinctive feature of modern urban life. Researchers note that the city provides opportunities for various activities, but at the same time weakens family and neighborhood ties; the nature of relations changes from emotional to formal, solidarity is replaced by competition, secondary contacts become prevailing, and social relations are segmented.

There are four main localization points for citizens' daily activities: 1) cultural institutions (theaters, cinemas, circuses, museums, libraries, etc.); 2) workplace, where an individual spends a significant part of the day; 3) home, where individual mass communication media (telephone, radio, TV, Internet, newspapers, etc.) are concentrated; 4) urban environment (streets, squares, public gardens, parks, courtyards). The urban environment and the home form two poles (centers) of daily activity of an urban resident: public and personal. In the former, people implement their potential as representatives of a civic population, as residents of a city, in the latter – as members of a small group, community, and family. It is important that the urban environment, home, workplace, and cultural institutions make up for the "partial nature" of urban existence of individuals by involving them in the urban way of life.

The next stage in the study of the urban environment took place in the 1960s–1970s, when interdisciplinary research focused on identifying criteria for the quality of the urban environment that are suitable for people and society. Thus, R. Barker concluded that human behavior could not be explained outside of its connections with the immediate environment, together they create an eco-behavioral cycle [2, pp. 143–165]. K. Lynch placed human perception of the urban environment at the center, thus laying the foundation for the so-called environmental approach. He linked the spatial and temporal dimensions of the environment into a single view of it – a holistic one, "almost impossible to dissect, with all the various connections that permeate it" [3, p. 6].

Today, the term "urban environment" can be interpreted from different perspectives: as a spatial and material structure, a functional space that includes the masses of people concentrated in the "space of their staying" and the "space of communication", and as an object of management [4, pp. 3–7]. The urban environment is considered as the relation of various subjects (individuals and groups) to the physical and social surroundings, which they develop in the process of interaction with other urban subjects [5, pp. 722–730]. The quality of the urban environment is associated with the following indicators: involvement of citizens in urban communities, ability to implement one's potential at work, satisfaction of urban residents with the functioning of various institutions and service facilities, public spaces, variety and intensity of leisure and everyday practices of urban residents implemented at the expense of urban infrastructure [6].

Working on the projects for the development of the urban environment, despite the conceptual renewal of modern Russian urban thought, one still uses the term "population", like in Soviet times; i.e., instead of designing conditions enabling social activity, one continues to calculate normative needs for life necessities [7, p. 41]. The root of these problems lies in the lack of engagement of urban residents in the transformation of the urban environment. Citizens do not perceive the space of a post-Soviet city as their own, rather – as someone else's or "nobody's". It is the resident of the city who connects their life with this very area and who should be interested in creating and maintaining a comfortable urban environment there. Through regular communication, residents create an urban community with the following features: it is functioning within a specific urban area; it has a single culture and value system; it is self-organized with the help of sustainable internal communication and interaction with the urban environment.

Thus, at present, urban studies link the prospects for the formation of a comfortable urban environment not so much with a technocratic approach in urban planning, but with an approach aimed at involving urban communities in the transformation of their own environment by managing public discourse (between bureaucratic structures and the public).

One of the theorists in the field of research on public discourse is the German philosopher J. Habermas – the author of the theory of communicative action. According to J. Habermas, a communicative action is a specific type of social action that is focused on achieving mutual understanding between two or more actors involved in communication. A communicative action is distinguished from an instrumental action, which is aimed at achieving a practical result, regardless of the presence or absence of agreement between the participants of the activity and a critical understanding of the prerequisites, principles and socially significant implications of this activity [8, pp. 199–200]. It follows that the management of public communication is aimed at finding mutual understanding and agreement between various actors of social relations. Consent cannot be forcibly imposed by one subject of interaction on another – it is the result of rational approval by individuals of each other's statements and actions in the public space, finding common ground in the ideas of various actors of communication about the legitimate social order [9, pp. 113–197].

J. Habermas' approach promotes a deeper understanding of the logic of the relationships that arise between authorities, non-governmental organizations and urban communities in the process of coordinating collective interests and socially significant goals. This approach sets a conceptual framework for addressing practical problems in planning and managing public discourse. In the 21st century, this topic is actively developed by specialists from foreign countries, and it already has a certain research tradition [10–12].

In world studies, the methodological potential of the theory of communicative action is illustrated by various topics – from the functions of the media in urban self-government [13] to the formation of local communities through involvement in local eco-politics [14].

The effectiveness of local governments in the field of improvement of the urban environment largely depends on the successful interaction between municipal governments and city residents. This interaction should be based on mutual awareness, interest and willingness to participate jointly in this process. At the same time, urban residents should not act as an object of management or a "suppliant" waiting for help from the authorities; rather, they should become actively involved in urban policy. Municipal management involves interacting on local issues, where the subject is municipal authorities, and the object is urban space and the urban community. However,

specific studies have long pointed out the need not only to unite the efforts of urban communities, non-profit organizations, local businesses and municipal authorities to address urgent issues of urban development, but also to create a special communication infrastructure that ensures regular interaction between all the interested parties on a wide range of issues (what is called development support communication in foreign literature) [15, pp. 568–569]. So, for example, Yu.V. Kataeva believes that the "asymmetry" of the interests of the main actors involved in the development of the urban environment can be reduced by eliminating the existing imbalance and harmonizing their interests [16].

In recent years, the problems of communicative action in domestic research have been developed in the context of urban activism and the processes of self-organization of urban communities. Within the framework of this topic, we can distinguish the works of E.V. Tykanova, A.M. Khokhlova, A.I. Kol'ba and their colleagues. They prove that urban communities acquire their subjectivity in the field of public communication as a result of a conflict of interests of local groups of city residents, provided that these groups have their informal leaders and if local government agencies and individual business groups consider urban space as an object of commercial use [17; 18; 19]. The researchers also emphasize that Russian cities are characterized by the dysfunctionality of formal institutions of public communication; this fact gives rise to a number of alternative strategies of urban activism (mobilization of civil protest, transfer of the conflict to the regional level, development of informal "civil infrastructure") [17; 18; 20]. This indicates that the problem of reforming the institutional framework of communication management at the municipal (city) level remains acute in the Russian context.

In recent years, many researchers have focused on the problem of using modern information and communication technologies to streamline public communications. Wide and stable access to the Internet and the various online services that city residents actively use provide technological prerequisites for regular system-wide communication between the public and municipal authorities and contribute to a larger and more diverse participation of urban activists and ordinary citizens in the policy of reorganizing/structuring urban spaces and their improvement [21, p. 21; 22, pp. 139–141]. In the future, introduction of such technologies will make it possible to implement the concept of a "smart city", under which a variety of online services that optimize the relations of urban residents with municipal authorities and municipal services are combined into a coherent and integral system, thus improving the quality of life and comfort of the urban environment [23, p. 586].

Speaking about the Russian reality, we note that since 2011 the federal target program "Housing"[1] has been implemented, its goal is to provide citizens with affordable and comfortable housing and improve the quality of housing and communal services. The program "Providing citizens of the Russian Federation with affordable and comfortable housing and with efficient utilities services" adopted in 2014 for the first time formulated the task of promoting placemaking projects in urban and rural settlements and creating a comfortable living

[1] On the federal target program "Housing" for 2011–2015: Resolution of the Government of the Russian Federation of December 17, 2010 no. 1050. *Collection of Legislation of the Russian Federation,* 2011, no. 5, Article 739; On the federal target program "Housing" for 2015–2020: Resolution of the Government of the Russian Federation of December 17, 2010 no. 1050. (amended on December 30, 2016). *Collection of Legislation of the Russian Federation*, 2011, no. 5, Article 739. Available at: http://www.szrf.ru/szrf/doc.phtml?nb=100&issid=1002011005000&docid=73; On the approval of the state program of the Russian Federation "Providing affordable and comfortable housing and communal services to citizens of the Russian Federation": Order of the Government of the Russian Federation of November 30, 2012 no. 2227-r. *Collection of Legislation of the Russian Federation*, 2012. no. 50, Article. 7079. Available at: http://www.szrf.ru/szrf/doc.phtml?nb=100&issid=1002012050060&docid=142

environment for human activity as a condition for improving the quality of life. In 2017, a range of orders and methodological recommendations were issued for the implementation of the program for the formation of a modern urban environment and the involvement of the public in this process, as well as a technique for determining the urban environment quality index.

Urban residents have four main requirements to the urban environment: safety, comfort, functionality, and aesthetics. Positive implications of the formation of a comfortable urban environment include, among other things, efficient economic development, reduction in the degree of social tension and the level of morbidity. The priority project "Creating a comfortable urban environment" within the national project "Housing and the urban environment"[2] deals not only with cities, but also with all settlements with a population of more than 1,000 people. It is assumed that by 2024, all localities with a population of more than 1,000 people should: 1) adopt new or update old rules of urban improvement, 2) adopt municipal programs for urban improvement with the list of addresses of yard territories and the most visited municipal territories. The federal Internet portal "Comfortable urban environment and housing and utilities services" compiles the rating of constituent entities of the Russian Federation on the implementation of the project "Creating a comfortable urban environment"; in 2018 the Arkhangelsk Oblast was on the 16th place in this rating[3]. Scientific research on the effectiveness of the implementation of the "Comfortable urban environment" program is being conducted. The main issues under consideration are as follows: 1) involvement of residents in the project implementation process; researchers indicate that civic engagement in the implementation of the program depends largely on the effectiveness of the use of information communication channels, residents' trust in the local authorities and the availability of effective methods of communication between government and society[4]; 2) territorial and architectural planning as an integral factor in making cities more comfortable; it is emphasized that architectural and planning decision-making should take into account the interests of local population[5]; 3) municipal management effectiveness in the implementation of a priority project for the formation of a comfortable urban space[6].

Projects for the qualitative transformation of the urban environment can be initiated by residents; they should be publicly discussed and co-financed. Residents' engagement in this process is welcome, civic oversight should be ensured, and the priority measures include creating tools for this measure.

[2] Passport of the priority project "Creating a comfortable urban environment" (approved by the Presidium of the Presidential Council for Strategic Development and Priority Projects, Protocol no. 10 of November 21, 2016, with amendments and supplements). Available at: https://base.garant.ru/71678208/

[3] Internet portal "Comfortable urban environment and housing and utilities services". Available at: http://gorodsreda.ru

[4] Dmitrieva N.N., Ipatova T.M. Formation of comfort city environment – as a strategic direction of development of the project "Housing and city environment". *Sotsial'no-ekonomicheskoe upravlenie: teoriya i praktika=Socio-Economic Management: Theory and Practice*, 2018, no. 1 (32), pp. 95–98; Petrina O.A., Stadolin M.E. Comfortable urban environment: trends and problems of the organization. *Vestnik universiteta=University Herald*, 2018, no. 6, pp. 34–38.

[5] Shershov S.O., Chasovskii V.I., Shershova L.V. Territorial planning as an aspect in creating a comfortable urban environment in Russian cities. In: *Sbornik trudov konferentsii "Sovremennye stroitel'nye materialy i tekhnologii", Kaliningrad, 23–30 maya 2018 g.* [Proceedings of the conference "Modern construction materials and technologies", Kaliningrad, May 23–30, 2018]. Pp. 149–173; Bushmakova Yu.V., Dubova O.V., Shorkina Yu.A. Problems of forming a comfortable urban environment in the city of Gornozavodsk. *Vestnik Permskogo natsional'nogo issledovatel'skogo politekhnicheskogo universiteta=PNRPU Sociology and Economics Bulletin*, 2019, no. 1 (33), pp. 21–35.

[6] Goryainov V.A., Barchukov T.A. Improving the effectiveness of the implementation of the program "Comfortable urban environment" (on the example of Yemanzhelinsky Municipal District of the Chelyabinsk Oblast). *Gumanitarnyi traktat=Humanitarian Treatise*, 2019, no. 60, pp. 12–18.

It is necessary to form a system for assessing the quality of the urban environment, the key parameters of which are engagement of urban residents, and availability of civic oversight tools[7].

Residents' interest, involvement, and the openness of discussion are the main principles and approaches to increasing civic participation. T.M. Dridze points out that a person, "when arranging 'an environment in which they live' and continuously addressing important problems, has to increase purposeful activity, develop vital solutions, choose strategies, means and ways to achieve the desired result. The very need to make this choice can create certain "moments of tension" in the life situations of individuals and determine specific forms of their lifestyle, the nature of the resources they use to address vital and socially significant issues "[24, p. 25].

In the context of the formation of a comfortable urban environment at the present stage, one of the features of civic participation is the degree of involvement of citizens in urban improvement projects, i.e., the feature characterizing urban residents' participation in the process of urban governance through broad discussion of projects, oversight and assistance in their implementation, and evaluation of the success of transformations. The program provides for institutional ways of involving urban residents in urban improvement activities: information, advisory support, questionnaires, surveys, etc. Based on the results of the monitoring, a public rating of cities by the level of urban comfort is created for each municipality and region. The ratings will help to achieve publicity, understand the weaknesses of each municipality, and make the right decisions. No less important is citizens' personal activity, which is expressed in the involvement of urban residents in the initiation and implementation of projects to create a comfortable urban environment. We agree with L.I. Nikovskaya and I.A. Skalaban who give the following definition of civic engagement: it is "the processes by which citizens directly or indirectly influence the decisions made by the authorities and affecting public interests" [25, p. 48]. We believe that civic engagement in the urban improvement program is impossible without an effective system of communication between government and society. The study of this system is the goal of our work.

Empirical research methodology

In April – November 2019, we conducted an empirical study on creating a comfortable urban environment in major cities of the Arkhangelsk Oblast. Special attention was focused on the issues of interaction between city residents and municipal self-government during the development and implementation of measures to create a comfortable urban environment.

The geography of the study covers five cities of regional significance: Arkhangelsk, Severodvinsk, Novodvinsk, Kotlas and Koryazhma. Arkhangelsk is an administrative and a major industrial center and transport hub of the region. The population of the city is 355,476 inhabitants[8]. Severodvinsk is another major industrial center of the oblast, with a population of 183,284 inhabitants[9]; until recently it had the status of a restricted-access city due to the location of large defense enterprises on its territory. As a result, the city has developed a special relationship between government, defense enterprises and urban residents, mostly employed by these enterprises. A similar situation is observed

[7] On the approval of methodological recommendations for the preparation of state (municipal) programs for the formation of a modern urban environment in the framework of the priority project "Formation of a comfortable urban environment" for 2017: Order of the Ministry of Construction of the Russian Federation no. 114 of February 21, 2017. Available at: https://www.minstroyrf.ru/docs/13709/

[8] Main indicators of the socio-economic situation in municipalities. Department of the Federal State Statistics Service for the Arkhangelsk Oblast and Nenets Autonomous Okrug. Available at: https://arhangelskstat.gks.ru/main_indicators

[9] *Ibidem.*

in the cities that we have combined into a group of "small towns": Novodvinsk (38,082 inhabitants), Kotlas (74,274 inhabitants) and Koryazhma (36,224 inhabitants)[10]. Each of them has its backbone enterprise, the activities of which determine both the economic situation of the population and the state of the urban environment.

In the framework of the empirical study we developed a set of tools aimed at studying three major issues:

1) ideas and expectations of urban residents of the Arkhangelsk Oblast concerning measures to create a comfortable urban environment;

2) institutional forms and informal communication practices in the system of relations between regional/city authorities and the urban community;

3) public and expert assessment of the quality of the regulatory and organizational frameworks necessary for the development of urban space.

The main methods of data collection were the mass survey of urban residents and the expert survey.

The general population of the mass survey included 527,279 full-aged residents of the cities listed above. The sample population was 783 people. The sample was quota-based and representative by gender, age, and place of residence. Sampling error did not exceed 3.48%.

The questionnaire developed for the mass survey contained 37 questions, combined in five units: 1) social feeling of urban residents, 2) awareness of citizens about the program "Creating a comfortable urban environment", 3) participation of residents in the communication with the authorities on the formation of a comfortable urban environment, 4) involvement of residents in the implementation of measures to create a comfortable urban environment, 5) socio-demographic and socio-economic characteristics of respondents. The survey data was processed using the IBM SPSS Statistics software package for statistical analysis.

[10] *Ibidem*.

The expert survey was conducted with the use of semi-structured interviews. Representatives of the following two groups were involved as experts: the first group included state and municipal employees, whose official duties are directly related to the formation of a comfortable urban environment; the second group consisted of leaders and activists of local non-profit organizations engaged in the development of urban public spaces. The sample for the first group was formed by target selection, for the second group – by the "snowball" method. A total of 15 expert interviews were conducted in Arkhangelsk, Severodvinsk, Novodvinsk and Kotlas, ten of them – with representatives of the municipal authorities of Arkhangelsk, Severodvinsk and Novodvinsk, and five – with representatives of non-profit associations. The average length of the interview was at least 60 minutes. In Kotlas, the answers to the questions of the expert interview were received in writing. Representatives of the municipal government of Koryazhma refused to participate in the survey.

The purpose of the expert survey was to determine the main channels of communication and forms of cooperation between municipal authorities and the urban community on the development of urban space, priority areas and key measures to create a comfortable urban environment, the role of urban residents and non-governmental associations in the development and implementation of urban improvement projects.

Results of the study

The results of the study are structured as follows:

1) views and expectations of Arkhangelsk Oblast residents concerning the measures to create a comfortable urban environment; 2) institutional forms and informal communication practices in the system of relations between regional/city authorities and the public; 3) civic and expert assessment of the quality of the regulatory and organizational foundations necessary for the development of urban space.

Views and expectations of Arkhangelsk Oblast residents concerning the measures to create a comfortable urban environment

Table 1 shows gender and age characteristics of the sample (broken down by city). *Figure 1* shows the structure of the sample by income indicator.

Expressing their attitude toward the place of their current residence, respondents gave different answers. Thus, when asked "Are you satisfied with living in your city?", 56.8% answered they were (the sum of answers "completely satisfied", "sooner satisfied"), and 36.9% said they were not (the sum of answers "not fully satisfied" "sooner dissatisfied"). At the same time, statistically significant differences (at the level of $p < 0.001$) for this indicator broken down by city are extremely insignificant. Severodvinsk residents have slightly higher satisfaction with life in their hometown *(Tab. 2)*.

Table 1. Gender and age structure of the sample (n = 783), % of the number of respondents, broken down by city

	Men				Women			
	18–29	30–49	Over 50	Total	18–29	30–49	Over 50	Total
Arkhangelsk	47.4	24.4	53.9	41.9	56.1	49.7	53.0	52.3
Severodvinsk	24.7	39.5	42.2	36.3	23.2	26.9	26.8	26.1
Small towns	27.8	36.1	3.9	21.8	20.7	23.4	20.2	21.6
Source: own research.								

Figure 1. Self-assessment of purchasing power of respondents (n = 783), % of the number of respondents

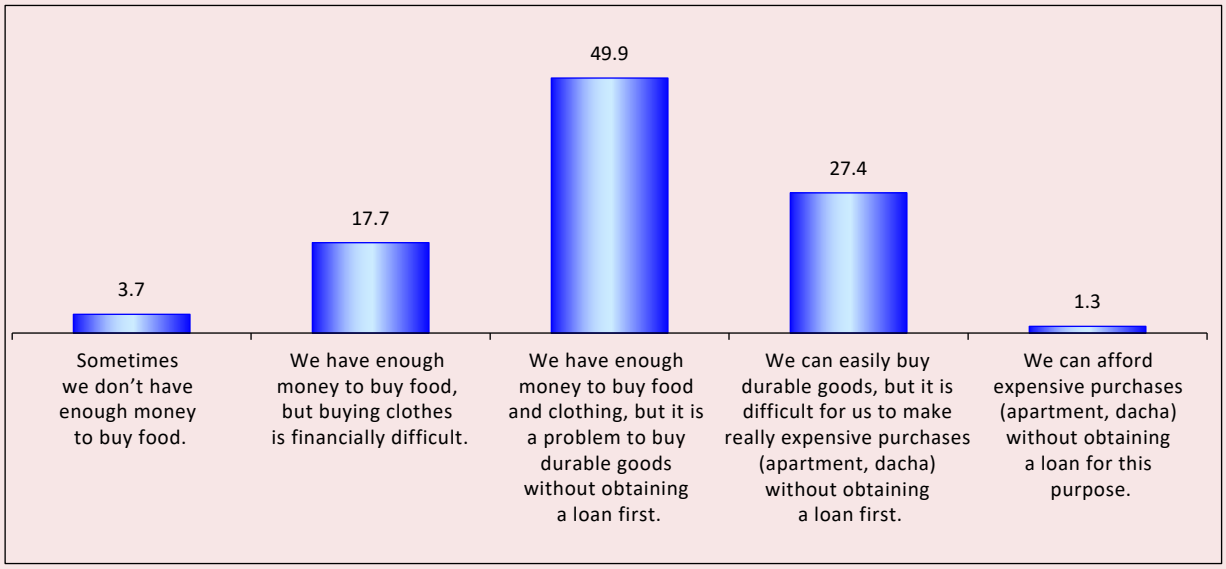


Table 2. Distribution of answers to the question "Are you satisfied with living in your city?" (n = 783), % of the number of respondents, broken down by city

	Arkhangelsk	Severodvinsk	Small towns
I am completely satisfied	12.4	9.0	14.4
I am sooner satisfied, in general	39.8	57.2	39.2
I am sooner dissatisfied, in general	30.5	23.2	23.3
I am completely dissatisfied	11.5	6.3	12.7
I find it difficult to answer	5.7	4.3	10.3
Source: own research.			

Respondents' opinions about the changes in the quality of the urban environment in their current place of residence were approximately equally divided between positive and negative. When answering the question "In your opinion, how has the state of the city changed over the past three years?", 32% of respondents noted there were improvements, 34.4% indicated a deterioration in the situation, and 33.6% did not notice changes in the state of the city over the past three years. A comparison of the distribution of opinions on this indicator in different cities has shown some statistically significant ($p < 0.001$) differences in favor of small towns *(Tab. 3)*.

The assessment of actual results of improvement of the urban environment (as a whole) is noticeably more negative than the satisfaction with living in the city: 73% of respondents are more or less dissatisfied with the improvement of the urban space (the sum of the answers "dissatisfied", "sooner dissatisfied"), and only about 23% expressed a positive opinion on this matter (the sum of the answers "satisfied", "sooner satisfied"). We might assume that a significant difference in the results of assessments on indicators of satisfaction with place of residence and improvement of the urban environment is associated with the influence of economic factors – people are satisfied with the availability of well-paid jobs, allowances and benefits for living in conditions equated to the conditions of the Far North. However, the calculation of the rank correlation coefficient showed the actual absence of a linear relationship between income level and satisfaction with the place of residence (Spearman's $r = 0.129$). In addition, we revealed no correlation between this indicator and the socio-professional status of respondents[11]. There is some correlation (at $p < 0.001$) between the assessment of the state of the urban environment and respondents' education level, in particular, people with secondary vocational and higher education are more skeptical. However, this relationship is very weak (Cramér's $V = 0.139$). A similar situation is observed in the correlation between respondents' satisfaction with living in their city and the indicator of education – people with higher education, including those with incomplete higher education, are somewhat less satisfied with their place of residence than everyone else (Cramér's $V = 0.177$). Thus, the differences in economic status, profession, and education level do not allow us to explain why citizens are generally satisfied with their place of residence, but are not satisfied with the improvement of the urban space.

At the same time, these two indicators correlate relatively well (correlation strength is slightly below median) with a variable that reflects the distribution of estimates of changes in the state of the urban environment over the past three years. In other words, respondents who note positive changes in the improvement of their city are more likely to express satisfaction with living in it (Spearman's $r = 0.318$) and have a higher assessment of the quality of the urban environment at the time of the survey (Spearman's $r = 0.357$). Correlations of this kind

Table 3. Distribution of answers to the question "In your opinion, how has the state of the city changed over the past three years?" (n = 783), % of the number of respondents, broken down by city

	Arkhangelsk	Severodvinsk	Small towns
Improved	4.9	3.5	11.1
Sooner improved	27.8	21.4	29.4
Did not change	31.5	35.4	35.7
Sooner deteriorated	22.3	28.9	15.4
Deteriorated	13.6	10.8	8.5
Source: own research.			

[11] We also did not reveal any correlation between the professional affiliation or economic status of respondents and their assessments of the improvement of the urban environment.

are quite logical and expected. We find it interesting to point out those correlation analysis results, which show that respondents' satisfaction with the fact of living in a particular city is affected by the extent to which they associate their future with this city (Spearman's r = 0.505) and to what extent they are satisfied with their life in general (Spearman's r = 0.439), and their satisfaction with the state of the urban environment is influenced by their assessment of the work of municipal authorities aimed at improving the city (Spearman's r = 0.392).

Institutional forms and informal communication practices in the system of relations between regional/city authorities and the public

We point out that the units of indicators that are of major importance in our research are those that allow us to measure the interest of urban residents in the public life of the city, their awareness of the activities of municipal authorities and regional authorities in the field of urban improvement, and the extent of participation in public discussions of the issues related to this activity and in the implementation of relevant measures.

When asked "To what extent were you interested in what is going on in your city?", the majority of respondents answered that they were interested in public events taking place in the city in varying degrees *(Tab. 4)*.

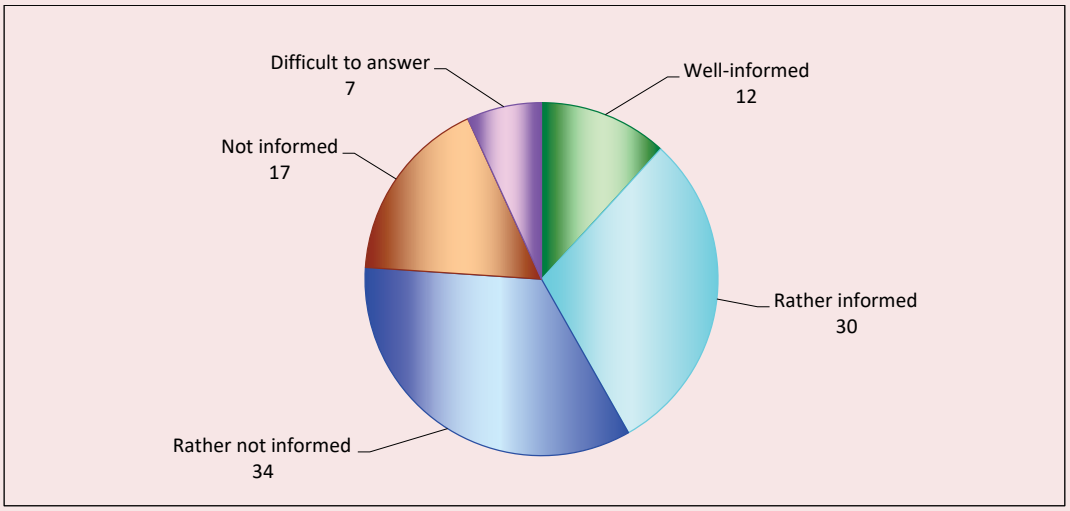
At the same time, slightly more than half (51%) of respondents have not heard anything or do not know much about the fact that the priority project "Creating a comfortable urban environment" is being implemented in their city; 42% of respondents noted that they were more or less informed about this project *(Fig. 2)*. At the same time, there were no statistically significant differences in this

Table 4. Distribution of answers to the question "To what extent are you interested in what is going on in your city?" (n = 783), % of respondents, broken down by city

	Arkhangelsk	Severodvinsk	Small towns
I'm trying to stay up to date with all the events	38.3	50.5	36.0
I'm interested in some events	45.7	39.2	43.5
I have little interest in the events	12.3	9.7	17.5
I'm not interested in any events	3.7	0.6	3.0

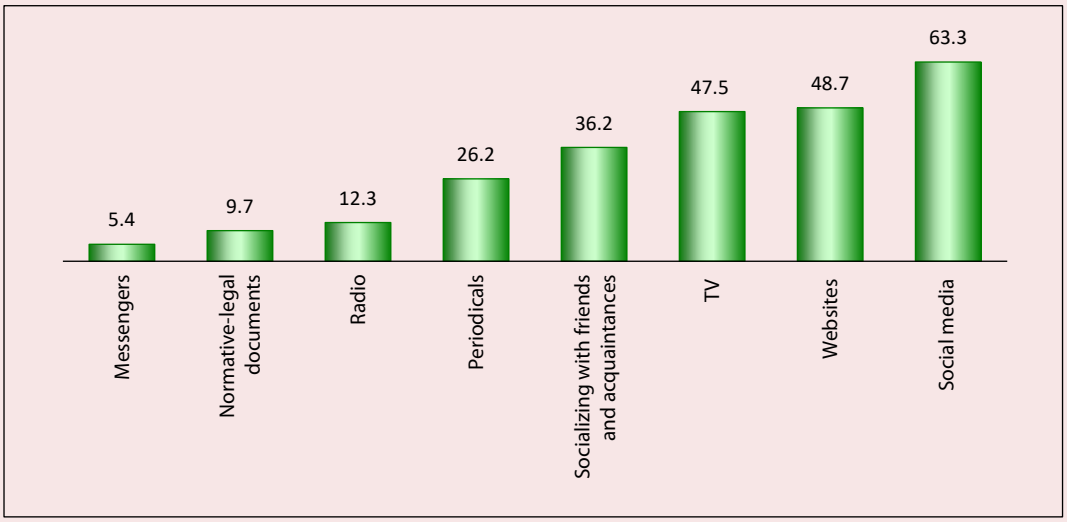
Source: own research.

Figure 2. Degree of awareness of respondents about the project "Creating a comfortable urban environment" (n = 783), % of the number of respondents



Source: own research.

Figure 3. Main sources of information about the project "Creating a comfortable urban environment" (n = 783), % of the number of respondents*



* Several possible answers were allowed.
Source: own research.

indicator when comparing the results of the survey in Arkhangelsk, Severodvinsk, and small towns.

Those who confirmed at least a minimal degree of awareness about the project implementation named social media (63.3%), specialized Internet sources (48.7%) and television (47.5%; *Fig. 3*) as the main sources of information about it.

Civic and expert assessment of the quality of the regulatory and organizational foundations necessary for the development of urban space

The interviewed experts from among the civil servants emphasize that according to the effective legal acts, municipal authorities are required to conduct regular information and application campaigns via various communication channels in order to bring up-to-date information to city residents. According to heads of municipalities, the existing methods for informing residents do not require significant changes. The authorities are confident that the residents have sufficient information about the project, and if necessary, they are ready to work individually with applicants: *"All this can be explained. If they want to, they can come to any administration, any senior official will explain everything to them personally. But the point is people don't want to"* (Informant 4). However, it seems that the lack of urban residents' awareness about the project on creating a comfortable urban environment can be explained not only by people's passivity and their lack of interest in this matter. The fact is that according to legislation there is a strictly regulated procedure for informing city residents about the activities of officials, and communication channels available to residents are reduced to the official media portal of the regional government, traditional mass media, and other similar media. Although their audience is still quite large, we have to admit that nowadays the main operational source of information for citizens is the new media, including social media, which the authorities use unsystematically, or they have narrow coverage of the target audience. For example, the community of the press center of the Government of the Arkhangelsk Oblast in the social media "Vkontakte" has less than 7,000 subscribers and the community "Comfortable urban environment of the Arkhangelsk Oblast" – less than 100 subscribers; the page of the E-government of

the Oblast in the same social media is inactive and is not updated; the main news portal of the city of Arkhangelsk has an audience of more than 20,000 subscribers but it does not have any posts that contain the key words "urban improvement" and "comfortable environment", and most of the posted information is advertising. This fact is pointed out by experts from non-profit organizations: urban residents are not properly aware of the need to transform urban space, and it is largely the result of a non-systematic approach to informing citizens about the program being implemented and the lack of regular interaction between government and society. According to public activists, bid campaigns are often conducted so as "to observe formalities" and make formal reports on budget spending (Informants 11, 12, 13). In order to make the current situation right, it is necessary to conduct a comprehensive "education" of urban residents, which should begin with an explanation of basic concepts: *"Granted, everyone knows that there is such a program, but in general I think they don't know what a comfortable environment is... probably no one among local residents does"* (Informant 11). *"A comfortable environment is first of all an environment where residents could spend time, that is, it is a courtyard, some kind of public territory where they can come, have a rest, spend their free time, where there may be some activities to engage in... Maybe it's a garden, a square, or some kind of equipped site for older people... a comfortable environment should be kind of alive..."* (Informant 13).

A significant number of respondents note it is important for ordinary residents to take a proactive position in communication with municipal authorities on the improvement of the urban environment, and that their role should not be reduced to that of passive recipients of official information. When asked "Do you think it is necessary to convey your opinion about the improvement of the urban environment to the administration of your city?" almost 84% gave an affirmative answer (the sum of the answers "yes" and "sooner yes") and only 11% answered negatively (the sum of the answers "no" and "sooner no"). At the same time, there were no noticeable differences in the distribution of answers to this question in different cities.

Experts also note the high interest of citizens in urban improvement projects and in the formation of a comfortable environment (Informant 8). However, expressing their interest, urban residents are often not ready to invest their own resources in the implementation of specific projects, for which there is not enough budget funding. The reason lies in the poverty of the population. First of all, this applies to people of retirement age. *"There are houses in which a large number of pensioners live, and they are, so to speak, not ready to co-finance"* (Informant 5). Pointing out that the residents' interest in urban improvement projects is combined with low initiative when it comes to the project implementation stage, city district leaders emphasized that residents *"do not feel like they are masters of their own land"* (Informant 7); *"The psychology of our residents is that they still mostly cannot renounce the realities of the Soviet era local housing and utilities authorities ("ZhEKs"), they live in memories... They do not understand that they are the owners now"* (Informant 6). It is assumed that the residents themselves must take care of their yard and maintain it in good condition. But, *"... when citizens get into the program, they are very surprised that they are to maintain it"* (Informant 3). As a result, the amount of projects on creating a comfortable urban environment, which have been actually implemented, remains low. For example, in the city of Arkhangelsk, it is necessary to improve about two thousand adjacent territories. During the implementation of the program, 21 courtyards were improved in 2017, 16 – in 2018, and 15 – in 2019 (Informant 8). Another problem, according to experts is the fact that many residents do not realize their unity with the place where they live: home, yard, neighborhood and the city as a whole. The space of the city turns out to be a kind of "forced"

community, within which most people are in a state of social isolation and disunity (Informant 9). People do not associate themselves with the place where they live, and, accordingly, do not want to change anything there (Informants 1, 8).

Speaking about the most preferred channels of feedback with municipal authorities on urban improvement[12] *(Fig. 4)*, the respondents put the media on the first position (54.3%), the city administration website – on the second position (49.5%); the third place was shared by specialized resources for citizens' appeals and initiatives: GIS ZhKKh (state information system for housing and utilities) and the portal "Gosuslugi" (government services) (43.2%), and such a form of direct communication as public mass events: rallies, pickets, and petitions (39.8%)[13]. In terms of the frequency of mentions, the latter option bypassed the reception office of the city administration. This may indicate that public opinion attaches increasingly more importance to collective actions coming from below as an instrument of influence on the municipal government. *"Nothing can be achieved without a dialogue with the urban community that has been already formed in the city; the rallies that we are witnessing prove this"* (Informant 13). At the same time, the mass media is traditionally considered by the population as a key intermediary in the dialogue between the public and officials. Internet resources with feedback functions are popular among urban residents; it can be explained by the following: wide availability of Internet resources for urban residents in general, increased digital literacy of Russians in recent years, and a relative convenience and simplicity of online services for citizens' requests.

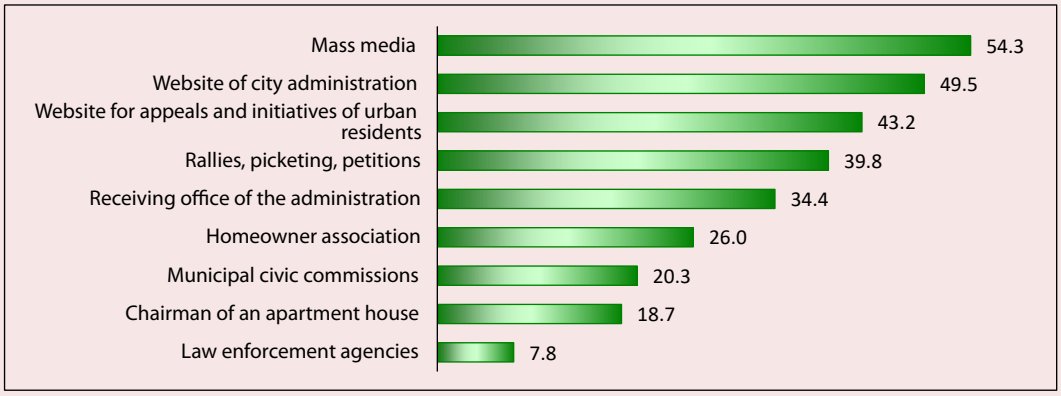
If we consider which channels of communication with the authorities are actually used by urban residents, we see that the distribution of values for this indicator looks somewhat different *(Fig. 5)*. Mass actions and the signing of petitions have become major forms of interaction with the city authorities for citizens who actively broadcast their position on the improvement of urban space (one fifth of respondents). The next three most in-demand communication channels coincide with those that were indicated by respondents as the three most optimal for these purposes. We should also note that every tenth respondent used a representative of a local organization for interaction with municipal services – the chairman of the house council or the property owners' association – as an intermediary in the process of communication with municipal authorities. At the same time, 38.3% of the total number of respondents did not try in any way to convey their opinion on the improvement of the urban environment to the authorized bodies[14].

[12] The question was formulated as follows: "Which of the following can urban residents use for conveying their opinion about the improvement of the urban environment to the city administration?"

[13] Having compared the distribution of opinions broken down by city, we observe statistically significant differences in the options "Website for urban residents' appeals and initiatives", "Mass media", "Rallies, picketing, petitions" (the differences were identified with the use of the nonparametric Kruskal-Wallis test for independent samples). Options 1 and 3 are the most interesting to interpret. Speaking about a special website (GIS ZhKKh, Gosuslugi), Arkhangelsk and Severodvinsk are markedly different from single-industry towns: if in the largest cities of the region almost half of residents pointed them out, then in single-industry towns – a little more than one third. The contrast with regard to the answer "Rallies, picketing and petitions" is even more striking: this communication channel was chosen by almost half of the population in Severodvinsk (48.6%), the figure is slightly lower in Arkhangelsk (40.2%), as for single-industry towns, this option was marked by only a quarter of their population (26.4%).

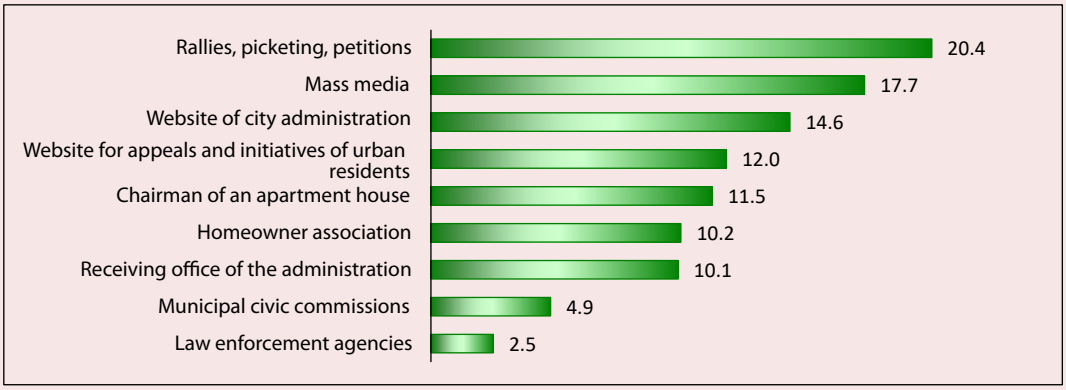
[14] Statistically significant differences between samples from different cities (the nonparametric Kruskal-Wallis test was used) were identified for the following options: "Mass media" (residents of the regional center are half as likely to choose the media as a channel of communication with the local government), "Rallies, picketing, petitions" (in single-industry towns, this form of communication is used much less often than in large cities; in Severodvinsk, this indicator is the highest), "Homeowners association" and "Chairman of an apartment building" are twice as often mentioned by Archangelsk residents compared to those of Severodvinsk. It is important to note that the share of those who take a passive civic position (who do not try to convey their opinion on the formation of a comfortable urban environment to local governments) is 10% higher in single-industry towns compared to Arkhangelsk and Severodvinsk.

Figure 4. The most convenient channels of communication with local governments on the improvement of the urban environment, according to respondents (n = 783), % of the number of respondents*



* Several possible answers were allowed.
Source: own research.

Figure 5. Main channels that respondents use for communication with municipal authorities on urban improvement issues (n = 783), % of the number of respondents*



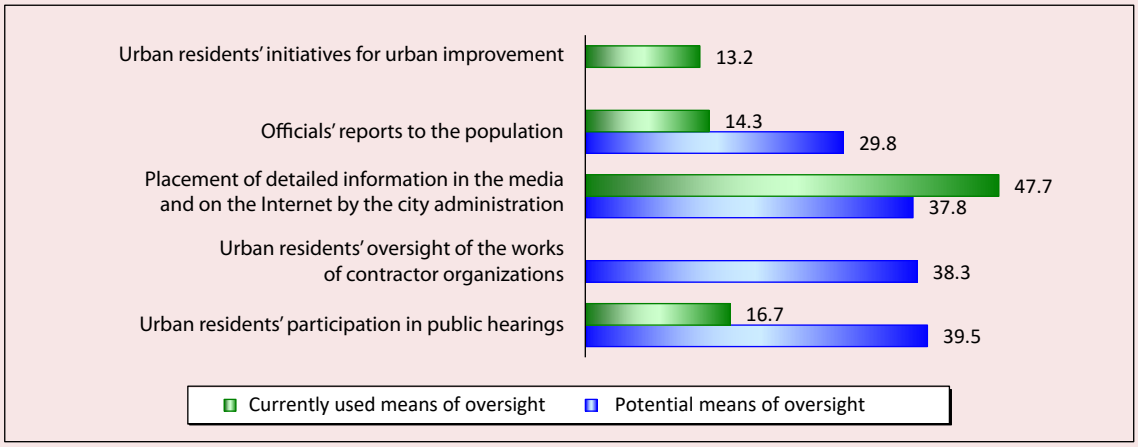
* Several possible answers were allowed.
Source: own research.

We were also interested in the opinion of residents of the surveyed cities regarding what means are available to them for the purpose of monitoring the activities of city administrations in the implementation of measures to create a comfortable urban environment – both potentially applicable measures and those that respondents applied in practice. The distribution of answers is shown in *Figure 6*.

Despite the fact that respondents approximately equally assess the importance of various mechanisms for monitoring the activities of municipal authorities, in fact, they use mainly passive forms associated with obtaining information in the form of journalistic materials, blog entries and official documents (in total – 62%). Only about 30% indicated they had actually participated in active forms of monitoring, such as public hearings. At that, 38.4% of respondents said that in general they did not try to monitor the activities of local authorities.

The main forms of residents' engagement in the assessment of the state of the urban environment are related to their participation in public opinion polls

Figure 6. Means of monitoring the actions of local authorities to improve the urban environment: potential and actually used by respondents (n = 783), % of the number of respondents*



* Several possible answers were allowed.
Source: own research.

and meetings of homeowners, so they are not related to their own initiative or are related to specific issues of improvement of house territories that are outside the framework of public communication in the system of "power–public" relations. At the same time, from one third (in the regional center) to 44% (in single-industry towns) of urban residents are not involved in the assessment of the state of urban space *(Tab. 5)*.

Despite the fact that urban residents mostly use passive forms of participation in the monitoring and assessment of the activities of municipal authorities in the sphere of urban improvement, and also despite the presence of a high percentage of those who are not engaged in the monitoring and assessment (especially in small towns) at all, the survey showed high readiness of northerners to participate in the development of projects to create a comfortable urban environment *(Fig. 7)*.

Discussion of the results

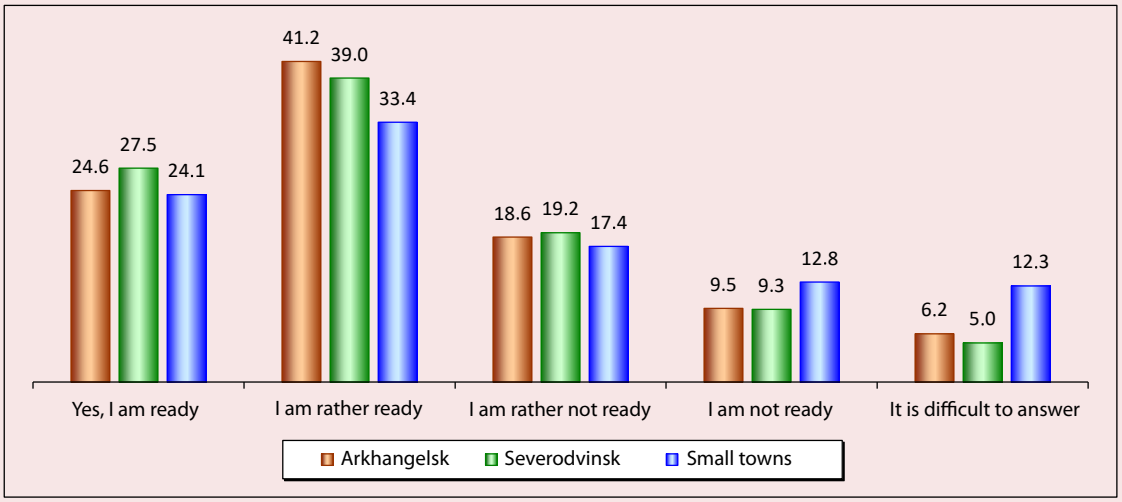
The results of the mass survey show that despite the high percentage of urban residents who are generally satisfied with living in their city, the share of those who consider that urban space requires improvement exceeds two-thirds of the total number of respondents. The main factor influencing this distribution of opinions is the dissatisfaction of residents with the policy of municipal authorities in the field of urban improvement.

The vast majority of respondents showed active interest in the events taking place in the city. At the same time, less than half are somewhat

Table 5. Forms of participation of respondents in the assessment of the urban environment (n = 783; multiple answers were allowed), % of respondents, broken down by city

Form of participation	Arkhangelsk	Severodvinsk	Small towns
Participation in public discussion	11.9	21.8	9.2
Participation in a questionnaire or interview	47.2	41.8	41.1
My child (or younger brother/sister) participated in school projects on a similar topic	11.4	11.8	11.8
Meeting of homeowners	29.2	19.9	16.6
Did not participate in any way	34.4	41.6	44.0
Source: own research.			

Figure 7. Readiness of urban residents to participate in the development of projects to create a comfortable urban environment (n = 783), % of the number of respondents, broken down by city



familiar with the content of the "Comfortable urban environment" project (only 12% consider themselves well-informed in this matter). This fact suggests not only that information about the project is disseminated with the use of inefficient means, but also that the very presentation of information does not convince urban residents of the fact that the implementation of the project is a socially and individually significant event.

Respondents agree that it is important to engage in communication with municipal authorities on the improvement of urban spaces and express their readiness to participate in the development and implementation of relevant projects. However, the actual degree of participation of urban residents in public communication with municipal authorities, as well as in the monitoring and evaluation of proposed and implemented projects, is noticeably lower. At the same time, the prevailing forms of urban residents' participation in the monitoring and evaluation of projects can be characterized as passive: they are not related to the initiative of the residents themselves (for example, involving them in public opinion polls); they are manifested in getting acquainted with official information on the improvement of the urban environment, published in the media and in various Internet resources. Despite the fact that Russians admit the importance of civic participation, in the course of over 30 yearsб they have not yet developed a firm belief in the possibility and success of such participation (especially in the regions).

Speaking about active forms of civic engagement, respondents prefer direct actions (rallies, picketing, petitions) and show less interest in more formalized feedback channels like public hearings, reception office of the city administration, or specialized Internet services for citizens to get in touch with the authorities. This fact is probably due to the increased protest activity in the cities of the Arkhangelsk Oblast (in connection with environmental issues), which resulted from the lack of opportunities to achieve the implementation of their interests with the help of administrative means.

However, according to representatives of state and municipal authorities, residents of the Arkhangelsk Oblast are interested in participating in the formation of a comfortable urban environment, but show low activity due to their reluctance to co-finance the proposed projects and the need to fill in a large set of documents for submitting

an application. Public figures attribute the inefficiency of the federal program to a formal approach to informing and involving residents in the implementation of projects aimed at creating a well-maintained urban environment; such an approach impedes correct understanding of the comfort of urban space. Urban residents participate in the implementation of the program in accordance with their needs, but they may be disappointed by the low level of response of the state administration system to their requests, and they are not satisfied with the stereotyped and standard approach in the implementation of projects. In addition, we should not forget that often Russian citizens do not firmly believe that they are the owners in the city, and they do not relate themselves with a specific place of residence. Perhaps this is a legacy of the Soviet past, in which the system of municipal government acted differently, and an urban resident could be moved to another place of residence for various reasons. At the same time, urban residents have not acquired the necessary resources (appropriate competencies and available financial means) to participate more actively in urban improvement and placemaking.

Thus, we can point out the main contradictions in the implementation of the "Comfortable Urban Environment" project. Providing urban residents with information does not create an image of a personally significant project for them. Urban residents do not have the proper experience of successful participation in addressing urban issues, and this fact sometimes forces them to resort to protest activity. Residents of Russian cities have not yet realized that they are the owners of urban space, they do not have the proper competencies and finances. The authorities are often not ready to act in a new way, handing the initiative to improve the urban space over to the residents.

Conclusion

Thus, at the present stage of the implementation of the program for the formation of a comfortable urban environment, the civic activity of urban residents as an activity aimed at satisfying socially significant interests remains low. The main reasons for this are the formal approach of municipal authorities to informing and engaging citizens in the implementation of urban space improvement projects, on the one hand, and the passivity of the residents themselves, on the other. The latter is largely due to the lack of understanding of the fundamental principles of the program, according to which citizens themselves should take the initiative and be responsible for it. The efforts undertaken by city authorities are more demonstrative than instrumental, and cause residents to feel distrust of their activities.

The results of our study are of practical significance, because they can be used to improve urban governance. With the help of public communications, municipal authorities should involve citizens in the decision-making system on the development of urban space. Achieve this goal, it is necessary for municipalities to create civic oversight bodies representing the urban community; these bodies would be responsible for urban improvement projects. A wide range of communication tools should be used to inform urban residents. It is also important to increase the level of competence of municipal officials and citizens. It is necessary to eliminate mutual distrust between the urban community and municipal authorities through the successful implementation of joint projects. Taking into account the obvious potential for civic engagement among urban residents, we believe it is necessary to review the existing forms and tools of interaction between government and society on creating a comfortable urban space and develop a descriptive model that in the future will allow urban residents to be involved to the full extent in the implementation of the federal program and raise the level of civic engagement. The empirical basis for constructing such a model is largely formed on the basis of the data obtained through the sociological tools we have developed. Although they were originally created

to identify the opinions of the public and experts on the formation of a comfortable environment in cities of the Arkhangelsk Oblast, they can also be used in other constituent entities of the Russian Federation when conducting similar sociological studies.

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Assessing the Socio-Economic Potential of Rural Territories*

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Abstract. Currently, the relevance of the research of trends and potential for rural territory development is primarily caused by increased attention of scientists and public authorities to spatial topics. In 2019, the Spatial Development Strategy of the Russian Federation for the period up to 2025 and the new State Program of the Russian Federation "Integrated Rural Development" were adopted. In this regard, the article's aim is to develop a methodological approach to assessing the socio-economic potential of rural territories and, based on its approbation, to determine priority areas for ensuring their integrated and sustainable development. To achieve this goal, the authors use such scientific methods as economic, statistical, and comparative analysis, methods of generalization, analysis, synthesis, as well as the monographic method. The scientific novelty of the research is the proposed method of socio-economic potential measurement (with scoring) of rural territories. This method makes it possible to classify them by the level of potential development to justify the priorities of regional and local socio-economic policies for different types of territories. The authors have drawn the following conclusions: key development problems of rural territories of Russia, and Russian North in particular, are unfavorable demographic conditions; a low level of accomplished housing with all kinds of amenities (the national average is that only a third of the Fund is improved); a high share of population (for example, 40% of the Nenets Autonomous Okrug, and 45% of the Vologda Oblast) that is provided with poor-quality drinking water; a noticeable lag of rural population's income in comparison with urban citizens' incomes. Moreover, most municipal districts of the Vologda Oblast (14 out of 26) are characterized by the average potential level

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of their rural territories. The materials of the article can be used by the authorities and serve as a basis for further scientific research on this topic.

Key words: rural territories, socio-economic potential, assessment methodology, Russian Federation, Russian North.

Introduction

Rural territories (areas outside urban territories) occupy most of the Russian territory. Performing a number of national economic functions (ensuring food security, preserving the space connectivity, historical and cultural legacy, maintaining ecological balance, creating conditions for the restoration of population's health and recreation, etc.), they play an important role in the Russia's spatial development. At the same time, the rural territory development has accumulated a lot of complex and systemic problems among which we should particularly note a significant decline in the rural population in the majority of Russia's entities, a noticeable lag of rural population's living standards behind citizens' conditions, persistent low level of housing improvement, a low level of social infrastructure development, disruption of production activities, etc. To solve these problems and tasks in Russia, the authorities have adopted special state programs since the 2000s: Federal Target Program "Social Development of Rural Areas through to 2013" (Resolution of the Government of the Russian Federation no. 858, dated December 03, 2002,); Federal Target Program "Sustainable Development of Rural Areas for 2014–2017 and until 2020" (Resolution of the Government of the Russian Federation no. 598, dated July 15, 2013,); State Program of the Russian Federation "Complex Development of Rural Areas" with the 2020–2025 implementation period (Resolution of the Government of the Russian Federation no. 696, dated May 31, 2019). Also, there was the approved "Strategy for Sustainable Development of Rural Areas of the Russian Federation through to 2030" (Resolution of the Government of the Russian Federation no. 151-r, dated February 2, 2015).

However, in practice, it was not possible to significantly improve the situation with rural territories everywhere due to the lack of comprehensive, systemic government programs, limited by their focus (until 2019, rural territories were considered only within the rural settlements framework and with reference to agricultural production) together with the apparent lack of their financing.

In the State Program "Integrated Development of Rural Areas" (approved by the Resolution of the Government of the Russian Federation no. 696, dated May 31, 2019), rural territories are understood as: 1) a rural settlement, or rural settlements, and inter-settlement territories sharing a common territory within the municipal district borders; 2) rural communities included in the urban settlements, municipal districts, urban districts (except for urban districts, where there are the administrative centers of the constituent entities of the Russian Federation); 3) rural communities included in the inner-city municipalities of Sevastopol; 4) workers' settlements, given the status of urban settlements; 5) workers' settlements included in the urban settlements, municipal districts, and urban districts (except for urban districts, where there are the administrative centers of the constituent entities of the Russian Federation). We also use this definition in our work.

Spatial Development Strategy of the Russian Federation until 2025 (approved by the Decree of the Government of the Russian Federation no. 207-r, dated February 13, 2019) shows the solution of the problem related to the settlement system stability due to the socio-economic development of rural territories (taking into account population density,

different nature of reclamation and usage of such territories, natural conditions, remoteness from big cities). The plan is:

– to improve population's living conditions in rural territories including sustainable reduction in the share of uninhabitable housing stock, increasing the level of rural settlements' improvement, the utility infrastructure provision; to enhance transport accessibility to the nearest inter-municipal service centers through the development and enforcement of the standards of regional and local roads, public transport promotion;

– to promote the development of small and medium towns and large rural settlements as inter-municipal service centers for rural territories providing the population and entrepreneurs with various types of services;

– to improve the competitiveness of their economies by promoting unique local brands, promoting the development of consumer, credit and other forms of cooperation, farming, increasing the availability of agricultural markets for small and medium producers, supporting the development of specialized infrastructure for storing agricultural products, introducing technologies and equipment for deep processing of agricultural raw materials, and promoting the development of land reclamation facilities, involvement in the agricultural turnover of unused land and arable land in rural territories suitable for conducting effective agriculture;

– to contribute to the employment diversification and expanding support for population's initiatives in the field of entrepreneurship, not related to agriculture; to promote the development of tourist and supporting infrastructure (transport, energy, utilities, objects of the territory's engineering protection) in rural territories and promoting their tourist resources in the domestic and international tourist markets, etc.

It is worth recognizing that these goals and tasks are quite correct, but complex at the same time. Their solution will require scientific justification for improving the mechanisms and tools for rural development.

The countries of the European Union carry out rural development at the supranational level within the framework of the EU Common Agricultural Policy (CAP): rural development policy is its integral part. It is funded by the European Agricultural Guarantee Fund (EAGF; in 2021–2027 the funding amount is 291.1 billion euros) and the European Agricultural Fund for Rural Development (EAFRD; in 2021–2027 – 95.5 billion euros). There is also the European Network for Rural Development (ENRD) – an association that brings together all stakeholders and aims to achieve improved rural development outcomes. One of the key technologies in the projects' implementation in the field of rural development is the project "LEADER". It is a local development method for involving local actors in the formation and implementation of strategies, decision-making, and resource allocation for the development of their rural territories [1–3].

Many foreign [4–9] and Russian [10–21] scientists study the issues of assessing the potential, trends, and prospects of rural development. For instance, the paper [4] emphasizes that the conditions for the sustainable development of rural territories in the modern knowledge-based economy are: 1) the development of new economic activities that can meet the potential urban demand; 2) local entrepreneurship that can create and expand new activities; 3) social capital that can support entrepreneurship in new fields of activity with access to credit, labor, human capital, external markets, and external knowledge for learning and innovation.

Sustainable development of any territorial entities is possible only with the effective use of available development resources and sources. The most important of them are natural and labor resources, production facilities, infrastructure, and financial resources that make up the territory's potential [11]. Accordingly, in order to understand

the prospects for the territories' development and determine the priorities and tools of state and local socio-economic policy, it is important to objectively assess the existing potential, which implies the resources that will provide the basis for the rural territories' long term development, as well as to identify the problematic aspects of this potential that hinder sustainable and progressive development.

In a broad sense, the word "potential" (from Latin *potentia* – power, opportunity) means a set of resources and conditions necessary for conducting, maintaining, and preserving something [22].

According to A.N. Syrov's opinion, the economic potential of the territory's sustainable development is determined by its geopolitical position, natural resources, means of production, demographic and labor resources, the state of the socio-cultural sphere, and the possibilities of using and attracting financial support. The main task of assessing the economic potential is to identify the main sources of self-development [23].

O.S. Rusinova [24] understands the resource potential of the socio-economic development of a municipality as a set of factors that form the basis for the functioning and development of the territorial socio-economic system.

By the potential of a municipal formation, A.B. Grachev [25] means a set of natural and social opportunities that determine the development or limit it, leading to the stagnation of the municipal formation. Thus, the author notes the need to analyze not only the development sources, but also the factors that hinder it.

T.G. Krasnova and E.A. Balabanova [26] propose to define the municipality's socio-economic potential as identified resource opportunities for socio-economic development which should maximally meet the needs of a local community and bring a municipality to a completely new level of competitiveness.

A.B. Martynushkin [27] identifies many components of the economic potential at the rural territories' level. The management potential, production, labor, innovation, investment, financial, social, natural-climatic, geographical, and landscape potentials are the most significant ones.

Under the production potential, the authors of the monograph [28] understand the system of economic relations that arise between economic entities about obtaining the maximum possible production result with the most effective use of production resources, with the existing state of the art and technology, advanced forms of production organization.

In this research, the socio-economic potential of rural territories is understood as a set of resources and factors that allow rural territories (area outside urban territories) to develop sustainably, effectively use the available resources and opportunities which ultimately lead to an increase in the level of their socio-economic development and living standards of rural population. At the same time, it is necessary to note that most methods and tools are devoted to the socio-economic potential assessment (development potential, etc.) of regions (entities of the Russian Federation) or municipalities (usually districts and urban districts). The authors do not reveal the specifics and features of rural territories' potential.

Thus, the relevance of the research is caused by the imperfection of existing scientific approaches and the mechanism for assessing the potential of rural territories. Accordingly, from a scientific point of view, it is important to develop a methodological approach to assess the rural territories' potential and to determine priority areas for ensuring their integrated and sustainable development, based on its testing (for example, in the Vologda Oblast). It is the purpose of our article.

Research methodology description and its choice justification

The results of a comparative analysis of existing methods and methodological tools for assessing the rural territories' potential in Russia (for example, [29–35]) indicate their significant variety, both in essence and in content. In general, we can distinguish the following approaches to assessing the rural territories' potential: strategic (usage in the strategies' creation for the development of regions and municipalities and implementation in the form of SWOT analysis and other methods); resource (evaluation of individual resource types, territories' development factors); marketing (determination of the territories' competitive advantages); and cost (using various methods, the cost assessment of various types of the territory's resources, such as forest resources, wildlife resources, etc., is conducted).

The main methods of assessing the territories' potential (including rural ones) are the following: assessment of its individual components (types, for example, natural resource potential, production potential using the analysis of indicators that characterize it); economic and mathematical modeling (the degree estimation of influence of individual resources and factors on the parameters of territorial development); methods of expert assessments (experts usage of a point scale or other techniques to assess certain resources, conditions, and factors of territorial development); score estimates (values of the corresponding indicators of the potential assessment are assigned an appropriate score based on the reference values or comparison with other territories); calculation of the integral indicator (using various methods, the integral indicator of the assessment of socio-economic potential is calculated).

The analysis proves that there are a lot of methods. However, since science and practice have no unified approach to understanding the socio-economic potential of rural territories, it does not allow conducting its quantitative and qualitative assessment: including a dynamic assessment and an evaluation of different entities of the Russian Federation. Also, several methods have problems regarding inaccessibility to statistical and other information bases for calculating the potential in dynamics, with the need to distinguish between the assessment of the potential of "rural" municipalities and the assessment of the potential of rural territories or municipal districts' rural territories, urban districts, the complexity of interpreting the results of such an assessment, etc. This makes it necessary to create our own methodology for assessing the potential, taking into account the specifics, functions, factors of rural development, the availability of development resources, and orientation toward the problems of the Russian countryside.

A comprehensive assessment of socio-economic potential of rural territories suggests that there is the existence of a reasonable and scientifically validated system of indicators; statistical capacity; justification of the target indicators as benchmarks or the definition of the boundaries of the indicator values in order to distinguish different groups of territories according to their capability level.

When developing a methodology for assessing the rural territories' potential, it is worth taking into account the following points:

1. Rosstat has been publishing the statistical collection "Rural Territories of the Russian Federation" since 2014. It provides generalized information on the rural territories' development of each entity of the Russian Federation on a number of indicators grouped into blocks (health, sports, tourism, trade, services, communications, investment, housing construction, and housing conditions).

2. For municipal districts and urban districts, in the context of rural and urban territories of s corresponding district (okrug), official statistics publish information that reflects only some

demographic indicators and indicators of the development of engineering (municipal) infrastructure.

3. It is not entirely correct to assess the rural territories' potential only for rural settlements, because, in the conditions of the municipal-territorial structure that has developed in the entities of the Russian Federation, rural territories also occupy a large part of a territory in a number of urban and municipal districts, urban settlements. However, statistics on rural settlements are very limited both in terms of the composition of indicators and their timely and complete filling in relevant official statistical databases.

In this regard, we consider it possible to assess the socio-economic potential of rural territories of entities of the Russian Federation on the basis of statistical data on municipal districts, municipal districts and urban districts (share of rural population in such urban districts should be at least 10% of a municipality's total population, and a territory's area – at least a third of an average area of municipal districts, municipal and urban districts of a corresponding entity of the Russian Federation). In the Vologda Oblast, all 26 municipal districts fit these criteria.

The methodology for assessing the socio-economic potential of rural territories should meet the following requirements: 1) indicators used to assess the potential should reflect the specifics of rural territories (the basis for the most rural territories' development are agro-industrial and forestry complexes, among medical organizations, paramedic and midwife stations predominate, etc.); 2) availability of initial data for calculations, ability to perform similar calculations for any entity of the Russian Federation; 3) ease of calculations and simplicity of interpretation of the results which allows applying the methodology for further substantiating the directions of potential development and improving the efficiency of its use. Accordingly, we will describe our own methodology that meets the specified requirements and "circumvents" existing limitations in the statistical database.

The algorithm of the proposed method of scoring the socio-economic potential of rural territories consists of several stages.

Stage 1. Determination of a list of indicators that characterize various types of socio-economic potential of rural territories ***(Tab. 1)***.

Stage 2. A value of each of 34 indicators for assessing socio-economic potential is assigned a point score (Ip) in accordance with the following boundaries of the indicator range ***(Tab. 2)***.

Table 1. Indicators for assessing the socio-economic potential of rural territories (municipal districts)

Type of potential	Assessment indicators
Natural resource potential	1. Total stock of the main forest-forming species (+), thou. cu. m. per 1 sq. km of a municipality's territory 2. Reserves of sand and gravel materials and sands (+),thou. cu. m. per 1 sq. km of a territory 3. Fresh water reserves (+), cu. m. per day. on 1 sq. km of a territory 4. Share of an agricultural land area in a total area of a district (+), %
Production potential	1. Share of usage of estimated cutting area (+), % 2. Cultivated area in all categories of farms per 1000 square kilometers of a territory (+), hectare 3. Number of cattle in farms of all categories per 1000 inhabitants (+), heads 4. Number of individual entrepreneurs per 1000 residents (+), units 5. Degree of depreciation of fixed assets at the end of a year (-), % 6. Renewal coefficient of fixed assets (+), %
Labor potential	1. Share of working population in a total population size (+), % 2. Officially registered unemployment level (-), % 3. Labor market tension coefficient (-) (load of unemployed population per one declared vacancy), times 4. Students' number in general education institutions per 1000 people (+), people

End of Table 1

Type of potential	Assessment indicators
Financial potential	1. Investment volumes in fixed assets per 1 resident (+), thou. rub. 2. Share of own income (tax and non-tax) in a total budget revenue of a municipal district (+), % 3. Share of profitable organizations (+), %
Socio-demographic potential	1. Population density (+), persons per sq. km 2. Natural increase (loss) rate (+), ‰ 3. Migration increase (loss) rate (+), ‰ 4. Average monthly salary (+), rub. 5. Average pension (+), rub. 6. Population's morbidity (-), cases per 100,000 population
Social and infrastructural potential	1. Total accommodation area per 1 inhabitant (+), sq. m 2. Housing commissioning for 1 person per year (+), sq. m 3.Total capacity of heat supply sources (+), Mkcal/hr per 1000 population 4. Length of heat and steam networks in two-pipe calculation by municipal districts and urban districts (+), km per 1 sq. km of territory 5. Single length of street water supply network in municipal districts and urban districts (+), km per 1 sq. km of territory 6. Housing stock improvement with water supply (+), % 7. Housing stock improvement with sewerage (+), % 8. Housing stock improvement with central heating (+), % 9. Kindergarten occupancy rate (-), number of children per 100 kindergarten places 10. Availability of doctors per 10,000 people (+), people 11. Number of paramedic-midwifery stations per 10,000 people (+), units 12. Number of places in cultural and leisure institutions per 1000 residents (+), units
Note: «+» – direct indicator, «-» – reverse indicator. Source: own calculations.	

Table 2. The interval boundaries for determining the score of indicators of the socio-economic potential of rural territories (Ip)

Indicator value score (Ip)	Group boundaries for direct indicators	Group boundaries for reverse indicators
5	$x_i \geq x_{average}+(3/4)\cdot\sigma$	$x_i < x_{average}-(3/4)\cdot\sigma$
4	$x_{average}+(1/4)\cdot\sigma \leq x_i < x_{average}+(3/4)\cdot\sigma$	$x_{average}-(3/4)\cdot\sigma \leq x_i < x_{average}-(1/4)\cdot\sigma$
3	$x_{average}-(1/4)\cdot\sigma \leq x_i < x_{average}+(1/4)\cdot\sigma$	$x_{average}-(1/4)\cdot\sigma \leq x_i < x_{average}+(1/4)\cdot\sigma$
2	$x_{average}-(3/4)\cdot\sigma \leq x_i < x_{average}-(1/4)\cdot\sigma$	$x_{cp}+(1/4)\cdot\sigma \leq x_i < x_{average}+(3/4)\cdot\sigma$
1	$x_i < x_{average}-(3/4)\cdot\sigma$	$x_i \geq x_{average}+(3/4)\cdot\sigma$
x_i – indicator value of i-th municipality (urban district) of an RF entity; $x_{average}$ – average value of a corresponding indicator for all analyzed municipalities; σ – mean square deviation for a corresponding indicator. Source: own calculations.		

Stage 3. By adding the scores of each indicator included in the block (Ip), the sum of the points for each block of indicators (summbIp) is determined. The point score of each of six blocks of indicators (Ib) is determined based on the following limits of summbIp ***(Tab. 3)***.

Stage 4. Summing up the scores of each block (Ib) determines the total score of the socio-economic potential (Icom). Based on the score value, the potential level determines the corresponding municipality group ***(Tab. 4)***.

Stage 5. The article estimates by what parameters (indicators) the improvement/deterioration of a municipality's position occurred during the analyzed research period (in our research, it is 2018, respectively, compared to 2005[1]). To ensure the temporal comparability of such estimates, the

[1] The choice of the specified research period (2005–2018) is caused by the availability of complete, reliable, and comparable information only for these years for conducting a comprehensive assessment of the rural territories' potential of the Vologda Oblast (both in this article) and for other entities of the Russian Federation.

Table 3. The interval boundaries for determining the score of certain types of socio-economic potential of rural territories (Ib)

Natural resource potential			
Indicator block score (Ib)	3	2	1
Total points' value of the block indicators (summblp)	[14.66; 20]	[9.33; 14.66)	[4; 9.33)
Production potential			
Indicator block score (Ib)	3	2	1
Total points' value of the block indicators (summblp)	[22; 30]	[14; 22)	[6; 14)
Labor potential			
Indicator block score (Ib)	3	2	1
Total points' value of the block indicators (summblp)	[14.66; 20]	[9.33; 14.66)	[4; 9.33)
Financial potential			
Indicator block score (Ib)	3	2	1
Total points' value of the block indicators (summblp)	[11; 15]	[7; 11)	[3; 7)
Socio-demographic potential			
Indicator block score (Ib)	3	2	1
Total points' value of the block indicators (summblp)	[22; 30]	[14; 22)	[6; 14)
Social and infrastructural potential			
Indicator block score (Ib)	3	2	1
Total points' value of the block indicators (summblp)	[44; 60]	[28; 44)	[12; 28)
Source: own calculations.			

Table 4. The interval boundaries for determining the point assessment of the socio-economic potential of rural territories

Potential level	Value Icom
High	[14; 18]
Average	[10; 14)
Low	[6; 10)
Source: own calculations.	

interval boundaries for scoring the values of 34 Ip indicators for all years are taken based on the results of the first analyzed year. In addition, the values of all cost indicators are reduced to a comparable form.

The next is the interpretation of the results, identification of the problem spheres (with the potential reduction), justification of areas for solving identified problems and improving efficiency of the potential usage for each selected capacity level.

The originality of our approach is a comprehensive assessment (covering economic, social, and infrastructural aspects) of the rural territories' potential in corresponding municipal districts and urban districts. This methodology can be used to determine priorities (based on the identified assessment of individual components of the potential) of state support for rural territories (or the production sector, or the human potential sphere, or infrastructure) and to justify recommendations for authorities regarding improvement of the efficiency of using existing potential and its development.

Research results

First, we will analyze and identify the key trends and problems of rural development in Russia (in more detail – on the materials of entities of the Russian Federation belonging to the Russian North: Arkhangelsk, Vologda, Murmansk oblasts, Karelia and Komi republics, the Nenets Autonomous Okrug).

The main development problem of most Russia's rural territories is unfavorable demographic situation: a significant population's reduction due to natural decline and high migration outflow. All of this leads to the "extinction" of entire settlements, and territories' manageability loss. In the Russian North, on average, over 27 years (1991–2018), the rural population decreased by 34% (in Murmansk and Arkhangelsk oblasts, the Komi Republic, and the Nenets Autonomous Okrug – by 36–40%; in the Vologda Oblast – by 30%, in the Republic of Karelia – by 16%; *tab. 5*). In this period, a slight decrease of rural population in Russia as a whole (by 4%) was caused by the entry of the Republic of Crimea and Sevastopol (a federal town) into Russia in 2014.

As for the economic basis for the rural territories' development, by the end of 2018, the physical volume of agricultural production in the country as a whole exceeded the level of 1991 by 2.3% ***(Tab. 6)***, but in all regions of the RN, there was a decrease of this indicator's values: from 44% in the Komi Republic to 87% in the Murmansk Oblast.

A significant problem in the development of most Russia's rural territories is an extremely low level of settlements' improvement with basic communal goods. It is one of the factors contributing to a low attractiveness of these areas for living. Thus, in 2018, only 34% of the country's rural housing stock was equipped with all types of landscaping ***(Tab. 7)***. A fairly high value of this indicator (80%) was noted in the Murmansk Oblast in 2018; the lowest values were in the Republic of Karelia and the Nenets Autonomous Okrug (less than 5%).

Table 5. Average annual number of permanent population, thou. people

Entity of RF	1991		2018		2018 to 1991, %
	Entire population	Rural population	Entire population	Rural population	Entire population
Russian Federation	148394.2	39012.8	146830.6	37440.4	98.9
Russian North	6116.4	1412.1	4528.4	934.6	74.0
Republic of Karelia	790.5	142.9	620.3	120.6	78.5
Komi Republic	1231.0	296,9	835.6	182.4	67.9
Nenets Autonomous Okrug	51.0	18.5	43.9	11.8	86.2
Arkhangelsk Oblast (except AO)	1510.8	394.6	1105.7	239.2	73.2
Vologda Oblast	1353.5	461.1	1172.2	322.6	86.6
Murmansk Oblast	1179.6	98.1	750.8	57.9	63.7
According to: Unified Interdepartmental Statistical Information System (UISIS). Available at: https://fedstat.ru/					

Table 6. Physical Volume Index of agricultural production, % to 1991

Territory	1991	2000	2010	2018
Russian Federation	100	63.6	73.7	102.3
Republic of Karelia	100	48.8	38.9	27.8
Komi Republic	100	65.1	54.6	56.0
Arkhangelsk Oblast	100	56.8	32.7	25.5
Nenets Autonomous Okrug	100	43.4	40.7	49.7
Vologda Oblast	100	74.7	51.0	49.9
Murmansk Oblast	100	40.1	34.0	13.4
According to: Unified Interdepartmental Statistical Information System (UISIS). Available at: https://fedstat.ru/				

Table 7. Share of housing stock area in rural territories provided with all kinds of amenities, a total housing stock area of the Russian Federation, %

Territory	2013	2014	2015	2016	2017	2018	2018 to 2013 (+/-), p.p.
Russian Federation	26.0	28.3	30.8	31.5	32.6	34.2	+8.2
Republic of Karelia	10.1	3.3	4.1	4.2	4.7	4.7	-5.4
Komi Republic	6.3	6.2	6.1	6.3	6.1	5.9	-0.4
Nenets Autonomous Okrug	3.0	2.9	3.0	2,9	3.7	3.7	+0.7
Arkhangelsk Oblast (except AO)	6.6	6.5	6.6	6.6	6.4	6.6	0.0
Vologda Oblast	11.8	12.4	12.8	13.2	13.3	13.4	+1.6
Murmansk Oblast	82.4	79.9	80.1	82.9	82.1	79.8	-2.6
According to: Unified Interdepartmental Statistical Information System (UISIS). Available at: https://fedstat.ru/							

Table 8. Share of population provided with unsafe drinking water or living in localities where it was not studied, %

Territory	Unsafe water				Unexplored water
	2010		2018		2018
	Urban territory	Rural territory	Urban territory	Rural territory	Urban territory
Russian Federation	7.2	15.4	3.2	9.6	0.7
Republic of Karelia	13.8	33.8	13.8	9.6	1.0
Komi Republic	0.1	3.6	0.1	0.8	0.8
Arkhangelsk Oblast	44.5	19.9	14.3	17.5	0.6
Nenets Autonomous Okrug	0.0	10.0	20.1	40.4	0.0
Vologda Oblast	62.6	61.6	47.3	45.0	0.3
Murmansk Oblast	0.0	2.9	0.0	2.5	0.0
According to: Unified Interdepartmental Statistical Information System (UISIS). Available at: https://fedstat.ru/					

In rural territories, there is an acute problem with the provision of high-quality drinking water. For instance, almost 10% of the country's rural population consumes unsafe water ***(Tab. 8)***. The most negative situation was in the Nenets Autonomous Okrug and the Vologda Oblast, where this indicator value was 40 and 45%, respectively, in 2018. It is worrisome that in some RN regions, nearly a third of drinking water in rural territories has not been explored.

After 2018, available resources of households in rural territories averagely amounted to only 65% of the urban settlements' level ***(Tab. 9)***. In all RN regions, this indicator's value was higher than the national average: in 2018, the highest value was observed in Arkhangelsk and Murmansk oblasts (91–93%), the lowest – in the Komi Republic (77%).

Next, we will explore the specifics of the socio-economic state of rural territories in the Vologda Oblast in more detail ***(Tab. 10)***.

Table 9. Ratio of household disposable resources in rural and urban territories, %

Territory	2014	2015	2016	2017	2018	2018 to 2014 (+/-), p.p.
Russian Federation	62.3	65.3	63.5	67.3	64.9	+2.6
Republic of Karelia	69.5	76.7	92.0	92.5	87.3	+17.8
Komi Republic	83.1	88.3	88.0	76.3	76.9	-6.2
Nenets Autonomous Okrug	89.9	81.9	82.3	88.5	90.3	+0.4
Arkhangelsk Oblast (except AO)	81.8	74.8	94.4	83.9	92.8	+11.0
Vologda Oblast	66.6	67.2	86.3	84.0	80.4	+13.8
Murmansk Oblast	106.3	92.4	84.7	90.2	91.1	-15,2
According to: Unified Interdepartmental Statistical Information System (UISIS). Available at: https://fedstat.ru/						

Table 10. Selected indicators of socio-economic development of rural territories of Russia and the Vologda Oblast in 2014–2018

Indicator name	Russia			Vologda Oblast	
	2014	2018	2018 to 2014, %	2014	2018
Investments in basic capital at the municipal budget expense, mil. rub.	27778.4	16918.8	11.6*	394.5	365.9
Residential buildings' commissioning per 1 rural resident, sq. m	0.47	0.38	80.8	0.30	0.22
Single length of the street gas network, km	312462.6	328646.9	105.2	853.4	1116.1
Share of heat supply sources with a capacity up to 3 Mkcal/hr, %	78.1	76.1	-2.0	85.2	84.1
Share of heat and steam networks replaced and repaired, % of needing replacement	9.8	7.6	-2.3	7.4	3.9
Share of street water supply network replaced and repaired, % of needing replacement	4.1	3.2	-0.9	6.6	2.9
Share of the street sewer network replaced and repaired, % of needing replacement	1.9	1.5	-0.4	12.1	6.7
Number of utility services of population, thou. units	42.63	42.68	100.1	0.38	0.42
Number of shops, thou. units	199.39	186.98	93.8	2.56	2.29
Number of seats in collective accommodation facilities, thou. units	397.85	561.66	141.2	3.45	5.85
Number of sports facilities, thou. units	98.12	95.79	97.6	0.84	0.86
Number of engaged in children's and youth sports schools, thou. people	545.68	573.63	105.1	2.77	1.67
Number of treatment and preventive organizations, thou. units	37.79	38.08	100.8	0.60	0.57

* Investment share in rural development in a total volume of investments at the local budgets' expense, %.
Source: Statistical information on the socio-economic development of rural territories of the Russian Federation. Federal State Statistics Service of the Russian Federation. Available at: https://gks.ru/free_doc/new_site/region_stat/sel-terr/sel-terr.html

It is necessary to note the following trends in the rural territories' development of the Vologda Oblast and the country as a whole over the previous five years:

– volume of housing commissioning reduced (by 19 and 27%, respectively);

– replacement rate of heat and steam networks, water supply, and sanitation remains quite low (less than 10%), and it does not allow upgrading networks to create comfortable living conditions in rural territories; the majority (76%) of heating sources are low powered;

– number of public service facilities grows (by 9% in the Vologda Oblast), as well as places in collective accommodation facilities (by 70%), but there is a decrease of a number of shops (by 11%), treatment and preventive organizations (by 5%), a number of children involved in sports schools (by 40%).

Table 11 presents the dynamics of values of the demographic development indicator in rural territories of the Vologda Oblast in 2000–2018. On this basis we can draw the following conclusions: in general, rural population in regions of the Oblast decreased by 20% (in 11 out of 26 regions, more than a third of population was affected); rate of natural population decline got significantly higher (in 2018 it was -9,5 per mille against -3,9 the average for the region), as well as the migration loss (-6,2 per mille against -3,8, respectively).

Table 11. Key indicators of demographic development of municipal districts and rural territories of the Vologda Oblast in 2000–2018

Municipal district, urban district	Rural population size, thou. people			Share of rural population, %	Natural increase rate, per mille			Net migration rate, per mille		
	2000	2018	2018 to 2000, %	2018	2000	2018	2018 *	2000	2018	2018 *
Babayevsky	12.9	7.8	61.0	40.9	-15.0	-8.9	-16.3	1.3	-8.1	-16.6
Babushkinsky	15.5	11.5	73.8	100.0	-9.7	-10.0	-10.1	-7.4	-6.1	-6.1
Belozersky	11.0	5.8	53.3	40.3	-10.6	-11.5	-15.2	-1.6	-7.5	-11.8
Vashkinsky	10.3	6.6	64.0	100.0	-10.3	-13.3	-13.3	1.2	-10.0	-10.0
Velikoustyugsky	22.6	15.6	68.9	29.0	-8.7	-6.8	-12.0	1.9	-3.6	-1.4
Verkhovazhsky	16.6	12.7	76.9	100.0	-9.4	-6.4	-6.4	5.4	-5.5	-5.5
Vozhegodsky	12.5	8.4	67.1	57.9	-12.7	-10.5	-11.9	8.1	-5.0	-6.3
Vologodsky	51.1	52.2	102.1	100.0	-5.8	-4.5	-4.6	-2.0	-3.7	-3.7
Vytegorsky	21.0	13.7	65.0	57.1	-10.4	-11.6	-15.2	2.7	-7.2	-13.8
Gryazovetsky	19.0	11.9	62.9	37.1	-6.8	-7.7	-9.3	-2.9	-0.6	-6.7
Kaduysky	4.5	3.2	71.8	19.5	-10.9	-7.0	-14.0	-4.4	-5.5	-12.8
Kirillovsky	10.7	7.2	67.1	49.0	-11.5	-12.3	-18.3	1.3	-5.8	-20.3
Kichmengsko-Gorodetsky	22.8	15.4	67.3	100.0	-12.5	-7.6	-7.6	-0.5	-18.4	-18.4
Mezhdurechensky	7.9	5.3	67.6	100.0	-9.8	-7.8	-7.8	5.8	-8.9	-8.9
Nikolsky	18.6	11.6	62.6	59.3	-10.0	-6.6	-10.5	-1.1	-8.0	-11.4
Nyuksensky	11.9	8.4	70.0	100.0	-5.0	-10.1	-10.0	0.1	-11.8	-11.8
Sokolsky	10.0	7.0	69.4	14.5	-11.1	-6.0	-12.8	-5.5	-2.9	-8.7
Syamzhensky	10.6	8.0	75.3	100.0	-9.8	-7.7	-7.7	9.3	-8.8	-8.8
Tarnogsky	15.6	11.2	71.9	100.0	-8.8	-8.8	-8.8	-1.4	-5.4	-5.4
Totemsky	16.2	12.5	77.5	56.3	-5.0	-5.7	-7.1	4.8	-1.7	0.6
Ust-Kubinsky	5.4	7.5	140.2	100.0	-14.3	-12.1	-12.1	8.8	-13.9	-14.0
Ustyuzhensky	11.6	8.1	69.4	48.7	-13.6	-9.1	-8.8	1.3	-6.1	-8.6
Kharovsky	9.5	4.8	50.9	35.2	-14.3	-15.6	-14.9	1.5	-13.8	-27.3
Chagodoshchensky	4.8	3.1	64.0	26.2	-17.2	-11.2	-16.0	8.1	-12.9	-14.4
Cherepovetsky	37.5	38.6	102.9	100.0	-10.5	-8.2	-8.2	5.9	-0.6	-0.7
Sheksninsky	13.0	14.7	112,9	44.0	-9.1	-2.6	-6.6	1.9	3.7	18.2
Vologda	0.0	7.2	-	2.3	-4.3	0.9	-18.3	-0.5	-3.2	0.1
Cherepovets	0.0	0.0	-	0.0	-4.1	-2.1	-	3.5	-2.4	-
Districts' total	403.2	312.8	77.6	58.8	-10.1	-7.8	-	0.8	-5.0	-
Oblast's total	403.2	320.0	79.4	27.4	-7.2	-3.9	-9.5	1.2	-3.8	-6.2

* By rural settlements.

Note: A significant increase in the rural population in the Ust-Kubinsky, Sheksninsky and Cherepovetsky districts is mainly due to the fact that some urban settlements there received the status of rural settlements in this period, and, accordingly, a number of rural population in these districts also increased statistically.

Source: *Municipal Districts and Urban Districts of the Vologda Oblast. Socio-Economic Indicators. 2000–2018: Stat. Coll*. Vologdastat. Vologda, 2019. 271 p.

Further, we will review the results of testing the proposed methodological tools for 2005–2018 ***(Tab. 12)***. The choice of this research period is justified by the fact that, first, 2005 was a year before the new Federal Law no. 131-FZ, "On the general principles of the organization of local self-government in the Russian Federation", dated October 6, 2003, entered into force in several Russian entities (including the Vologda Oblast) on January 1, 2006 (nationwide – on January 1, 2009). Second, we can collect all statistical information for a complete, reliable, and comparable assessment of the rural territories' potential starting exactly from 2005.

Table 12. Assessment results of the socio-economic potential of rural territories of the Vologda Oblast in 2005–2018

Municipal district	2005		2010		2015		2018	
	Meaning	Level	Meaning	Level	Meaning	Level	Meaning	Level
Vologodsky	13	a	14	h	15	h	16	**h**
Kaduysky	12	a	15	h	15	h	15	**h**
Sheksninsky	16	h	17	h	15	h	15	h
Gryazovetsky	16	h	14	h	13	a	14	h
Cherepovetsky	14	h	12	a	12	a	14	h
Vozhegodsky	9	l	7	l	10	a	13	**a**
Sokolsky	14	h	14	h	13	a	13	*a*
Totemsky	13	a	13	a	13	a	13	a
Babushkinsky	10	a	10	a	10	a	12	a
Velikoustyugsky	13	a	12	a	13	a	12	a
Verkhovazhsky	10	a	11	a	12	a	12	a
Kharovsky	9	l	10	a	10	a	12	**a**
Babayevsky	11	a	11	a	12	a	11	a
Kirillovsky	11	a	10	a	10	a	10	a
Kichmengsko-Gorodetsky	9	l	11	a	10	a	10	**a**
Mezhdurechensky	10	a	8	l	8	l	10	a
Nikolsky	11	a	11	a	10	a	10	a
Ustyuzhensky	11	a	11	a	12	a	10	a
Chagodoshchensky	13	a	11	a	11	a	10	a
Vytegorsky	9	l	11	a	9	l	9	l
Nyuksensky	14	h	10	a	12	a	9	*l*
Syamzhensky	11	a	10	a	10	a	9	*l*
Tarnogsky	12	a	13	a	12	a	9	*l*
Ust-Kubinsky	11	a	12	a	10	a	9	*l*
Belozersky	11	a	9	l	10	a	8	*l*
Vashkinsky	8	l	9	l	8	l	8	l

Note: h – high potential level, a – average, l – low.
Semi-bold type is used for the territories with a higher potential level in 2018 compared to 2005; italic type is used for the territories with a lower potential level.
Source: *Municipal Districts and Urban Districts of the Vologda Oblast. Socio-Economic Indicators. 2000–2018: Stat. Coll*. Vologdastat. Vologda, 2019. 271 p. (and the similar collection for the previous years); *Resources of the Vologda Oblast. 2000–2018: Stat. Coll*. Vologdastat. Vologda, 2019. 141 p. (and the similar collection for the previous years); Complex territorial cadaster of the natural resources of the Vologda Oblast, issue 24 (as for January 1, 2019). *Official website of the Government of the Vologda Oblast*. Available at: https://vologda-oblast.ru/dokumenty/2528795/?sphrase_id=968304 (and the similar cadasters for the previous years); Main performance indicators of the healthcare facilities of the Vologda Oblast for 2018. Department of Health of the Vologda Oblast; Medical information and analytical center. Available at: https://miac.volmed.org.ru/files/medstat/sbornik_za_2018_g..rar (and the similar collection for the previous years).

The data in table 12 shows that only five districts of the region had a high potential for rural development in 2018. They are located around major towns (Vologda and Cherepovets). The largest number (14 out of 26) of the regions districts is characterized by the average potential. In 2005–2018, five districts managed to improve their situation, and six districts had worse capacity assessments.

It is also important to determine which individual components (indicators) of the potential assessment showed the most noticeable deterioration in the situation (the district moved to the group with a lower level of values of a particular initial statistical indicator of the potential assessment). The results of such assessments are presented in a comparable form in *table 13*.

Table 13. Change dynamics in the scores of individual indicators for assessing the socio-economic potential of rural territories of the Vologda Oblast (2018 compared to 2005 in a comparable assessment)

Municipal district	Wat	Cat	FC	Ufr	WP	Mgp	Mor	PHS	NCP	NPC
Babayevsky	-1	-1	-4	1	-1	-2	0	0	-4	-2
Babushkinsky	0	-1	-2	-3	-1	0	-1	-1	-1	-3
Belozersky	0	0	1	2	-1	-2	-2	0	-3	-2
Vashkinsky	0	-2	0	3	-1	-2	1	0	0	-3
Velikoustyugsky	-2	0	-2	1	-4	-2	0	0	0	0
Verkhovazhsky	0	-1	-2	0	-2	-1	-1	0	-2	-1
Vozhegodsky	-1	-1	-4	2	0	-4	2	0	-3	-1
Vologodsky	-1	0	-2	-1	-4	-4	0	-1	-2	-2
Vytegorsky	3	0	0	1	-2	-1	-3	0	0	0
Gryazovetsky	-2	0	-2	-1	-3	2	-2	0	-2	-1
Kaduysky	0	0	3	2	-2	-4	-2	0	-1	-3
Kirillovsky	0	0	-1	0	-1	-4	0	1	-1	-4
Kichmengsko-Gorodetsky	0	0	0	-2	0	-1	1	0	0	-2
Mezhdurechensky	0	-1	-3	0	0	-1	1	1	1	0
Nikolsky	0	0	-3	-1	0	-2	-3	0	-1	0
Nyuksensky	0	-1	-4	-3	-1	-4	-2	-4	-1	-2
Sokolsky	-2	0	-2	1	-3	0	0	-1	-1	0
Syamzhensky	0	-1	0	-1	-2	-3	-2	-3	-3	-3
Tarnogsky	-1	0	0	-1	-1	0	-3	0	-2	0
Totemsky	-1	0	-3	-2	-3	-2	-2	-2	0	-2
Ust-Kubinsky	-1	-3	-3	-2	0	-3	0	0	1	-2
Ustyuzhensky	-1	0	-2	-1	-1	-2	-1	0	-1	-3
Kharovsky	-1	-1	-1	-1	0	0	0	-2	0	-2
Chagodoshchensky	-2	1	-4	-4	0	-3	-2	-1	0	0
Cherepovetsky	-1	-1	-2	-3	0	-2	0	0	-3	-1
Sheksninsky	-1	0	-1	-1	-4	1	-1	0	-4	-2

Note: The maximum score for each indicator is 5, and the minimum score is 1. Accordingly, "-4" means that the district has moved during the analyzed period, for example, from a group with a high level of development (score 5) to a group with a low level (score 1).
Wat – Freshwater resources, thou. cub. m. per day; Cat – Number of cattle of all categories per 1000 inhabitants; FC – the Degree of funds consumption at the end of the year, %; Ufr – update funds rate, %; WP – Share of working population in the total population, %; Mgp – migration growth (decline) population ‰; Mor – Morbidity per 1000 population cases; PHS – total power of heat sources, Mkcal/hr; NCP – Number of children per 100 places; PMC – Number of places in cultural and leisure-type institutions per 1000 inhabitants.
Source: own calculations.

Therefore, the key issues that lead to the reduction of rural territories' potential development in the Vologda Oblast are significant migration outflow of rural population, mostly people of working age; reduction of cattle; insufficient rate of funds consumption; reduction of heat sources' power; reduction of places in kindergartens, cultural and leisure type institutions: partly due to the optimization of this sector's institutions (liquidation, merging, reorganization).

Using the research results and its future prospects

Based on the analysis results of the main trends and problems and the assessment of rural territories' potential, the author has identified the key development areas that will ensure the prevention of further degradation, improve utilization of rural territories' potential, and create conditions for sustainable development.

1. Fully ensure the implementation of measures and achievement of objectives of the state program of the Russian Federation "Complex Development of Rural Territories". Government Resolution of the Russian Federation no. 391, dated March 31, 2020, includes the reduction of its targets and a 1.53 decrease of the program's financial support for the entire implementation period (from 2.288 to 1.491 billion rubles). Accordingly, taking into account the development of the financial and economic situation in the country in 2020–2021, it is advisable to return to the issue of increasing the financial support at least to the level planned in the original version of the program.

In addition, it is possible to expand the scope of the state program's activities in terms of solving the tasks of diversifying the rural economy and creating new jobs, reducing the significant migration outflow from rural territories, more extensive development of centralized water supply and sewerage in rural territories, attracting and securing qualified personnel in rural territories, etc.

2. Regarding the economic diversification and employment of rural population, it is necessary to ensure equal access of agricultural producers to the means of state support; to render state support to development of small and medium enterprises in rural territories including rural tourism (environmental, event, ethnographic, gastronomic, etc.) which has significant potential in the coming years taking into account possible continuations of restrictions on movement between countries.

In the process of developing tourism and encouraging urban residents to move to rural territories, it is worth using a marketing approach including the formation of local brands (for example, gastronomic), introduction of a full-time specialist in the development of tourism and recreation in the economic departments of municipal districts.

3. To create conditions for attracting extra-budgetary sources of financing for investments in the rural social and engineering infrastructure including the introduction of the project realization practice on the basis of public-private and municipal-private partnerships.

4. To ensure the development of various forms of agricultural cooperation, for example, through grant support to the development of material-technical base of agricultural consumer cooperatives; co-financing from the federal budget for the development of regional cooperative infrastructure (regional fund's financial support of cooperatives, centers for competence and advanced training of cooperative personnel, cooperative distribution network).

5. To assemble professional teams of experts, specialists, and activists interested in the rural territories' development in each entity of the Russian Federation (using the case study regarding the project of the All-Russian Popular Front "Rural Territory. The Development Territory", which has been successfully implemented since March 2019).

6. Actively support and develop various cooperation forms between municipalities (implementation of joint projects, events, establishment of inter-municipal organizations, etc.).

7. To support various forms of public participation in the municipality's development management (territorial public self-government, initiative budgeting, citizens' self-taxation, village headmen, etc.).

In our opinion, in general, Russia's rural territories can successfully develop only using a complex and systematic approach to their development by all authorities and ensuring effective interaction between authorities, business, population, scientific community, modern innovative technology adoption in the agro-industrial complex and municipalities' administration.

The author believes that the solution of the aforementioned comprehensive and systemic tasks for the rural territories' development is possible only if the scientific and methodological provision of the following issues is worked out in detail:

1. Criteria substantiation and typology development of rural territories of the entity of the Russian Federation for the implementation of regional and local socio-economic policy.

2. Development of economic and mathematical models that will reflect the relationship between indicators that characterize the production development level, infrastructure state, social sphere, and demography.

3. Systematization of factors of potential formation and Russia's rural territories' development, justification of the scientific and methodological approach to the assessment of the direction and influence power of these factors.

4. Development of a method for determining "the resettlement centers" and an algorithm for determining needs and adequacy of engineering, utility, and social infrastructure facilities taking into account the current and future level of economic development of rural territories in the entities of the Russian Federation; justification of the approach to determining the need for human resources, the construction of social and industrial facilities in the Russia's rural territories.

5. Development of an algorithm for the formation of an optimal municipal-territorial structure in the region in order to create a network of self-sufficient, self-developing urban and rural settlements. In our opinion, it is currently important to determine an optimal minimum number of residents of a rural settlement, to assess a real effectiveness (ineffectiveness) of an actual elimination of the settlement level in Moscow, Kaliningrad oblasts and a number of other Russia's entities by converting municipal districts into urban districts (from 2019 – into municipal districts as well), to justify an approach to ensuring the territorial accessibility of local self-government bodies for residents of municipalities and a real role of population in solving local issues and problems.

6. Working out organizational and economic mechanism that ensures the creation of conditions for complex and sustainable development of rural territories in the region, which also involves creation of favorable economic, institutional, organizational, and financial conditions.

7. Justification of areas and development of recommendation for the state authorities of the entities of the Russian Federation and local self-government bodies on the effective usage of the socio-economic potential of rural territories and the development of industries that are the basis of their economic specialization taking into account strategic and federal and regional program documents; recommendations for the authorities on the implementation of the territorial marketing concept in the administration of rural development. Our further scientific research will solve these tasks.

In conclusion, we should note that the study's contribution, the results of which are presented in this article, to the theoretical science development is the justification of the approach and methodo-logical tools for assessing the socio-economic potential of rural territories. Its contribution to the development of applied science is the identification of trends, issues of rural territories development in the Russian North and the Vologda Oblast, as well as usage of this basis for the definition of the ways of improving the management of their development and the main challenges for further research on the subject.

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Accounting of Ecosystem Services in the Resource Efficiency Assessment of Specially Protected Natural Territories of the Komi Republic*

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Abstract. One of the integral methods for assessing resource efficiency is the adjustment of net savings. It happens due to many indicators, including the assessment of specially protected natural territories. The author's opinion is associated with the assessment of tourism activities at these sites and consideration of the value of regulating ecosystem territories' services. The objectives of the study are the identification of approaches and assessment of protected areas; selection of "profitable" ecosystem services in regional protected areas; and submission of proposals for the effective usage of these territories. The calculation involves a combination of two methods: assessment of the gross value added of tourist destinations in protected areas and the value of regulatory ecosystem services. Tourism efficiency from the position of creating value chains destinations reflects the rate of gross value added, which is calculated as the

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difference between the proceeds from sales of tourist services entities and their material costs. To determine the economic value of regulatory services, the methods of market indirect assessment and compensation costs were used. During the calculation of ecosystem services, we selected those with beneficiaries located in the region. Increasing efficiency of facilities requires conditions for the development of recreation and new activities. These conditions are shown in the strengthening of interaction between administrations of protected areas with service companies that provide a quality factor of infrastructure, availability of facilities and food services. The economic contribution of specially protected natural areas from the usage of regulating ecosystem services and tourist and recreational activities amounted to 20.4 billion rubles, or 3.2% of gross regional product, in 2018. The proposed approach allows us to show the socio-economic and environmental contribution of specially protected natural areas to the economy of the Komi Republic.

Key words: gross regional product, gross value added, monetary value assessment, specially protected natural areas, tourist destinations, ecosystem services.

Introduction

The term "ecosystem services" (hereinafter – ES) implies the recognition of the fact that well-being and survival of people depends on nature, and a man is an integral part of modern biosphere [1]. Only the search for adequate assessments is an indicator of modern economy. Despite the absence of specific/strict methods of particular ES cost characteristics, it is impossible to ignore this assessment.

In Russia, ES do not enter the market, which means that they cannot be competitive. Nevertheless, the assessment of their significance now becomes an important component of efficiency with the usage of natural capital. Research in this area indicates the beginning of the stage of recognizing the value of natural capital and conducting various assessments (biological, environmental, and economic), in terms of the impact on the economy of many entities [1–7]. Development of schemes and mechanisms for accounting ES concerned the organization of sustainable nature management on the territory of specially protected natural areas (hereinafter – SPNA), based on the inclusion of the tourism and agricultural economic sectors, as well as traditional nature management [5; 7]. Experience of foreign countries is filled with practical developments of economic nature, including payments, various schemes of support from governments, mechanisms for compensating losses from the ES loss [8–12]. Thus, the GIS-toolkit "Land Use Modeler" (LUMO) was developed and tested for the project "Landscape of Saxony 2015" (2009–2012), which allows displaying capabilities, potentials, risks, ES resources, and topographic relationships in the territorial context [13]. In the Republic of Belarus, ES are taken into account at the design stage of assessing the impact of economic projects on the environment; various compensatory measures and payment of damages in accordance with the developed methodology are provided[1]. At the stage of the conducted monetary ES assessments, their integration into the economic accounting of the usage of natural resources becomes relevant [1; 14]. There is a number of foreign studies aimed at the selection of activities on the SPNA territory: for example, modeling and analysis of the relationship between recreational ecosystem services and benefits of traditional nature management [15].

[1] Methodology for Determining the Valuation of Ecosystem Services and the Value of Biological Diversity. *Technical Code of Established Practice*. Bel NITS "Ekologiya". Minsk, 2010. 32 p.

At the same time, the value of recreational services in the SPNA varies tenfold, and it is highly dependent on the biodiversity of entities, population's well-being, infrastructure quality, and availability of objects [16].

In Russia, the main development driver is the national project "Ecology", where the preservation of biological diversity includes the creation of at least 24 new specially protected natural areas with the development of recreational services[2]. The objects of our attention were the SPNA from the point of view of the ecological factor of the increment of net savings. The overall purpose of the study is to assess the economic growth through adequate consideration of the social, economic, and environmental aspects of resource management at the regional level. The adjustment of net savings is proposed as an integral method for assessing resource efficiency. In accordance with the concept of resource efficiency, adopted in the study, inversion pairs are used in terms of eco-efficiency: resource productivity and resource intensity, environmental intensity and environmental productivity[3]. The adjusted net savings method (ANS), which takes into account social and environmental aspects, is acceptable for assessing environmental productivity[4]. According to the methodology for calculating adjusted net savings, the formula is used for Russia's conditions:

$$ANS = GF - IA - DNR - DEP + HCD + CEP + SPNA, \quad (1)$$

where GF – gross fixed capital formation;

IA – investments in fixed capital by type of activity "Mining";

DNR – depletion of natural resources;

DEP – damage from environmental pollution;

HCD – budget expenditures on human capital development;

CEP – costs of environmental protection;

SPNA – assessment of specially protected natural areas.

The focus of the study is the assessment of the resource efficiency by adjusting net savings through the efficient usage of resources in the SPNA. Previously, we analyzed and evaluated the positive impact on the GRP by evaluating the value of ecosystem services and considering regional tourist and recreational destinations [17]. However, the use of these options without their combination has a limited focus. The objectives of our research are to identify the mechanism for calculating and evaluating the SPNA; to select "profitable" ES for the region; and to propose efficient usage of these territories.

Analysis of assessment methods

According to S.N. Bobylev's methodology [18], the logic of the SPNA assessment is that the GRP production on the region's territory is distributed evenly. The SPNA are territories which are fully or partially withdrawn from the economic activity, which means that the lost income relative to the GRP will be a necessary amount. The author's opinion is associated with more detailed and correct assessment of the value of the SPNA considering the ES. On the one hand, the budget receives less income from the exploitation of the territory; on the other – protected areas allow their untouched nature

[2] Passport of the national project "Ecology" (approved by the Presidium of The Presidential Council for Strategic Development and National Projects, protocol dated December 24, 2018. No. 16). Available at: https://www.mnr.gov.ru/activity/directions/natsionalnyy_proekt_ekologiya/ (accessed: January 16, 2019).

[3] *Resource Efficiency: Potential and Economic Implications. A Report by the International Resource Panel March 2017.* 167 p. Available at: http://www.unep.org/resourcepanel/KnowledgeResources/AssessmentAreasReports/Cross-CuttingPublications/tabid/133337/Default.aspx (accessed: September 14, 2017).

[4] Environmental productivity is an amount in which the environmental value is reduced due to losses from carbon dioxide emissions, resource depletion, and population morbidity due to polluted natural environment, but it increases by improving the quality of social and environmental factors (education and healthcare expenses; expenditures on preserving the environment and the value of the SPNA).

to ensure the environmental quality of adjacent territories that can bring income. Many regulatory services function, including the absorption of cross-border pollution. The understanding of this problem is shown even in the loss of financial benefits from business for the sake of preserving natural resources. Thus, a survey of managers of enterprises (more than 900 respondents) among small and medium-sized businesses in the field of tourism in the SPNA confirmed the willingness to lose financial benefits from tourism and direct use of resources to ensure living conditions, quality and environmental protection [19]. As a result of the research, it was revealed that the value of industrially active territories (for example, for coal mining) is comparable to the volume of ecosystem services in the form of recreation and aesthetic benefits for people [20]. The oxygen content in the air and river water outside and in protected areas contributes to the improvement of the natural environment of nearby territories due to the protected regime in the SPNA [21]. Thus, consideration of regulatory services (not just production and cultural services – ones that fit into market relations the most) provides many benefits for population. This fact explains the reason for using the economic assessment of the SPNA ecosystem services on the basis of the concept of total economic value according to the cost calculation of benefits provided at these facilities [2; 22; 23].

Most methods of assessing the SPNA in terms of resource usage efficiency are based on calculations of tourism, or recreation, benefits, as well as the traditional usage of natural resources by population at these objects. Thus, S.B. Boldyreva, according to the statistical reports of the Organization for Economic Cooperation (OECD), records a high contribution of tourism to the GDP, for example, in Iceland (27.2%), Greece (18.5%), New Zealand (17.4%), Portugal (16.4%), Spain (10.8%), Australia (10.8%), Italy (10.2%), Sweden (9.6%), France (9.1%), Germany (8.9%), the United States (8.2%), and other countries [24]. Obviously, such high values are most likely obtained due to business, event, and sea tourism. Nevertheless, ecotourism in the SPNA annually brings considerable income to national budgets of these states (from 660 to 1.2 trillion dollars). There is a synergistic effect, while the distribution of income of the territory itself and related businesses is not uniform. G.T. Shkiperova and other scientists refer to the experience of foreign studies on the costs of maintaining the SPNA and income received from eco-tourism (tour operators, public catering enterprises, hotels, gas stations, shops, etc.), which is estimated as 1:5 and higher[5] in many countries [25–27]. Currently, according to the UNWTO, the contribution of eco-tourism to the global tourism industry is only 10%, in the Russian Federation – 2%, or 11.7 million dollars[6]. The main flow of tourists who prefer ecological types of recreation appears in the SPNA.

The methodology for assessing tourism in a region is based on the System of National Accounts developed under the United Nations, the IMF, the World Bank, the OECD, the World Tourism Organization, and Eurostat. It is based on methods for calculating the GDP[7]. The GRP is calculated by the production method as the sum of the values

[5] *Tourism and Visitor Management in Protected Areas. Guidelines for Sustainability.* International Union for Conservation of Nature, Gland, Switzerland, 2018. 136 p. Available at: http://www.iucn.org.pa_guidelines (accessed: April 22, 2020).

[6] Rosturism: Ecotourism in the structure of the Russian market has a share five times less than in the world. *TASS.* June 6, 2019. Available at: https:// yandex.ru/turbo/s/tass.ru/obschestvo/6518680 (accessed: April 20, 2020).

[7] *System of National Accounts 2008.* UN, MFI, OECD, European Commission, World Bank. New York, 2012. 764 p. Available at: http://unstats.un.org/unsd/nationalaccount/docs/SNA2008Russian.pdf (accessed: April 24, 2020); *Methodological Provisions on Statistics*. Issue 1. Goskomstat Rossii. Moscow, 1996. Available at: https://gks.ru/bgd/free/B99_10/Main.htm (accessed: April 24, 2020); *Tourism Satellite Account: Recommended Methodological Framework*. 2008. UN, UNWTO, OECD, Eurostat. Luxembourg, Madrid, New York, Paris, 2010. 145 p. Available at: http://www.cisstat.com/rus/SeriesF_80rev1r.pdf (accessed: June 23, 2018).

added created in the sectors of the economy in producers' prices[8].

Assessment of tourism at the SPNA objects of the region is performed using the cluster approach, reflecting the specificity of this activity, taking into account the geographically neighboring companies characterized by common activities [28] and the concept of chain and distribution values of the tourism product [29; 30]. Thus, protected areas act as destinations where the value added chain is created within the network interaction of tourism entities with the management system and mechanisms for promoting the tourist product. The level of the efficiency of tourism activities in the SPNA as destinations reflects the indicator of gross value added.

In 2019, «Methodology for calculating indicators "Gross value added of the tourism industry" and "Share of gross value added of the tourism industry in the gross domestic product of the Russian Federation"»[9] was approved. In it, gross value added of the tourism industry (GVATI), due to the classification grouping of types of economic activity "Tourism" [2], is defined according to the formula:

$$GVATI = OTI - ICTI, \quad (2)$$

where OTI – cost of production of goods and services,

ICTI – cost of intermediate consumption[10].

Gross value added of tourist destinations located within protected areas (GVATIд) is calculated as the difference between the amount of revenue from sales of tourist services of entities belonging to the "Tourism" classification group (OTIд) and their material costs (ISTIд). Restrictions in the calculation of gross value added were removed by expert means: in particular, in case of the extraterritorial nature of tourist companies or the lack of recording of tourist and recreational activities in the accounting statements of entities engaged in several types of activities at once.

Assessment of protected areas in the region

Considering tourism, the leading federal SPNA in the Komi Republic are Yugyd Va National Park and Pechora-Ilych Nature Reserve. The flow of tourists to the Yugyd Va National Park has slightly increased in 2000–2018: in 2000, it was 5,000 people a year, by 2018 – 7,300 visitors. At the same time, the share of local residents of the districts prevails (65% of the total flow), share of residents of Moscow and St. Petersburg does not exceed 11%; tourists from other Russian towns – 21%; foreign visitors – 3%[11]. Types of tourism include rafting on non-motorized vessels – 42%; hiking – 12%; water-hiking – 15%; weekend recreation – 31%.

The reserve includes many natural objects, ecological trails, a museum, and a unique moose farm (the first one in Russia). In recent years, the tourist flow has been growing (from 1,000 people in 2000 to 3,200 in 2018). This could be also explained by the fact that, in 2008, the Manpupuner plateau was included in the list of the seven wonders of the world in Russia. Despite the remoteness of the object from a convenient transport network, the flow of tourists in 2008–2012 reached 500 people a year. However, this fact is not considered positive for the plateau itself and the nature reserve trails. Only thanks to activities of the inspection, the installation of cordons and various restrictive

[8] Gross regional product according to Rosstat. Available at: https://rosinfostat.ru/vpr/ (accessed: April 24, 2020).

[9] On approval of the Methodology for calculating indicators "Gross value added of the tourism industry" and "Share of gross value added of the tourism industry in gross domestic product of the Russian Federation ": Order of Rosstat no. 267, dated May 14, 2019. Consultant Plus.

[10] On the adoption and implementation of the Amendment 1/2007 OKVED to the All-Russian Classifier of Economic Activities OK 029-2001 (KDETS Ed. 1), the All-Russian Classifier of Economic Activities OK 029-2007 (KDETS Ed. 1.1) and the All-Russian Classifier of Economic Activities OK 034-2007 (KPETS 2002): Order of Rostehregulirovanie no. 329-st, dated November 22, 2007. Consultant Plus.

[11] *Business Plan of FSBI Yugyd Va National Park*. Non-profit partnership "OOPT RK". PROON/GEF Komi. 2015. P. 54, 55. Available at: http://www.undp-komi.org (accessed: September 1, 2017).

Table 1. Gross value added of tourist destinations of protected areas (expert assessment of 2018), mil. rub.

Activity according to the "Tourism" classification group	Yugyd Va National Park			Pechora-Ilych Nature Reserve		
	$GVATI_д$	$OTI_д$	$ICTI_д$	$GVATI_д$	$OTI_д$	ICTIд
Organization of complex tourist servicing, services of tour operators*	31.55	38.67	7.11	3.20	4.00	0.80
Activities of hotels and tourist bases (hotel "Erkusei", Yugyd Va National Park base)	0.35	1.5	1.15	0.60	1.3	0.70
Aviation transport services and services of the tour operator "Severny Ural"	1.75	3.48	1.73	6.0	12.2	6.20
Railway transport services	24.0	52.0	28.0	-	-	-
Automobile and other transport services (SPNA and other entities, mainly in Inta town)	29.00	49.30	20.30	1.52	3.36	1.52
Retail sale of souvenirs	0.15	0.17	0.02	2.00	2.20	0.20
Total	**88.15**	**145.12**	**58.31**	**13.32**	**23.06**	**9.42**

*Active recreation in Komi, NordUral, active recreation in the Urals, IP Dan'ko V.Yu. NP Yugyd Va, Pechora-Ilych Nature Reserve, and other tourism sites.
Source: own calculation.

measures, a number of visitors was reduced to the amount allowed for the territory – 200 people a year, including tourists from the Sverdlovsk Oblast.

The information base for identifying the cost of tourist services was a survey of the heads of tourism entities and the Internet resources of travel agencies, where the cost of a tourist service or product was indicated. The volume of services was specified through a number of visitors, which is recorded by the administration of the national park and reserve. The material costs of tourism entities were determined in the course of a survey of managers and tourists who received services, as well as on the basis of tour programs. An expert assessment of the added value of the SPNA destinations based on actual indicators of revenue and costs of tour operators is presented in *table 1.*

The most important link in the food chain in federal protected areas is transport services. The volume of interaction between transport companies and the SPNA in terms of the delivery of tourists is 61.4% of the destination's revenue (62.27 million rubles). Tourist companies served only 27% of tourists (about 3,000 people) who visited these protected areas, which generate 42.5 million rubles (41.8%) of the gross value added of destinations. At the same time, it should be noted that the tour operator "Severny Ural" also provides services for the air transportation of tourists, primarily on the Manpupuner plateau. The calculations for 2016 and 2018, performed according to the studied scheme, gave the following results. The gross value added of tourist destinations in 2016 amounted to 91.10 million rubles. In 2018, when the tourist flow increased by 32.3% compared to 2016 (to 10,500 people), and the tour operator was added, it reached 101.47 million rubles (see *tab. 1*). The share of the value of the tourist product of destinations in the GRP[12] in 2016 was only 0.02%. Considering efficient usage of resources and increasing gross value added, the priority is the growth of tourist services, since, without the quantity and quality of tourist goods, the flow of tourists does not bring income but only increases the cost of maintaining security and tourist infrastructure of the SPNA. In this regard, it is important to strengthen the interaction of the SPNA administrations with service companies that provide catering and accommodation services for tourists. Only 0.2% of food is provided on the territory of the destination, the rest is purchased outside of it. Construction of a high-quality highway from Inta

[12] In 2016, the GRP amounted to 574.38 billion rubles; in 2018 – 665.74 billion rubles (*Finances in the Komi Republic: Stat. Coll.* Komistat. Syktyvkar, 2019. 240 p.).

Table 2. Gross value added of the regional SPNA (expert assessment of 2018), mil. rub.

Type of activity in the classification group "Tourism"	Zakazniki		
	$GVATI_д$	$OTI_д$	$ICTI_д$
Services of entities of tourist activity, including tourist bases located in relative proximity to protected areas	25.0	30. 2	5.2
Automobile and other transport services	13.5	15.6	2.1
Products of protected areas (mushrooms, berries, etc.)	-20.0	0.0	20.0
Total	**18.5**	**45.8**	**27.3**
Source: own calculation.			

to the national park could significantly reduce costs per tourist (from 4000 to 1000 rubles). In addition, low income from accommodation facilities (2.3% of total destination's income) is collected on the territory of destinations due to low capacity and high maintenance costs.

Unlike the federal SPNA, regional protected areas, which include 161 nature reserves, 67 natural monuments, and one protected natural landscape, generate 18.5 million rubles, but they do not form full-fledged tourist destinations with an appropriate level of tourist infrastructure development (*Tab. 2*). Currently, only one out of twenty regional districts (Knyazhpogostsky) includes tourism entities in the SPNA, which make it possible to consider it a proto-destination without an appropriate organizational structure. The implementation of the state policy in the sphere of regional national protected areas development, including ecological tourism, is governed by SBI KR "SPNA Center", which does not consider protected objects from the standpoint of the tourist destination formation.

The peculiarity of the tourist flow in these territories is the visits of residents of Syktyvkar, Ukhta, and Vorkuta for recreation and collecting berries, mushrooms, and other resources (about 10 thousand people). The services of tourism entities consist of the delivery and escort of tourists to protected areas and a possibility of living in neighboring territories. In general, tourism entities receive 25 million rubles from this type of activity.

In this situation, the role of regional protected areas is very specific. These are basic territories that do not receive money from tourism and give their resources to other users for free (minus 20 mil. rubles, see tab. 2).

As a result, it is necessary to focus on changing the role of the regional SPNA and redistributing income from tourism: at least partially compensating for losses from collecting resources of protected areas and creating an appropriate tourist infrastructure with an increase in the income of destinations.

The specifics of the author's calculation are the inclusion of ecosystem services in the income component of the SPNA due to the dependence of the quality and availability of services of the recreation territory. The essence of economic assessment is narrowed down to the calculation of the ES through the product of natural and cost values. The calculation procedure is determined by the methods and key parameters discussed in previous authors' publications [17; 31]. Thus, the key regulatory ES (water regulation, CO_2 deposition, water clearance, soil erosion protection, biodiversity conservation, and air pollution absorption) were initially selected and then calculated. The method of compensatory or alternative costs prevails in the evaluation of services, with the exception of the CO_2 deposit service for which an indirect market valuation is applied. ES were calculated within forestry and administrative districts; for the SPNA – proportionately to an area occupied by them in forest and administrative districts (*Tab. 3*).

A high capacity of forest ecosystems to absorb dust and harmful substances from the atmosphere

Table 3. Economic assessment of ecosystem services of the SPNA (estimated data for 2018), mil. rub.

SPNA	Area, thous.hect.	Ecosystem services*						
		WR	D	WC	P	BD	AP	Total
Reserve	721.3	87.1	105.3	57.7	461.2	17.0	2904.8	3633.1
National park	1894.1	208.6	104.5	50.5	698.8	16.5	10219.4	11298.3
Zakazniki	1281.8	202.0	67.3	115.1	775.3	72.0	11768.8	13000.5
Total	**3894.8**	**497.7**	**277.1**	**223.3**	**1935.3**	**105.5**	**24893.0**	**27931.9**
Percentage of total values, %		1.8	1.0	0.8	6.9	0.4	89.1	100

* Water regulation (WR); carbon deposition (D); water cleaning (WC); erosion protection (P); preservation of biodiversity (BD); Absorption of pollutants from air (AP).

Sources: own calculation according to data of SNiP 23-01-99. Table 2. Climatic parameters of a warm period of a year. RF. Kemerovo Oblast, Kirov Oblast, Komi Republic, etc. and SNiP 23-01-99. Construction Climatology. Table 1. Climatic parameters of a cold period of a year. RF. Kemerovo Oblast, Kirov Oblast, Komi Republic, etc..; *Atlas of the Komi Republic*. Moscow: Feoria, 2011. 294 p.; *Red Book of the Komi Republic*. Syktyvkar: Institute of Biology of Komi SC UB RAS, 2009. 791 p.; *Forest Plan of the Komi Republic*, 2019. 314 p.; *On the State of the Environment of the Komi Republic in 2019: State Report*. Ministry of Natural Resources and Environmental Protection of the Komi Republic, SBI KR "Territorial Information Fund of the Komi Republic". Syktyvkar, 2020. 162 p.

(9 t/ha of harmful emissions; 51 t/ha of dust per year) explains a maximum value in the calculations provided by the ES (89.1%). Forest ecosystems contain erosion processes, and the economic significance of this function is 6.9% of total economic effect.

When analyzing the cost values of the SPNA value, it is important to understand the goals and objectives of this type of action. It is obvious that, it is necessary to follow the rule of choosing those benefits that remain in the region for the SPNA assessment, thereby forming a regional product. In this regard, in the next section, we suggest discussing the choice of these services.

Discussion of the results

The main task of the SPNA is to protect natural ecosystems and preserve biodiversity, conduct scientific research in permitted areas – ecological tourism and recreation of population. It is obvious that only tourism and recreation of citizens form a real income and therefore contribute to the GRP. Despite a significant potential for ecotourism in the Komi Republic and the presence of world-class objects in it – the "Virgin Komi Forests" (UNESCO natural heritage site) in particular, the Manpupuner weathering pillars, Narodnaya mountain (the highest point of the Ural Mountains), it is not yet possible to get a sufficient economic effect from ecotourism in the SPNA of the republic.

Currently, an attempt has been made to obtain funds from the federal project "Ecology" (sub-program "Preservation of biological diversity and development of ecological tourism")[13] through participating in the all-Russian competition of investment projects for the development of the SPNA potential[14]. On demand of the Ministry of Culture, Tourism, and Archival Affairs of the Komi Republic, the competition application Tourist and Recreational Cluster "Seventh Wonder of the World" was prepared (geographically extending beyond the UNESCO site "Virgin Komi Forests") at the budget of 26.7 billion rubles. Within the project, four zones of the functional and planning organization of the tourist and recreational cluster were allocated: 1 – "Manpupuner Plateau", 2 – "Lesnaya (Yaksha village)", 3 – "Tima-iz Ski Area", 4 – "Zhelannoe". In particular, in zone 4 "Zhelannoe" (the Circumpolar Urals area), it is planned to create tourist bases (glamping for 20 people) at the foot of the Narodnaya mountain

[13] Passport of the national project "Ecology" (approved by the Presidium of The Presidential Council for Strategic Development and National Projects, protocol dated December 24, 2018. No.16). Available at: https://www.mnr.gov.ru/activity/directions/natsionalnyy_proekt_ekologiya/ (accessed: January 16, 2019).

[14] All-Russian competition for the creation of tourist and recreational clusters and the development of ecotourism in Russia. *Agency for Strategic Initiatives*. June 16, 2020. Available at: https://priroda.life/ (accessed: October 7, 2020).

(22 million rubles budget), Manaraga mountain (22 million); reconstruction of the Sanavozh base for 50 people (50 million) and quartz adit (20 million); development of helipads (12 million). The key project of the cluster is the construction of a highway (137 km, at the budget of 7.7 billion rubles) with bridges (including the one over the Kozhim River – 2.5 billion rubles) from Ints to the foot of Narodnaya Mount to ensure the delivery of tourists to the attractions. The project has reached the final stage of the All-Russian competition of investment projects for the development of the potential of specially protected natural areas.

Authors of the Tourist and Recreational Cluster "Seventh Wonder of the World" application state that, considering a general grandiosity of plans, only 30% of infrastructure exists now. Obviously, this is a serious exaggeration. It can be assumed that the expected flows are increased by several tens of times, as well as investments (from 0.2 to 5 billion rubles). Nevertheless, the tourism and recreation cluster project can be implemented after a professional revision with the definition of a group of priority local projects.

The functional zoning of the territory of the tourist and recreational cluster in the light of modern approaches to the management of protected areas also raises a big question [32]. The world has accumulated extensive experience in international practices for the development of protected areas using, among other things, cluster approaches. One of the interesting objects, located in climatic conditions similar to the Komi Republic's, is the geopark "Rokua" located in Finland – 200 km south of the Arctic Circle. It is visited by nearly 200,000 people, and the park's budget in 2013 was 500,000 euros: 50% from subsidies from the European Regional Development Fund, about 30% – own funds, and 20% – subventions of the Finnish government. In the geopark "Rokua", there are objects of recreational infrastructure (hotels, guest houses, cafes, and information centers), a developed network of roads and tourist trails. The service content of tourist zones coincides with the functional zoning of the geopark. The activity of the park is ensured by the coordination of the interests of state authorities, local communities, and tourists through the creation of clear mechanisms for involvement and cooperation. Much attention is paid to supporting local businesses; in particular, a right to use their own logo is given, and loans are issued to those who want to open their own business on the territory of "Rokua". The park has five food production companies (herb collections, mushrooms, berries, farm products) and organizations that install IT systems, produce souvenirs and power grids. The "Rokua" geopark is not a single nature protection complex.

Only the "Rokua" National Park located on its territory has a protected status. The managing organization of the park is Humanopolis Ltd., established by three municipalities. The Finnish Forest Administration and the "Rokua" Health and Rehabilitation Foundation are involved in the management and financing[15].

Currently, the federal SPNAs of the Komi Republic are far inferior to the leading Russian and foreign counterparts in terms of tourist flow and income, and they are comparable to the largest national park in Canada – "Wood Buffalo". However, the Canadian government allocated 27 million Canadian dollars (1.38 billion rubles) to the park in 2018. In Russia, within the federal project "Preservation of biological diversity and development of eco-tourism" in 2019, only 100.14 million rubles were allocated for the development of tourist infrastructure. The leader in a number of visitors in Russia in 2019 was the "Kislovodsk" National Park (more than 1.5 million people); more than 1.1 million people visited the Krasnoyarsk

[15] International experience in the development of eco-tourism in the SPNA. Guide to the SPNA development. *Agency for Strategic Initiatives*. 2015. Available at: https://mpr.rkomi.ru/page/20017/ (accessed: April 20, 2020).

Pillars, and almost half a million visited the "Russky Sever" National Park (the Vologda Oblast)[16]. One of the most visited parks in the world is the Yellowstone National Park in the United States (over 3 million people per year).

Thus, it should be noted that the main reasons for the success of the SPNA in the world are flexible mechanism of protected areas' interaction with business and population, the active use of the environmental education tool, transport accessibility and the formation of a compromise between nature preservation and tourism development, expressed, inter alia, through effective functional zoning of the SPNA territory.

Specially protected areas provide environmental services that deter or prevent negative environmental effects: sudden changes in runoff during spring floods of nearby territories and settlements, especially downstream of rivers; absorption of harmful substances (dust, pollutants, emissions, etc.) by forest ecosystems; dilution of storm pollution; prevention of wind and landscape erosion processes. It is widely known that the water protection and regulatory function of forests consists in the accumulation of water in forest soils and, as a result, the protection of adjacent territories from flooding and waterlogging of soils; increasing the intensity of groundwater formation. The preservation of the recreational qualities of landscapes, their recreational capacity, the productivity of bio-resources, and the ability to restore contribute to the development of recreation, ecological and educational tourism. In addition to direct income from the quality of the natural environment of existing PSNAs in the region, there is an indirect income that is not taken into account in this calculation. It can be formed through ecosystem services such as insect pollination of grasses, nesting of migratory birds, wild deer habitat, carbon and methane storage in the permafrost zone of wetlands and forest ecosystems (zones of tundra forests and rare-coniferous taiga). The role of such services is great, and it can be felt only at the moment of their loss. In this regard, many ecologists consolidate their efforts for economic and other modern assessments, creating models and schemes for the use of natural resources [1; 14].

However, there is an opinion about an inappropriate inclusion of the ES value in the calculations of key financial indicators of the economy. Thus, realizing the role of the ES in the economic processes of society's development, Yu.G. Puzachenko proves a small contribution of natural resources to the market value and integral indicators (for example, the GDP) [33].

Traditionally, "green" indices are based on subtracting from the GDP losses of natural capital and potential costs of preventing and eliminating pollution in the atmosphere, water basin, and soil. Nevertheless, foreign authors see this as a violation of the correctness of estimates and the resulting distortion of information [34]. The main reason for this distortion is hypothetical nature or replacement of indicators that only indirectly reflect the situation, as well as low reliability of information. According to D. V. Kasimov, "it is important to understand that economic and especially monetary valuation will always cover only a part of actual or total value of the ecosystem or its services. Despite the improvements, there are still large gaps in knowledge and the need to improve approaches, models, and databases for calculating total economic value of an entire set of ecosystem service" [4].

An important component of the ES economic assessment is the identification of recipients of benefits from its usage. This fact allows the selection of the subsequent evaluation of protected areas (*Tab. 4*).

[16] Popularity of ecotourism in Russia is growing. In 2019, a number of visitors to the SPNA exceeded 8 million people. The Ministry of Natural Resources. February 7, 2020. Available at: http://www.mnr.gov.ru/news/populyarnost_ekoturizma_v_rossii_rastet_v_2019_godu_kolichestvo_posetiteley_oopt_prevysilo_8_mln_che/ (accessed: April 20, 2020).

Table 4. Distribution of recipients of benefits from the use of ecosystem services

Ecosystem service	Recipients of benefits	Positive effect
Carbon deposition	Global community	Carbon dioxide absorption from the atmosphere
Water regulation	Nearby areas of the region; enterprises that depend on the water quality downstream; agricultural areas	Regulation of the flow of small rivers and streams; flood prevention
Water clearing		Natural clearing of storm water and wastewater entering water bodies
Protection of soils from erosion		Prevention of damage from the demolition of soil by rivers; preservation of natural soil fertility
Conservation of biodiversity	Country, region	Preservation of the species diversity inherent in this natural zone; regulation of the number and abundance of different groups of plants and animals (for example, some species of rodents, predators and ungulates); reduction of the risk of invasions of alien species, the development of natural focal diseases, the occurrence of conflict situations in agriculture
Absorption of pollutants from the air (dust, suspended particles)	Nearby areas of the region	Preventing diseases; improving mental health; reducing the cost of cleaning the air

Sources: *Ecosystem Services in Russia: Prototype of the National Report. Vol. 1. Terrestrial Ecosystem Services.* Ed. by E.N. Bukvareva, D.G. Zamolodchikov. Moscow: Publishing House of the Biodiversity Conservation Center, 2016. 148 p.; *Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being*. UNEP, Island Press, Washington DC, 2005. 283 p.; K. Grunewald [et al.]. *Erfassung und Bewertung von Ökosystemdienstleistungen (ÖSD)*. Bundesamt für Naturschutz. 2014. 374 p.

As in the table, only one function of natural capital – carbon deposition – can be excluded from the calculation according to the criterion of beneficiaries. To determine the value of the territory, it is of global importance, but for the benefits of the region without the introduction of market mechanisms of trade, as is the case in other countries, this eco-service cannot be included in the calculation of the "SPNA" indicator of formula (1).

Water regulation and water clearing services are extremely important for the surrounding areas, as well as for businesses situated at the river downstream. By accumulating water in the underground runoff and cleaning up pollution by swamp ecosystems, forest and water ecosystems save the money that would be needed to clean up the runoff and prevent flooding.

In order to assess the significance degree of these functions, it is possible to use the criteria of E.N. Bukvareva. She argues that, for the beneficiaries of water regulation and water clearing services, the relevance is determined by population density (especially in rural areas) and agriculture development [2]. The protective function of forest ecosystems from soil erosion in nearby areas is usually important when these lands are actively used for agricultural purposes.

Considering the fact that the nearby districts (Intinsky, Pechorsky, Vuktylsky, and Troitsko-Pechorsky), adjacent to the national park and nature reserve, are located in a zone of rural underdevelopment and low population density, we think that it is possible to reduce the calculated values by half. Air purification by vegetation (pollution absorption and dust deposition) refers to the ES of climate and atmospheric regulation and allows enterprises to save on air purification by dust collection plants. There are no production facilities that produce technogenic pollution and are located in the vicinity of large SPNAs of the region. Thus, it is most likely that the SPNAs absorb pollution from transboundary air movement. Regulatory services of regional zakazniki can fully participate in the assessment of protected areas with the exception of carbon deposition services. Despite the underdevelopment of agricultural economic sectors in the regions of the Komi Republic, they play an important stabilizing role in preserving

Table 5. SPNA assessment for the calculation of adjusted net savings

SPNA	Area, thousand hectares	Value of ecosystem services, million rubles	Gross value added of tourist destinations, million rubles	SPNA assessment, million rubles
Reserve	721,3	1763.9	88.2	1852.1
National park	1894,1	5596.9	13.3	5610.2
Zakazniki	1281,8	12933.2	18.5	12951.7
Total	**3897,2**	**20294.0**	**120.0**	**20414.0**
Source: own calculation.				

natural capital [36]. Presence of large production facilities and life of urban and rural populations near nature reserves make it possible to include regulatory services in the calculation. Thus, with the exception of the carbon deposit service, the calculations fully use the ES for regional zakazniki (complex and forest ones) and partially – for federal SPNA areas.

Therefore, the combination principle includes the sum of the regulatory ecosystem services and gross value added of tourist destinations of the region's SPNA (GVATId). Thus, the SPNA assessment in the calculation of adjusted net savings for the Komi Republic has the following form:

$$SPNA = ES + GVATI_д, \quad (3)$$

where the ES is composed of water regulation, water clearing, soil protection from erosion, biodiversity preservation, and the absorption of air contaminants. *Table 5* combines these two approaches to the assessment of the SPNA for the calculation of adjusted net savings.

According to the proposed approach, the SPNA assessment is 20.4 billion rubles according to 2018 data, and the share of the ES exceeds 90%.

The principle of combining the assessment of eco-services' value and tourist destinations' gross value added can also be used for other regions. The value of regulatory services may vary depending on population density of surrounding areas, development of agricultural sector, and presence of large industrial facilities that have a negative environmental impact.

The significance of including the ES in the assessment of protected areas is not to "sell" these resources or receive compensation for their loss. The value of the ES in monetary terms is an estimate of its benefits to society – benefits that will be lost in case of destruction [16]. Thus, the inclusion of a value assessment of the value of ecosystem services to society can serve as a powerful tool for making more effective and balanced decisions.

Conclusion

Currently, the approach to assessing the SPNA in the regional context does not fully take into account the role of protected areas as a reserve for preserving the ecosystem functions of natural ecosystems and an object of economic activity. As a result, there is a qualitative underestimation of the ecosystem services of protected areas and key economic activities – tourism in particular. The presented approach within the framework of adjusting net savings by determining the value of regulatory ecosystem services and measuring the value added of the SPNA tourist destinations allows us to determine the contribution of protected areas to the regional economy more correctly. Water protection, regulatory and clearing services of ecosystems, protection of soil cover from erosion, biodiversity preservation, and absorption of pollutants from the atmosphere by forest ecosystems can be used to calculate the SPNA value at the regional level. It created the conditions for introducing permissible business activities in the SPNAs and reducing production costs in the neighboring territories in the presence of industrial plants and agricultural farms (personal and state).

Consequently, these functions are involved as resources in the assessment of SPNA and its effectiveness. The preservation of this potential should become the norm for conducting permissible economic activities at protected sites. At the same time, in order to increase the efficiency of facilities, conditions are necessary for the development of tourism, which consists of strengthening the interaction of protected area administrations with service companies that provide a quality factor of infrastructure, accessibility to facilities and food services.

As a result of the SPNA assessment, a value of 20.4 billion rubles for 2018 was obtained, which can be used for subsequent calculations when adjusting net savings. The economic contribution of specially protected natural objects in terms of the use of regulatory ecosystem services, tourist and recreational activities amounted to 3.2% of the GRP in 2018. Thus, the proposed approach allows us to reflect the socio-economic and environmental contribution of the SPNA to the economy of the Komi Republic. Currently, the services provided by ecosystems cannot be put up for sale, such as wood, berries or mushrooms, hunting or fishing resources. However, the disclosure of their potential in the value system of the SPNA is considered one of the steps toward resource efficiency.

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Analyzing Trends in Training Highly Qualified Personnel in the Interests of Strategic Development of the Arctic Zone of the Russian Federation

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Abstract. The research urgency is caused by implementing the investment projects for the development of raw material base and transport infrastructure, solution of the long-term goals of socio-economic development, ensuring national security of the Russian Arctic which are provided by the Basic Principles of Russian Federation State Policy in the Arctic to 2035 and the Strategy for the Development of the Arctic Zone of the Russian Federation up to 2020. One of the priorities is training of highly qualified personnel for work in the extreme natural and economic conditions of the Arctic, which will increase the efficiency of labor results and ensure comprehensive safety of the population. The purpose of the study is a quantitative and qualitative analysis of highly qualified personnel training in the interests of the development of the Russian Arctic in 2015–2018. The scientific novelty and theoretical significance of the article is due to the fact that the implementation of the so-called "Arctic" educational programs by Russian universities, including those belonging to the National Arctic Scientific and Educational Consortium, is monitored using sociological and analytical methods. Based on the results of the study and the existing experience, the authors propose the ways to improve the quality of training, including updating educational standards, using network forms of higher education, developing targeted training and innovative research infrastructure, and creating a world-class research and education center based on the universities in the Arctic zone of the Russian Federation. The researchers make a conclusion about the possibility of using the study results when developing the measures of regional labor management policy, as well as the formation of expert and analytical opinion on the issues of highly qualified personnel training at the institutes of higher education in the Arctic zone of the Russian Federation. The materials of the article have been repeatedly tested and can be used in the educational process at universities. A further scientific search may be associated with an attempt to compare the features of personnel training at the universities of the Arctic zone of the Russian Federation and the University of the Arctic.

Key words: Arctic zone of the Russian Federation, higher education, labor resources.

Introduction

The Arctic problem has been remaining relevant for several decades. One of the reasons for this is related to the irreversible changes taking place in the Arctic region, which require consideration. Climate transformations determine the Arctic countries' attempts to change their geopolitical position, contribute to the activation of their economic activities in the Arctic, and also touch upon the risks of managing the Arctic (northern) territories by many states that are difficult to calculate in the ultra-long term perspective (from 50 to 100 years).

The relevance of the study is based on the fact that Russia is forming the policy of managing the socio-economic development of the Arctic zone of the Russian Federation (hereinafter – the Russian Arctic, the Arctic Zone) in the 21st century. The Russian Arctic strategy implies innovative modernization of the economy and social sphere taking into account the use of intellectual resources and the formation of advanced knowledge[1]. The Basic Principles of Russian Federation State Policy in the Arctic to 2035 (approved by the Executive Order of the President of Russia in March 2020) develop the provisions of the Basic Principles of Russian Federation State Policy in the Arctic to 2020 and the further perspective[2]. Human capital development, personnel training in the system

[1] Strategy for the development of the Arctic zone of the Russian Federation and national security up to 2020. Available at: http://government.ru/info/ (accessed: February 22, 2019).

[2] Basic principles of Russian Federation state policy in the Arctic to 2035: approved by the Executive Order of the President of Russia no. 164, dated March 5, 2020. Available at: http://government.ru/info/ (accessed: March 25, 2020).

of higher education (hereinafter – HE) and secondary vocational education (hereinafter – SVE), indigenous population included, the preservation of social guarantees and compensations for people working and residing in the Russian Arctic are the priorities of Russian policy in the Arctic. "Acceleration of the economic development of the RF Arctic zone territories" was declared one of the goals of this policy in 2020[3]. At the state level, it is necessary to focus on the elements usage of which will provide a synergistic effect in the implementation of the priorities of the Russian Arctic development. One of these elements is the training of personnel in the HE system. With the start of large-scale investment projects for the development of mineral resources and transport infrastructure in the Russian Arctic (hereinafter – megaprojects), resource and transport corporations, government agencies, educational and research organizations of the Russian Arctic face a shortage of highly qualified specialists who are able to live and work effectively in the extreme conditions of the Arctic. Their lack is a consequence of the population outflow, the weak involvement of businesses in targeted training and professional development of employees, the weakness of the scientific and educational space (there are no institutions of higher education in some territories of the Russian Arctic – in the Nenets Autonomous Okrug in particular) and information and analytical support for its functioning [1].

The issues of personnel training in the entities of the Russian Arctic are actively analyzed by many researchers. With the participation of Russian experts, the Arctic Council publishes a report on the state, socio-economic, and demographic characteristics of human capital in the Arctic [1]. B.A. Revich, T.L. Khar'kova, E.A. Kvasha [2] assess the demographic situation and the quality of human resources in the subjects of the Northern Economic Region. N.G. Men'shikh notes that the shortage of personnel hinders the sustainable socio-economic development of not only the Far North and the Arctic but the entire state. The quantitative and qualitative imbalance in the labor market threatens the implementation of megaprojects and national projects in the Arctic zone. The problem of personnel shortage is not solved by means of specialists' inflow from other regions of the country and abroad. The author differentiates two groups of tasks necessary to solve the problem of personnel training in the interests of the Russian Arctic. "The first group includes ensuring the innovative nature of basic education, updating the structure of educational institutions network, formation of integrated scientific and educational structures; provision of a competence-based approach adopted due to strengthening the relationship between theoretical knowledge and practical skills; development of educational programs variability, including the creation of an applied bachelor's degree system. The second group of tasks involves creation of a system of continuing education, training and retraining of personnel, including a system to support consumers of continuing professional education services; supporting corporate programs for training and retraining of professional personnel; creation of a support system for organizations providing continuing professional education services" [3, p. 98].

A.V. Simakova, I.S. Stepus', and E.A. Pitukhin analyze universities' potential for training personnel for the development of the Russian Arctic and the results of a survey of employers in key sectors of the Russian Arctic economy. According to the survey results, the authors formed a list of popular professions, most of them belonging to the SVE system. However, the subjects of the Russian Arctic do not have training in many of these areas. Using expert methods, the authors assess the coverage of

[3] Basic principles of Russian Federation state policy in the Arctic to 2035: approved by the Executive Order of the President of Russia no. 164, dated March 5, 2020. Available at: http://government.ru/info/ (accessed: March 25, 2020).

employers' needs for highly qualified labor resources both in general and in the context of specialties and training areas. The researchers pay attention to the problem of graduates' migration outside the Arctic region and its impact on the personnel potential of the territory. The research proves that it is advisable to develop international cooperation within the Barents Euro-Arctic region in order to form advanced professional competencies among Russian graduates based on the experience of universities and enterprises of the Republic of Karelia [4; 5; 6; 7].

O.M. Ostrovskaya emphasizes that the mission of Russian universities is "to build up the intellectual potential for the country's development", to provide society with a constant inflow of modern-minded and socially responsible young citizens. The author compares the personnel training processes in the higher education sphere during the Soviet and current time periods. The researcher considers the conditions that do not always contribute to improving the quality and accessibility of education, but which should be taken into account by universities in educational process and when promoting their graduates' employment. The research presents the current forms of training and cooperation between universities, enterprises, science, and government bodies. The author makes conclusions about the need to break the distance between the content of training at the university and the prospective personnel needs of the economy [8].

M.V. Ivanova and O.V. Shabalina consider the interconnection between higher education and the possibilities of implementing state policy in the North and in the Russian Arctic at the present stage. According to the authors, the factors hindering the effective training of personnel in the Arctic regions include the imbalance between supply and demand in territorial and professional terms. There are mutually exclusive trends in the labor market: on the one hand, there is a shortage of labor, on the other – there are difficulties in finding a job. The reform of higher education did not fully solve the problem of securing young people in the northern regions and meeting the needs of regional labor markets. The article presents the historical experience of involving young people in the development of the Arctic showing the importance of higher education, which began in the Soviet period. "The training of specialists who improved the theoretical, material and technical base of Russian science and accumulated empirical data ... allowed Russia to implement a large number of state tasks in order to protect its economic and geopolitical interests in the Arctic in the 18th – early 20th centuries" [9, p. 200].

V.P. Ignatiev, A.P. Bogushevich, and A.A. Daramaeva consider the issues related to training personnel for the Arctic zone of the Republic of Sakha (Yakutia) and believe that a systematic approach should be used in the development of the territory. To train personnel capable of working in the extreme conditions of the Arctic, it is necessary to update (or create in some places) educational and professional standards with the participation of employers, to develop disciplines that form special competencies necessary for working in the Arctic. The authors offer a list of such competencies, as well as examples of HE educational programs for training specialists, including online forms [10].

O.V. Budzinskaya notes that the projects on deposits development, most of which have not yet been released to the real economy, are short of specialists skilled in robot systems settings, upgrading (or creating) information and telecommunication technologies on the land territories of the Russian Arctic. The analysis showed that the Russian Arctic is characterized by the most extensive and deep network in the Arctic region for training specialists in the institutions of secondary vocational education and higher education [11].

Smyaglikova E.A. and Kostylev I.I. [12; 13] analyze the features of the Arctic labor market

and personnel training for the development of cargo transportation via the Northern Sea Route (hereinafter – NSR). V.G. Tsuprik, A.B. Afonin, P.A. Garibin emphasize that, in the entities of the Russian Arctic, training is in demand due to the activity of Russia and foreign countries for the extraction of resources in the shelf seas of the Arctic ocean, construction of infrastructure, and NSR development. The authors provide examples of partnerships at the national and international levels in the field of personnel support for sustainable socio-economic development of the northern territories [14].

Foreign experts and researchers do not consider the problems of higher education and training in the Far North as widely as their Russian colleagues do. They are attracted to private aspects, such as the industry standards of secondary and higher education. The use of sociological methods to study the education system is often limited to school education; researchers analyze the opinions of adolescents and teachers on the organization and prospects of education and upbringing. Much attention is paid to the analysis of the educational space among indigenous peoples. We should note that Russian sources lack such comparisons as "education – consolidation in the North – geopolitics", which are common in foreign publications [15; 16]. Researchers from the Estonian University of Applied Sciences and Entrepreneurship, analyzing the process of training at universities, formed a list of specific skills and studied the students' opinion about the role of "northern" skills in the curriculum. They revealed that students highly appreciate the importance of these skills and focus on the need for their acquisition and development in the process of their studies [17].

The articles [18; 19] present the experience of forming a list of professions taking into account the priorities of the Arctic development and criteria formed on the basis of data from the monitoring of vacancies of employment services and the forecast of the employers' personnel needs. S. Moller explores the models of decentralized nursing education in the circumpolar North, considering educational programs at the University of Greenland [20]. M. Salo analyzes the creation of a high-tech "Oulu Technopark" in the Far North of Finland, which is one of the first in the North of Europe based on the collaboration of the state, the University of Oulu, and Nokia Corporation [21]. O.A. Misund [22] approaches the importance of preserving and developing higher education in Svalbard from the standpoint of securing Norway on it and implementing the provisions of the national Arctic strategy. J. McDonnell, J. Kohut, O. Schofield, and others [23] focus on the Polar ICE platform (www.polar-ice.org), a comprehensive educational and information program to provide virtual access to the Polar Regions for high school teachers and university scientists to improve their understanding of polar science. E.V. Bania and S.E. Kvermo [24] study the mental health characteristics of indigenous Sami and non-indigenous youth in the socio-cultural space of rural and urban areas of the Far North of Norway. The purpose of K. Black's article [25] is to analyze the features of the development of postgraduate education in the Western and Eastern Arctic in 1945–1990 and clarify the role of Canadian universities in the implementation of socio-economic goals of nation-building in northern Canada.

This article continues the research that the authors started in 2016–2017, but it does not aim at comparing the results of the two studies in detail. We have found that the deployment of megaprojects and the emigration of the working-age population from the subjects of the Russian Arctic can be considered as factors contributing to the formation of the need for labor resources [26]. One of our conclusions reveals that there is a need to improve the state policy in the field of personnel training for the implementation of the Arctic strategy of Russia.

This makes the task of organizing and conducting research on the system of training personnel with higher education to work in the Russian Arctic relevant.

In 2018, we carried out a study aimed at quantitative and qualitative analysis of highly qualified personnel training in the interests of the development of the Russian Arctic in 2015–2018. Quantitative analysis implied the establishment of a number of offered educational programs with the Arctic focus and their distribution across the education levels (bachelor, specialist, master, and post-graduate studies); a number of educational programs graduates including those enrolled in the target training contracts; distribution of educational programs by some integrated groups of training areas (hereinafter – IGTA) and thematic groups defined by the Strategy of Scientific and Technological Development of the Russian Federation, in the HE organizations that participated in the monitoring for the 2015–2018 period[4]. The qualitative analysis assumed establishing the areas within which personnel training is carried out in the interests of the development of the Russian Arctic by the HE organizations that participated in the monitoring.

The study covered 121 HE organizations, including the National Arctic Research and Educational Consortium (hereinafter – NAREC). NAREC was established in 2016 on the basis of the Northern (Arctic) Federal University named after M.V. Lomonosov (hereinafter – NArFU). The purpose of the association is to consolidate public and private resources (including scientific initiatives) in the field of scientific and personnel support for sustainable socio-economic development of the Arctic and northern territories of the Russian Federation. "NAREC is focused on creating a unified scientific and educational space that provides information and analytical support for the development projects of the Russian Arctic, including the coordination of research and educational activities"[5]. Scientific research of the association covers fundamental and applied aspects of natural, social, humanitarian and engineering sciences. NAREC is a co-organizer of the scientific and educational expedition "Arctic Floating University" (organized by NArFU, Russian Geographical Society, Roshydromet, Russian and foreign research and educational institutions); it supports talented students (the annual All-Russian competition of student research papers on Arctic), student mobility (annual research internships of the winners of this competition), information exchange development (monitoring and publishing news on the NAREC website), mass open online courses (MOOC) on Arctic, development of professional educational and industry standards for the training of highly qualified specialists[6].

Research methodology. The main research methods involve sociological survey and system analysis. As far as there is no federal statistics data on the considered problem, the authors relied on the results of the state assignments of the Ministry of Education and Science (hereinafter – MES), implemented by NArFU in 2016–2018, in order to identify the universities offering Arctic focused programs[7].

[4] On the scientific and technological development strategy of the Russian Federation: Executive Order no. 642, dated December 1, 2016. Available at: http://kremlin.ru/acts/bank/41449 (accessed: March 10, 2020).

[5] National Arctic Research and Educational Consortium. Available at: http://arctic-union.ru/contacts/ (accessed: March 28, 2020).

[6] National Arctic Research and Educational Consortium. Available at: http://arctic-union.ru/contacts/ (accessed: March 28, 2020).

[7] MES State Assignment no. 27.262.2016/HM "Information and analytical support of scientific and educational space of the Arctic zone of the Russian Federation" (2016), MES State Assignment no. 27.9701.2017/HM "Development of a monitoring system of training of specialists with higher education for working and conducting research in the Arctic zone of the Russian Federation" (2017), MES State Assignment no. 27.12661.2018/12.1 "Expert-analytical support of the implementation of state policy in the field of training for work in the Arctic zone of the Russian Federation and international cooperation in the framework of the University of the Arctic" (2018).

The methodological basis of the study was the structural and functional approach, which allowed considering the system of training highly qualified personnel through a set of implemented functions and activities. Using the analytical method and systematic approach, we analyzed educational and methodical documentation of the universities (curricula, basic professional educational programs, working programs of subjects), regulatory documents (Federal State Educational Standards, hereinafter – FSES, professional and industry standards). Using the methods of generalization and analysis helped us to evaluate the content of a few foreign and Russian statistical, information and scientific sources on the studied topic.

The research program included designing a questionnaire that allowed identifying the HE organizations implementing Arctic focused educational programs, as well as determining the quantitative and qualitative characteristics of training personnel to work in the Arctic. The data was collected remotely via the Internet.

Preparation of the list of scientific areas implemented by universities and scientific organizations in the interests of the Russian Arctic included several stages. At the first stage, we compiled a list of education areas on the basis of the scientific and technical information category and the nomenclature of training areas and specialties. Next stage included expert assessment of the thematic field of the projects carried out by universities and scientific organizations, which made it possible to classify and systematize them.

The monitoring covered 121 HE organizations, including NAREC universities. The criteria that determine the Arctic focus of the educational program include the following parameters:

– partner organizations carrying out economic activities in the territory of the Russian Arctic are involved in the implementation of the educational program;

– provision of students' internships in such organizations (an agreement on organizing and doing the internship);

– doing research, participation in projects on Arctic in cooperation with Russian and international partners;

– availability of basic departments on the basis of universities and enterprises of the Russian Arctic;

– availability of "Arctic focused" skills and competencies in the main educational programs, work programs of subjects, evaluation funds in the analyzed areas of training (for example, in NArFU there is a profile of "Polar Meteorology" within the training areas 05.03.04 Hydrometeorology, a profile of "Natural resource potential of the Arctic" within the training area 05.03.06 Ecology and Nature Management, and others).

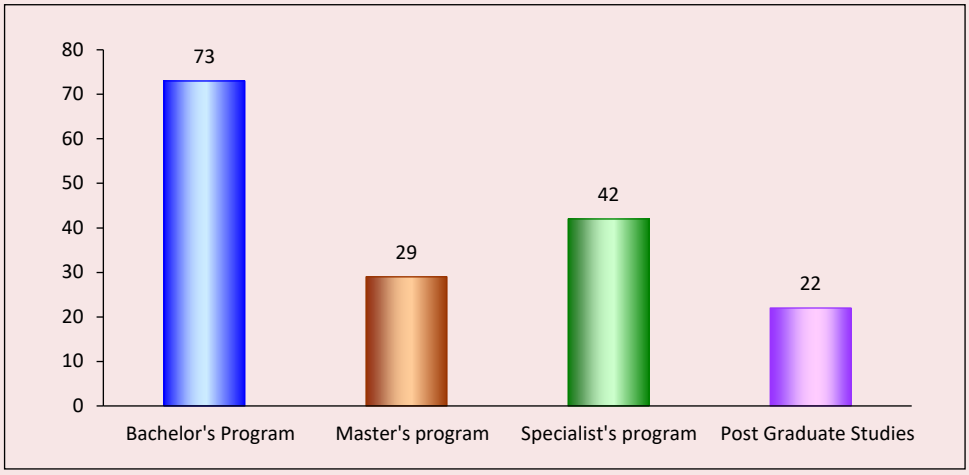
Results and discussion. According to the results of the 2018 monitoring, we have found out that 32 HE organizations out of 121 (13 are part of NAREC) implement Arctic focused programs. Totally the universities of the Russian Arctic implement 166 Arctic focused training programs. Their distribution by level of training is shown in *figure 1*.

The following *table* shows the distribution of educational programs for some IGTA.

The monitoring results showed that 92% of the Arctic focused educational programs include Arctic modules or subjects. Students' research works of 83% of the master's programs of the educational organizations included in NAREC reflect the Arctic specifics.

More than 90% (more than 360 units) of Arctic educational programs are implemented in the areas defined by the Strategy of Scientific and Technological Development of the Russian Federation. 52.4% (218 units) are related to training personnel for the implementation of the transition to digital, intelligent production technologies, the use of robotic systems, machine learning and artificial intelligence, big data processing

Figure 1. Distribution of Arctic focused educational programs by levels of personnel training in the HE organizations, 2018, units



Compiled by: monitoring data.

Distribution of Arctic focused educational programs in some IGTA, 2018

IGTA	Number of educational programs by level of education, units.			
	Bachelor's program	Specialist's program	Master's program	Post Graduate studies
08.00.00 Construction Methods and Technologies	17	6	10	–
21.00.00 Applied Geology, Mining, Oil and Gas and Geodesy	15	12	4	–
44.00.00 Education and Pedagogical Sciences	27	–	–	–
15.00.00 Mechanical Engineering	19	20	6	–
05.00.00 Earth Sciences	5	–	7	6
06.00.00 Biological Sciences	6	–	6	4
31.00.00 Clinical Medicine	–	4	–	5
13.00.00 Electric and Heat Power Engineering	5	–	3	–
20.00.00 Technosphere Safety and Environmental Management	6	–	–	–
26.00.00 Methods and Technologies of Shipbuilding and Water Transport	6	–	–	–
Compiled by: monitoring data.				

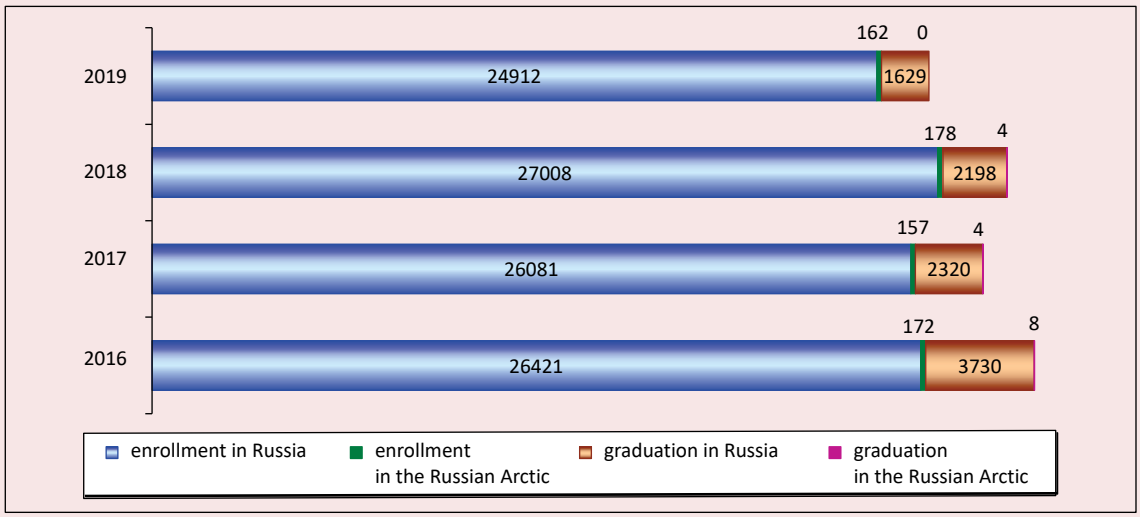
systems. 11.8% (49 units) are aimed at forming an effective response of society to global challenges arising from the interaction of man, technology and the environment, the development of social institutions, including using the methods of the humanities and social sciences. 10.6% (44 units) are focused on the transition to environmentally friendly and resource-saving energy, improving the efficiency of mining and deep processing of mineral raw materials, creating new energy sources, methods of its transportation and storage. More than 50% (more than 200 units) of Arctic focused educational programs are in the field of engineering. They are distributed according to the IGTA in the following way: 08.00.00 Construction methods and technologies (17.1%, 35 programs), 21.00.00 Applied Geology, Mining, Oil and Gas, and Geodesy (16.2%, 30 programs), 13.00.00 Electric

and Heat Power Engineering (8.3%, 18 programs), 26.00.00 Methods and Technologies of Shipbuilding and Water Transport (6.9%, 15 programs), 09.00.00 Computer Science and Engineering (3.7%, 8 programs), 23.00.00 Land Transport Engineering and Technology (3.7%, 8 programs), 15.00.00 Mechanical Engineering (3.7%, 8 programs).

A total number of graduates of the Arctic focused educational programs in the HE organizations in 2015–2018 was 23,871 people. They included 760 people studied under targeted training contracts: 40% in the bachelor's programs, 5.2% in the specialist's programs, 2.5% in the master's programs. Thus, about 3% of a total number of graduates of the Arctic focused educational programs were trained under targeted training contracts, including 62% at the universities belonging to the Russian Arctic. These results allow us to conclude that the HE organizations do not sufficiently use the capabilities of business enterprises for the implementation of educational programs in the organization of targeted training. The surveys have shown that the implementation of more than 90% of the Arctic focused educational programs provides for the possibility of internships at enterprises engaged in economic activities in the territory of the Russian Arctic.

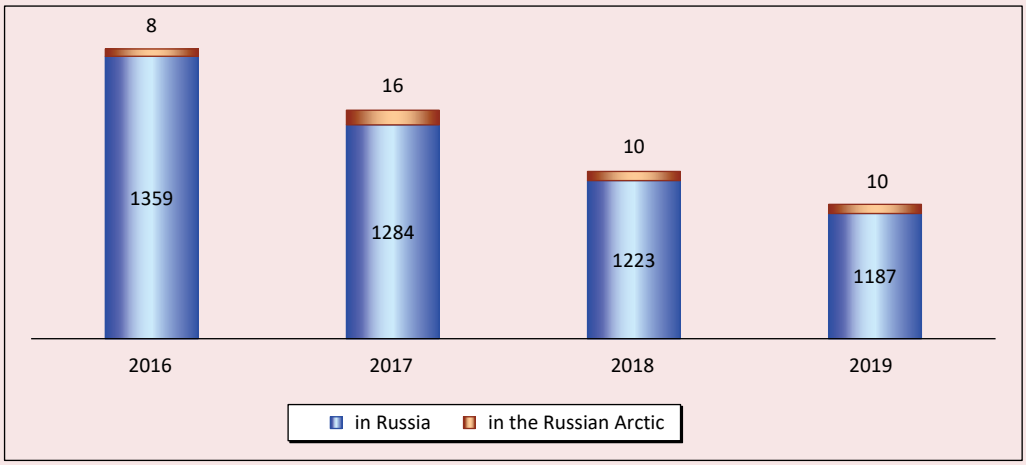
We can analyze some qualitative indicators of training of highly qualified personnel for work in universities and research organizations of the Russian Federation and its Arctic zone by means of the official statistics (*Fig. 2–5*). Without comparing the indicators with the all-Russian ones, we should note that almost all of them show negative dynamics in the entities of the Russian Arctic. This factor may affect the fact that the share of high-tech innovative goods, works (services) of organizations in a total volume of goods shipped, works (services) performed in entities of the Russian Arctic is three to five times lower than an average Russian level. The volume of innovative goods, works, and services produced at the enterprises of the Russian Arctic decreases. Against this background, the internal running costs of research and development (hereinafter – R&D) in the entities of the Russian Arctic increased insignificantly: from 4272.5 million

Figure 2. Number of candidates enrolled at and graduated from post-graduate studies, 2016–2019, people



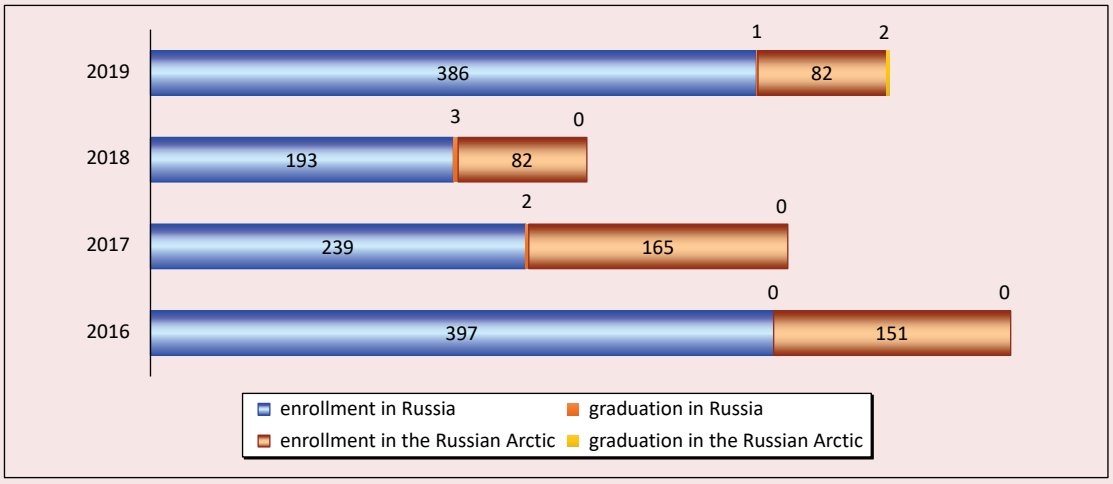
Calculated by: Regional statistics. Arctic zone of the Russian Federation. Available at: https://www.gks.ru/regional statistics (accessed: March 30, 2020).

Figure 3. Number of organizations with post-graduate studies in the Russian Federation and the Russian Arctic, 2016–2019, units



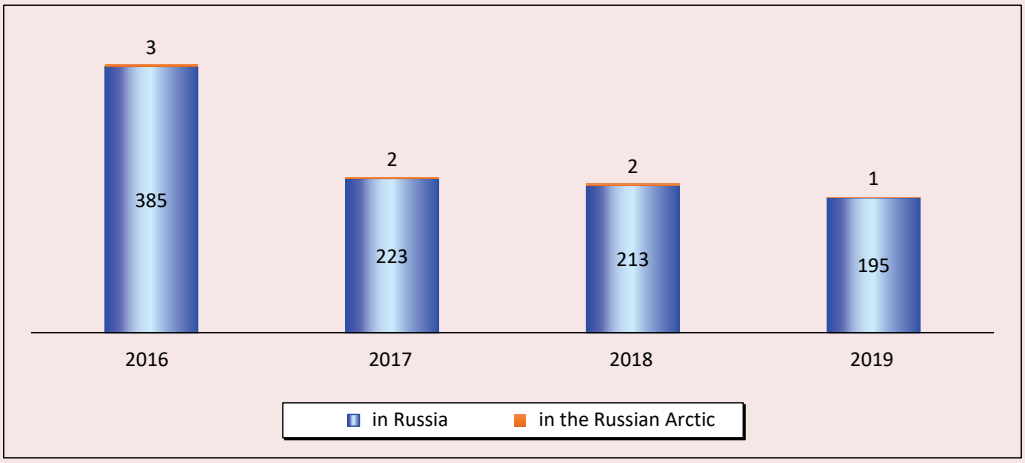
Calculated by: Regional statistics. Arctic zone of the Russian Federation. Available at: https://www.gks.ru/regional statistics (accessed: March 30, 2020).

Figure 4. Number of candidates enrolled at and graduated from doctoral studies, 2016–2019, people



Calculated by: Regional statistics. Arctic zone of the Russian Federation. Available at: https://www.gks.ru/regional statistics (accessed: March 30, 2020).

Figure 5. Number of organizations with doctoral studies in the Russian Federation and the Russian Arctic, 2016–2019, units



Calculated by: Regional statistics. Arctic zone of the Russian Federation. Available at: https://www.gks.ru/regional statistics (accessed: March 30, 2020).

rubles in 2016 (the Russian figure is 873878.9 million rubles) to 4579.9 million rubles in 2018 (the Russian figure is 960667.9 million rubles). The costs for technological innovations in the subjects of the Russian Arctic increased approximately fivefold in 2016–2018[8].

Conclusions and recommendations. Based on the results of the study, we can draw the following conclusions. As we noted earlier: "The current need for labor resources with higher education is 6,198 people (including 3,680 with bachelor's degree, 1,364 specialists, 1,145 with master's degree). The medium-term (until 2022) need is 8,261 people (including 4,658 with bachelor's degree, 1,836 specialists, 1,753 with master's degree). In the regional context, the greatest demand for labor resources was shown by the Murmansk Oblast, the Yamalo-Nenets Autonomous Okrug, and the Komi Republic. The Nenets and Chukotka Autonomous okrugs and the Republic of Sakha (Yakutia) demonstrated the lowest indicators of personnel needs" [26, p. 189]. Comparing these data with those obtained as the results of this study (the number of graduates of Arctic focused educational programs in the HE organizations in 2015–2018 is 23,871 people), we can argue that, in quantitative terms, a number of the HE organizations' graduates is several times higher than the personnel required for them. This may contribute to unemployment growth, outflow of able-bodied population, including highly qualified labor resources. These factors may ultimately lead to a further delay in the megaprojects implementation envisaged by the Russian Arctic strategy, and negatively affect the pace of the socio-economic development of the entities of the Russian Arctic. At the same time, employers are not always satisfied with the quality of the young professionals' training; they often have to "complete their studies" in the workplace [26]. In this regard, based on the results of the study and on the existing experience, in order to improve the

[8] Regional statistics. Arctic zone of the Russian Federation. Available at: http://www.gks.ru/free_doc/new_site/region_stat/arc_zona.html (accessed: March 10, 2020).

quality of training of highly qualified personnel for work in the Russian Arctic, we consider it appropriate to apply the following measures:

1. *FSES update*. Since 2017, the Ministry of Education and Science of the Russian Federation has been working on the inclusion of requirements of professional standards in the universities' educational practice. However, such standards are not approved for all IGTAs: for example, they are not available for hydrometeorology (IGTA group 05.00.00). It could be of practical interest if the Russian Arctic Federal University (NArFU) developed its own educational standards. This would increase the share of the applied bachelor's degree programs, and purposefully respond to the employers' requests. The authors of the research have experience in such activities.

2. *Modernizing targeted training tools*. Since 2016, the Ministry of Education and Science has been developing a new form of contract for targeted admission and training between the university, the customer (employer) and the applicant[9]. The state approach assumes mutual responsibility of all parties, including graduates' "serving out" at the enterprise or paying a penalty for non-performance of this obligation. Institutions of targeted admission and training can be developed with the participation of enterprises and businesses in fundamental and applied scientific research. In this case, there is a practical benefit both for the university and the enterprise, who are interested in the research.

3. *Development of basic departments*. The task of the basic department is to bring the educational process closer to the needs of the enterprise, to reduce the period of young specialists' "completing studies" at the workplace. Basic departments appeared in Russia in the early 2000s. In 2013, it became possible to organize them at enterprises for the implementation of practice-oriented training (applied bachelor's degree). Since 2017, MES has been using a special approach to licensing the educational activities of organizations that create basic departments. In particular, it fixed the possibility of licensing such structural units within the university, which removes excessive requirements for basic units in terms of the need to implement an educational program on their sites. Heads of enterprises on the basis of which they are created will be allowed to the management of such departments the [8, p. 66].

4. *Organization of educational activities using network forms*. As O.M. Ostrovskaya notes, network form, according to the definition of the Ministry of Education and Science, involves the organization of training using the resources of not only educational organizations, including the foreign one, but, if necessary, other organizations. "...The network form is used to improve the quality of education, expand students' access to modern educational technologies and training tools, provide an opportunity to choose training profiles and specializations, in-depth study of training modules / disciplines, form and develop professional competencies by studying the experience of leading educational and industrial organizations, increase the competitiveness of graduates in the Russian and international markets of educational services and labor..." [8, p. 60]. Based on the published recommendations of the Ministry of Education and Science, several such educational programs are being implemented in NArFU at all levels of training.

5. *Innovative infrastructure development*. The foundation for building the knowledge economy of the Russian Arctic is an innovative infrastructure, which is represented by technology parks, business incubators, venture capital companies, universities, federal research centers, and colleges (as experimental sites for pilot projects). It contributes to the sustainable functioning of the scientific and

[9] On improving the effectiveness of targeted training and targeted admission. Available at: http://government.ru/news/24903/ (accessed: March 10, 2020).

educational space, is used to create a system of intellectual presence in the Arctic in the long term, and provides a relevant level of scientific research and project expertise.

6. In modern conditions, a university is an organization "... which accumulates material, economic, scientific and technical, financial, information, intellectual resources and transforms them into the final product – general cultural and professional competencies of graduates, innovative educational programs, R&D..." [3, p. 101]. M.K. Yeseev addresses the issue of creating a research and educational center (REC) in the Arkhangelsk Oblast but on the interregional basis (for example, in cooperation with educational organizations and industrial enterprises of the Murmansk Oblast and other entities of the Russian Federation) [27]. RECs appearing in accordance with the goals of national projects should compete with the leading foreign universities and research organizations by 2024 on a competitive basis[10]. Russian RECs should link the selection of talented applicants, their training, the formation of advanced Arctic focused professional competencies, the organization and conduct of breakthrough scientific research, including the form of expeditions, and the accelerated implementation of R&D in the real sector of the economy. The development of the Arctic is a strategic goal of the Russian Federation's long-term development, so the introduction of new convergent technologies into the HE system, the use of adaptive materials and means of training and production, and the conduct of world-class research will have decisive importance for the sustainable socio-economic development of the Arctic. RECs can help creating a favorable image of universities at the international, federal and regional levels, which will contribute to the growth of interest in universities from applicants and the professional community.

The study elaborates the idea of training highly qualified workforce for the development of the Russian Arctic. For the first time, data from NAREC were used. The comparison of the material can only be carried out in a meaningful context with the expert and analytical materials of the University of the Arctic, the Arctic Council, the working group on Education and Science of the Council of the Barents Euro-Arctic region. They, however, do not differ in the completeness of the characteristics of the Russian Arctic. This is the novelty of the study.

The materials of the article are of theoretical significance; they have been repeatedly tested and can be used in the scientific and educational process in universities.

The monitoring allowed us to obtain the following practical results:

– identify the universities that implement Arctic focused educational programs;

– analyze the Arctic focused educational programs in the educational institutions of NAREC;

– create a list of skills and competencies for specialists in demand for work in the Arctic conditions;

– analyze the volume and structure of targeted admission and targeted training of students in 2018 for Arctic focused educational programs;

as well as others that are not considered in this article due to its limited size:

– identify the contribution of the regions of the Russian Federation to the implementation of scientific research in the interests of the development of the Russian Arctic;

– create a list of research directions implemented by universities and research organizations in the interests of the development of the Russian Arctic.

The research conclusions can be recommended for usage by executive authorities (including those

[10] On national goals and strategic objectives of the Russian Federation through to 2024: Executive Order no. 204, dated May 7, 2018 (p.10). Available at: http://www.kremlin.ru/acts/bank/43027/page/2 (accessed: April 8, 2020); World-class research and educational centers. Available at: https://www.ноц.рф/about (accessed: April 8, 2020).

at the interregional level, for example, between the Arkhangelsk Oblast and the Nenets Autonomous Okrug) when developing education policy, organizing research activities, managing scientific and educational space, training to meet the personnel needs of the Arctic zone subjects. The research can help fill the gap in statistical and analytical information in order to monitor the socio-economic development of the Russian Arctic. Based on its results, we have created information and analytical database, including a list and map of higher education organizations engaged in training and research in the interests of the development of the Russian Arctic[11], as well as database of employers in the Russian Arctic[12].

The future scientific research within the chosen topic may be aimed at the analysis of training for key sectors of the economy in the territories of the foreign Arctic (e.g., the University of the Arctic – UArctic), comparing this information with Russian counterparts, providing the rationale for the development of international cooperation in the scientific-educational sphere and exchange experience in personnel training in universities and colleges in the Arctic region.

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Potential of the Tourism and Recreation Sphere in the European North: Evaluation and Development Vector in terms of the Arctic Development

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Abstract. The article examines the potential and development vector of the tourism and recreation sphere in the European North in current conditions. We present the results of the research aimed at defining the potential level of the European North's tourism and recreation sphere and developing areas of its growth within the Arctic development on this basis. We name the objects of tourist attraction in the Arctic zones and show the monuments of cultural, historical, and natural heritage in the European North. We conduct a critical analysis of methodologies for defining the tourist potential level and reveal its pros and cons. We justify the necessity to develop efficient methodological approaches to studying the resource potential of the tourism and recreation sphere. We propose the following criteria for evaluating the tourist potential of northern regions: image of the tourist region, degree of the tourist infrastructure development, labor potential of tourism, transport accessibility and environmental friendliness of the territory, comfort and safety of tourists, competitive, institutional, and innovative components of the tourism sector. We reveal northern territories with the highest tourist potential on the basis of the results received after testing the author's methodology for evaluating the tourism resource potential, which implies the carrying out of the expert assessment considering the importance and manifestation of the tourist potential components. They are the basis for designing tourist and recreation zones and forming new tourist destinations. We mark the problems and prospects of developing tourist activity in the European North. It is justified that problem-oriented concept should be the development vector of the tourism and recreation sphere of

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northern tourist territories in modern conditions. We determine the significance of the study for the theory of tourism. We develop recommendations on the application of the obtained results in management and development of tourism and recreation in the European North.

Key words: tourism and recreation sphere, tourism development, tourism potential assessment, European North, Arctic.

Introduction

Due to global trends which negatively affect external and internal environment, there is a necessity to stabilize and increase the level of socio-economic conditions in Russian regions. The development of the tourist sectors is a promising area, and the implementation of its potential will allow reforming the reproductive structure of the economy. One of the priority strategic aims of the northern Russian territories development, defined in the Strategy for Developing the Russian Arctic Zone until 2020, is the Arctic tourism[1]. The Arctic zone is characterized by unique natu ral potential, cultural and historical heritages, which determine the exclusivity of tours to the Arctic. In this regard, the process of studying the tourist potential of the northern regions is of high importance in the modern conditions of the Arctic development. The purpose of the study is to assess the resource potential of the tourism and recreation sector of the European North and determine on this basis the areas of its development in the conditions of the Arctic development. To achieve this aim, we solved the following objectives:

– revealed the essence and features of the territory's tourist potential (the resource potential of tourism and recreation);

– conducted a critical analysis of approaches and methods of the tourist potential research;

– revealed the features of a current state of the tourism and recreation sphere in the European North;

– conducted and evaluated the resource potential of the tourism and recreation sector in the European North entities;

– highlighted the problems hindering the efficient realization of the tourist potential of the northern territories;

– determined the prospects for the tourism and recreation development in the European North in the context of the Arctic development.

The European North, being the largest tourist region in Russia, unites the territories of the Vologda, Arkhangelsk, and Murmansk oblasts, Karelia and Komi republics, as well as the Nenets Autonomous Okrug. The study of the tourist potential of the European North will help to determine the future prospects for the development of the tourism sector.

The tourism potential (the resource potential of tourism and recreation) is the resource base of a tourist region, which forms a opportunity to meet the needs of tourists and achieve the goals of tourism. The level of the tourism and recreation resource potential development is determined by a set of qualitative and quantitative characteristics. The size of the tourist potential reflects a totality of natural, cultural, historical and socio-economic resources that form the attractiveness of the territory for travelers. However, it is worth noting that, currently, there is a problem of evaluating the tourist potential of the territory, which is associated with the divergence of views of scientists and specialists from different professional fields on its components. At the same time, the results of the critical analysis of existing approaches to the study of the tourist potential of the territory suggest that the assessment

[1] Strategy for developing the Russian Arctic zone until 2020. Available at: http://government.ru/news/432/ (accessed: December 8, 2019).

of its individual components is the most developed – natural resources in particular [1–6].

The complexity of the structure of the tourism potential determines a variety of research approaches to the identification of components and criteria for its assessment (*Tab. 1*). Thus, in accordance with the approach of I.A. Bashalhanov and L.B. Bashalhanova, the evaluation criteria of the tourism potential are wildness, uniqueness and originality of recreational resources, quality of rest, fulfillment of human needs in communicating with "wild nature", and a possibility of restoring natural and recreational resources [1]. A.V. Drozdov [2] identifies the main components of the tourism potential for quantitative assessment: natural and cultural landscapes, means and conditions for conducting tours. Total value is converted into a qualitative characteristic. E.Yu. Kolbovskii

Table 1. Component structure and criteria for evaluating the tourist potential of the territory in researchers' approaches

Researcher	Components and evaluation criteria	Evaluation pros and cons
Bashalhanov I.A., Bashalhanova L.B.	Criteria: 1) quality of recreation, which is provided by a variety of opportunities (medical, sports, educational, aesthetic, etc.); 2) wildness, uniqueness and originality of recreational resources; 3) fulfillment of human needs in communicating with "wild nature"; 4) possibility of restoring natural and recreational resources.	Pros of evaluation are a wide range of components of natural potential, as well as consideration of its role in the process of meeting needs of a tourist. Cons: – lack of quantitative assessment; – cultural, historical, and infrastructural resources, as well as the socio-economic component, are not included.
Drozdov A.V.	1) Natural and cultural landscapes. 2) Means and conditions for the implementation of tours (landscape, recreational load, transport, public catering facilities, information materials, etc.).	Pros: – a fixed set of components is evaluated; – a qualitative scale is used to calculate the final value; – territorial scope of a comparison is indicated. Cons: – focus on using national parks in the conditions of specially protected natural areas; – lack of quantitative assessment.
Kolbovskii E.Yu.	1) Historical heritage objects. 2) Unique natural and cultural landscape-related objects. 3) Places chosen by population for their own recreation. 4) Potential types of tourism. 5) Objects used for tourism purposes. 6) Priority types of tourist activities. 7) Tour routes	Pros of this method include a possibility of a comprehensive study of the tourist potential and the identification of problems that hinder its development. Cons of the method are that it does not involve a quantitative and a general integral assessment.
Khudenkikh Yu.A.	Natural, historical, cultural, and socio-economic components.	The advantage of the method is the study of a totality of the main components of the tourist potential. Cons: – complexity of calculating the correction coefficients; – performance indicators of service and hospitality enterprises are not taken into account; – transport component is examined without taking into account the quality of the tourist transport used.
Rating Agency Expert RA	Natural and recreational, historical and cultural, infrastructural and entertainment potentials	The advantage of the method is the usage of the experts' experience in the process of assessing the tourist potential of the territory Cons: – there is no socio-economic component; – subjectivism, since indicators are calculated based on their significance, determined by experts.

End of Table 1

Researcher	Components and evaluation criteria	Evaluation pros and cons
Karachevskaya E.N.	Resource, environmental, infrastructure, and consumer factors.	The advantage of the method is to determine the impact of factors taking into account regionally significant criteria. However, indicators that characterize natural resources of a territory, as well as its socio-economic development, are not included.
Raskovalov V.P.	Natural, historical, cultural, and transport potentials.	The advantage of the methodology is determined by the fact that, in the process of assessing the tourist potential, a set of environmental factors that limit the development of tourism is taken into account. At the same time, infrastructure resources, socio-economic development and environmental friendliness of a territory are not taken into account.
Source: own compilation on the basis of methodological developments of researchers [1–6].		

improved this approach by proposing to consider not a separate part of a territory but a relatively large area of an administrative region or district.

Yu.A. Khudenkikh determines the amount of natural and historical-cultural components on the basis of a point assessment, taking into account the value of the territory's heritage [2]. The final result is the share of each specific territory in the natural, historical, cultural and socio-economic components of the potential. Rating Agency Expert RA annually calculates the tourist potential as its main component within the evaluation of Russian regions' investment potential.

E.N. Karachevskaya also evaluates the tourism potential using a generalized index and integral characteristics of resource, environmental, infrastructure, and consumer factors [3]. In accordance with the approach of V.P. Raskovalov, the complex potential of the territory consists of four unequal parts (blocks): natural, historical, cultural, transport potentials and a complex of environmental factors that limit the tourism development [4]. It is worth noting that all the considered approaches have pros and cons, as well as "bottlenecks", through which a subjective factor has a significant impact on evaluation.

In the works of A. Pashkevich, G. Fay, P. Maher, P. Mason, Yu.F. Lukin [7–18], the resource potential and features of the Arctic tourism organization are examined; problems and opportunities for conducting tourist activity in the northern territories are named. However, the researchers do not provide specific methods for assessing the tourism and recreation potential in relation to these territories. In this regard, we have developed our own approach to the study of the tourist potential of the northern regions, which allows conducing a comprehensive assessment. The novelty of the approach is provided by the formed system of evaluation criteria for revealing the content of the "tourist potential" category and determining the level of its development, taking into account the importance and expressiveness of each component in relation to the northern tourist territories.

Methodology of the study of the tourist potential of the territory

The developed system evaluation criteria to identify the level of the tourism potential of the northern territories is based on the following components of the tourist potential: general image of the tourism in an area, its infrastructure and transport, employment potential of tourism, environmental conditions of a territory, comfort and safety of tourists as well as competitive, institutional, and innovation in the tourism sector. The identified set of components of the tourist potential allows us to conduct a comprehensive analysis, taking into account features of the northern territories, rather than a fragmentary assessment, which is a disadvantage of most presented methods. At the

same time, the proposed methodology allows us to take into account the importance of each of the components of the tourist potential.

The image of the tourist territory is formed on the basis of such indicators as the presence of objects of tourist interest (natural and cultural-historical), a degree of development and popularity of tourist projects, brand awareness. At the same time, objects of tourist attraction – attractors - are of great importance. So, the North Pole is of great interest to travelers. Tourists visit the islands of the Arctic archipelago of Franz Josef Land [19] by helicopter and cruise ship. The route starts from Murmansk – a large port town (*Fig. 1*).

Skiing and recreation, mountaineering, hiking, mountain biking, and dog sledding are organized and successfully developed on the territory of the mountain ranges – Khibiny and Lovozero massifs. Active tours with kayaks and snowmobiles, rafting across the northern rivers are in demand. The basis for the formation of cultural and educational tours is UNESCO sites – natural and cultural complexes of the Arkhangelsk Oblast, the Republic of Karelia, and Komi Republic.

National parks, nature reserves, and natural monuments of the European North open up opportunities for the development of eco-tourism. The "Yugyd Va" national park is located on the territory of the Komi Republic. The "Russkaya Arktika" ("Russian Arctic") National Park was founded in 2009 on the Franz Josef Land and Novaya Zemlya archipelagos.

The development of tourist infrastructure is characterized by the presence of appropriate facilities: collective accommodation facilities (hotels, guest houses, recreation centers, etc.); tourist organizations; public catering enterprises, etc. Transport accessibility of the tourist center is provided by the functioning of the system of roads, air and waterways. Along with the tourist infrastructure, the most important element of resource provision and a factor in the development

Figure 1. Tourist route from Murmansk to the North Pole

Source: *official website of the tour operator "Poseidon cruise"*. Available at: http://poseidoncruise.ru/puteshestvie_na_severnyj_poljus_vozmozhnye_kruizy/

of the tourism sector is its labor potential, which includes a whole set of real and potential abilities of residents of a tourist region, providing activities for the organization of tourism [20]. In addition, in a current environment with unstable epidemiological situation and low temperatures in the northern territories, the comfort and safety of tourists are important components of the tourist potential, including, along with the criminal situation, the psychological comfort of a traveler, the level of improvement of a territory and other factors. At the same time, the most important component of the tourist potential is the environmental situation in a region. It is determined by the volume of emissions of pollutants into the atmosphere and water objects, amount of costs for environmental protection, etc.

Determinants of a competitive component of the tourist market are a set of factors of tourist production and demand, related and supporting industries ("clusters"), management strategies, structure and nature of competition between tourist firms. The formed system of these determinants creates conditions for a successful functioning of tourism organizations.

The institutional component of tourism is determined by the following conditions and factors: stability of tourism institutions; approaches to the management of the tourism sector; formation of the legislative framework; scientific support for the tourism development; symmetry of the territorial and regional representation of tourist organizations to promote tourist products; a set of strategic goals and operational tasks to enhance interregional cooperation in the tourism sector.

An innovative component of tourism combines internal characteristics and external conditions of the innovation process in the tourism industry. Internal innovation component includes the innovation potential, which is formed through the material, financial, intellectual, information, scientific, technical, and other resources necessary for the implementation of innovative activities in tourism. When determining the level of innovation potential, data on a number of employees engaged in research and development, financial costs for research and development, as well as innovation activity, measured through a number of patent applications and the volume of innovative technologies, are taken into account. The external innovation component is determined by the national innovation system, which promotes the innovative development of the tourism sector.

The identified components of the tourism potential served as the basis for its evaluation in December 2019. It was carried out by seven experts – regional tour operators working in the tourism market for more than 10 years on the territories of the European North. All experts (managers, their deputies and specialists) are competent in the examined field, which was the main criterion for selecting the participants of the expert group. A 10-point scale was used for the evaluation. At the first stage, each selected component of the tourism potential of entities was evaluated. At the same time, experts' group assessments were used to identify their relative significance and the level of their manifestation. The group examination was carried out using the Delphi method. At the second stage, an integral indicator of the potential of tourist territories was determined. The overall tourism potential index was calculated using the following formula:

$$Pt = \sum_{k=1}^{n} \frac{Svk \times Uvk}{Svk},$$

where:

Pt – index of the territory's tourist potential;

Sv – degree of importance of the tourism potential component *(k)*;

Uv – level of manifestation of the tourism potential component (*k*);

n – number of components (*k*) of the tourism potential.

At the final stage, comparative characteristics of the tourist regions of the European North were formed. At the same time, the problems hindering

the development of tourism in the northern territories were identified. The concordance coefficient was 0.79, which proves the consistency of experts' opinions and allows us to consider a selected number of experts sufficient to make an informed decision.

The results of the assessment of the tourist potential of the European North and their interpretation

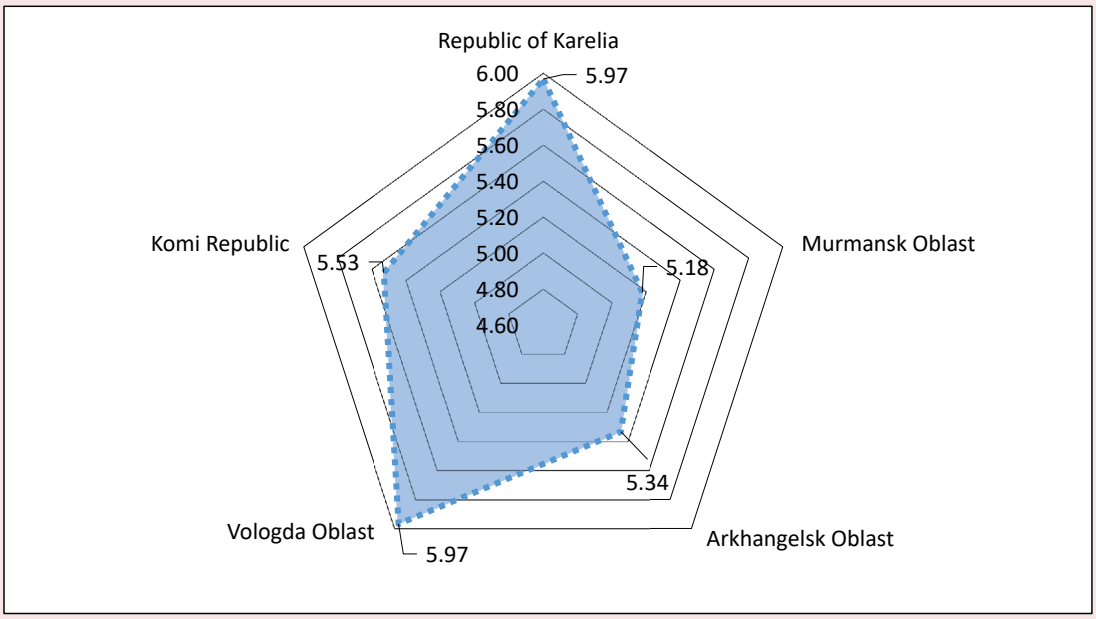
The identified evaluation characteristics allowed us to distribute the territories of the European North by the level of the resource potential of the tourism and recreation sector (*Fig. 2*).

The Vologda Oblast and the Republic of Karelia are characterized by the highest level of the resource potential of tourism and recreation ($Pt = 6$), and the discrepancy between the values of the index of the potential in these entities is insignificant and does not exceed 0.8. A degree of formation of tourist infrastructure and the level of development of labor potential in most entities are estimated by experts as average (5–6 points), which is confirmed by a lack of collective accommodation facilities and public catering facilities that meet international standards (mainly in rural settlements), and a low quality of tourist services.

Among entities of the European North in 2018, the largest increase (by 2.2 times) in a number of collective accommodation facilities (CAF), compared to 2013, is observed in the Vologda Oblast. This is related to the formation and development of a tourist cluster in the region (*Tab. 2*). However, a number of tourists accepted by the collective accommodation facilities of the region increased only by 42% in the studied period (*Tab. 3*). In general, in the territory of the European North, a number of collective accommodation facilities in 2018 increased by 75.4% compared to 2013, and a number of tourists placed in CAF – by 22.5%

We should mention that, in the European North in 2013–2018, a number of tourist organizations also increased, amounting to 691 units in 2018, which is 27.7% more than in 2013. The Arkhangelsk Oblast and the Republic of Karelia were the leaders according to this indicator (179 and 176 travel agencies, respectively; *tab. 4*). The Murmansk

Figure 2. The level of the resource potential of the tourism and recreation sector of the European North



Source: own compilation based on the results of expert assessment.

Table 2. Number of collective accommodation facilities in the European North in 2013-2018, un.

Entity	2013	2014	2015	2016	2017	2018	2018 to 2013, %
Vologda Oblast	131	120	200	210	266	291	by 2.2 times
Republic of Karelia	129	133	182	198	213	238	184.5
Arkhangelsk Oblast	112	145	166	152	150	173	154.5
Komi Republic	86	87	132	134	139	131	152.3
Murmansk Oblast	118	119	143	117	197	179	151.7
European North, total	581	611	830	818	970	1019	175.4
Source: *Tourism in the Vologda Oblast: Stat. Coll*. Territorial body of the Federal State Statistics Service in the Vologda Oblast. Vologda, 2019. 104 p.							

Table 3. Number of people served by collective accommodation facilities of the European North in 2013-2018, thous. people

Entity	2013	2014	2015	2016	2017	2018	2018 to 2013, %
Vologda Oblast	353,7	318,0	412,3	382,1	455,3	502,3	142,0
Murmansk Oblast	216,2	214,5	216,4	240,1	302,2	300,0	138,8
Republic of Karelia	372,0	377,1	411,6	420,2	414,6	461,5	124,1
Arkhangelsk Oblast	281,6	286,3	352,8	282,1	272,1	309,6	109,9
Komi Republic	221,9	199,9	272,2	212,5	198,4	210,8	95,0
European North, total	1463,6	1413,3	1686,3	1549,7	1650,2	1793,1	122,5
Source: *Tourism in the Vologda Oblast: Stat. Coll*. Territorial body of the Federal State Statistics Service in the Vologda Oblast. Vologda, 2019. 104 p.							

Table 4. Number of tourist organizations in the European North in 2013–2018, un.

Entity	2013	2014	2015	2016	2017	2018	2018 to 2013, %
Republic of Karelia	85	102	104	171	140	176	by 2.1 times
Arkhangelsk Oblast	127	136	132	132	157	179	140.9
Murmansk Oblast	65	81	58	71	87	85	130.8
Vologda Oblast	132	145	90	103	116	141	106.8
Komi Republic	127	135	115	110	114	108	85.0
European North, total	541	606	504	590	618	691	127.7
Source: *Tourism in the Vologda Oblast: Stat. Coll*. Territorial body of the Federal State Statistics Service in the Vologda Oblast. Vologda, 2019. 104 p.							

Oblast was characterized by the smallest number of travel agencies (85 units).

The entities of the European North have limited transport accessibility, which is proved by the results of the expert assessment (4 points). A significant part of rural areas is characterized by poor development of the transport network. The results of the assessment are confirmed by the Russian independent investment company "InfraONE", which determines the "transport index" on the basis of statistical reports on the quantity and quality of transport infrastructure in the regions of the Russian Federation. At the time of the expert assessment, the transport infrastructure development index of the entities of the European North did not exceed 3.3 (with a maximum possible value of 10; *tab. 5*).

Table 5. Index of the transport infrastructure development on the territory of the entities of the European North

Entity	Index
Murmansk Oblast	3.24
Komi Republic	2.99
Vologda Oblast	2.94
Republic of Karelia	2.76
Arkhangelsk Oblast	2.70
*Source: The index of development of infrastructure in Russia. 2019. Available at: https://infraone-research.ru/index_id/2019_regions	

According to experts, the environmental situation in the European North is generally favorable (7–8 points). However, it is worth noting that, in the national environmental rating of Russian regions, the Arkhangelsk Oblast ranked 44th in 2019 due to its low environmental index (*Tab. 6*).

The level of comfort and safety of tourists in all regions is rated at 7 points. This indicates a sufficient degree of psychological comfort for those traveling in the European North. The existing problems with the improvement of rural areas, the harsh climate of the Arctic zones, as well as the criminal situation in some regions reduce the level of comfort and safety. In the ranking of criminality in Russian regions, conducted by the Institute of Regional Problems (as of peer review period), Komi and Karelia republics were characterized by the worst criminal situation among the territories of the European North (positions 2 and 6, respectively). It is associated with high levels of criminality, including violent and economic crimes (*Tab. 7*).

A competitive component of the tourist market of the European North, as shown by the results of the study, is at the development stage (4–5.8 points). At the same time, expert assessments (6–6.5 points) indicate the need to improve the level of institutional support for the tourism sector. An innovation component received the lowest average score (2–3 points), which determines the significance of changes in the tourism industry.

The results obtained are consistent in key aspects with the analytical studies of the rating agency "RAEX", which determines the level of labor, institutional, innovation, and tourism potential of the Russian regions within the framework of the investment potential assessment (*Tab. 8*). According to the agency's data presented for 2019, the Republic of Karelia and the Vologda Oblast have the greatest tourist potential among the entities of the European North (the 21st and 24th place in the rating, respectively). At the same time, all regions of the European North are characterized by a low level of labor, institutional, and innovation potential.

Table 6. Positions of entities of the European North in the environmental rating of Russian regions

Entity	Ranking
Komi Republic	9
Murmansk Oblast	12
Vologda Oblast	27
Republic of Karelia	37
Arkhangelsk Oblast	44
*Source: Environmental rating of the entities of the Russian Federation. Available at: https://greenpatrol.ru/ru/stranica-dlya-obshchego-reytinga/ekologicheskiy-reyting-subektov-rf?tid=388	

Table 7. Positions of constituent entities of the European North in the ranking of criminality among Russian regions

Entity	Ranking
Komi Republic	2
Republic of Karelia	6
Arkhangelsk Oblast	25
Murmansk Oblast	42
Vologda Oblast	56
Source: Rating of criminality in regions. Available at: https://www.irpr.ru/2019/05/31/pervyj-rejting-kriminogennosti-regionov	

Table 8. Positions of the European North entities in the rating according to the level of labor, institutional, innovation, and tourism potential of the Russian regions

Entity	Labor potential(ranking)	Institutional potential (ranking)	Innovation potential (ranking)	Tourism potential (ranking)
Republic of Karelia	73	57	50	21
Vologda Oblast	55	40	45	24
Arkhangelsk Oblast	56	49	48	47
Komi Republic	65	52	59	55
Murmansk Oblast	61	55	61	60
Source: own compilation on the basis of data from the rating agency "RAEX". Available at: https://raex-a.ru/ratings/regions/2019/att3				

Among the main problems hindering the development and realization of the resource potential of the northern tourist territories, we can highlight a low degree of their transport accessibility and the formation of tourist infrastructure, poorly developed innovative activities in the field of tourism.

In the assessments of the importance and manifestation of the components of the tourism potential in most regions, significant differences (4.6–5.5 units) are recorded for the innovative component of the tourism sector. This proves the urgency of the problem of creating favorable conditions for the emergence of innovations in the industry. The smallest discrepancy between the values of importance and manifestation (less than 0.5 units) can be traced in the estimates of the institutional component. It should be noted that, when forming the institutional environment, special attention should be paid to the currently unresolved problem of legal certainty and legitimacy of the status of the Arctic territories.

Development and realization of the potential of tourism and recreation in the European North within the Arctic development

In our opinion, the efficient functioning and development of the tourist sphere of the European North, the elimination of problems identified during the assessment of the tourist potential, will contribute to the creation of tourist and recreational complexes, tourist infrastructure facilities that meet modern international standards; development of interregional tourist routes and the formation of new destinations, including the Arctic zones. In order to increase and evenly distribute the tourist flow, it is advisable to combine northern regions with different levels of tourist potential within the framework of tourist projects. For example, it is proposed to develop an interregional tourism project on the territory of the Vologda and Arkhangelsk oblasts. The tourist route will pass through the Kotlassky municipal district of the Arkhangelsk Oblast and the municipal Veliky Ustyug district, Vologda Oblast, where the project "Veliky Ustyug is a homeland of Ded Moroz", which attracts significant tourism flow.

Integrated development of the northern territories, development and implementation of regional target programs, as well as the formation of special economic zones will contribute to the activation of innovation and investment activities in the tourism industry. At the same time, the implementation of interregional and inter-municipal tourism projects within the framework of cooperation can become an efficient direction for further development and use of the tourist potential of the European North.

In our opinion, the main vector of the development of the northern tourist territories in current conditions should be the implementation of a problem-oriented concept, which is aimed at solving the difficulties that hinder the development and effective usage of the tourist potential of the European North. At the same time, it is important to take a timely set of measures to adjust the strategic directions of the development of tourism and recreation in the European North in the conditions of increased dynamism of the external environment. The current trend of rapid environmental changes is caused by a number of factors that affect the tourism development: changes in the socio-economic and epidemiological situation in the country and the world, deterioration of environmental favorability, problems and prospects for the development of the Arctic zones. In this regard, the implementation of the problem-oriented approach will allow the following steps:

– promotion of innovation and investment processes in the northern tourist territories, including development and implementation of new tourist projects (including interregional ones), the creation of tourist products using innovative technologies (for example, artificial intelligence, mixed and augmented reality, etc.), etc.;

– development of the tourist infrastructure (mainly rural areas) of all the entities of the European North, including the expansion of the network of collective accommodation facilities and public catering facilities, increasing the level of transport security of tourist areas, modernization of berths, seaports, airports;

– formation of the resource base for the diversification of the tourism product during the pandemic through an active usage of digital technologies, development of domestic tours for small groups, expanding the geography of tourist routes, as well as through the implementation of an individual approach to tourists and updating the environmental aspects of tourism products;

– improvement and control of the quality of tourist services, including ones provided under extreme weather conditions;

– development of the labor potential of the tourism sector, increasing the level of its communicative and creative components that contribute to the emergence of innovations in tourism;

– increase of the level of institutional support and efficient management of the tourism sector in the northern territories; development of a set of strategic goals and objectives to enhance interregional cooperation in the field of tourism and recreation in the European North;

– development and implementation of a set of measures to support and stimulate domestic tourism in the northern territories, including development of children's and youth tourism, tourism for pensioners;

– preservation of natural resources, cultural and historical heritage, traditions and crafts of the northern peoples; maintenance of environmental friendliness of the entities of the European North;

– formation of a system of information support and support of tourist activities in the northern territories; digitalization of tourist services;

– activation of the process of promoting the tourism and recreation potential in the European North.

The elaboration and detailing of the proposed directions are defined by us as the main tasks of a further research concerning the studied problem.

Conclusion

Summing up, we can conclude that the methodology for identifying the level of the tourist potential, developed within the study and tested in relation to the northern territories, deepens and continues the existing theoretical research in this area. The author's methodology allows a comprehensive assessment of the resource potential of the tourism and recreation sector in the northern territories, which determines its specificity and scientific novelty. The originality of the methodology is associated with a system of criteria that includes the image of the tourist territory, development degree of the tourist infrastructure, the labor potential of the tourism industry, transport accessibility and environmental friendliness of a region, comfort and safety of tourists, competitive, institutional and innovative components of the tourism sector. The results of the assessment allow us to determine the projection of the development of tourism and recreation in the European North. The main difficulties of the northern tourist territories are identified, including a low level of infrastructure and transport security, low innovative activity of organizations in the tourism industry. To solve the identified problems, it is necessary to develop and implement a set of measures within the framework of a problem-oriented approach as the main vector of tourism development in the European North in the conditions of the Arctic development. The practical significance of the study is a possibility of applying its results by regional authorities and administration in order to make timely management decisions, determine strategic directions, and develop programs and projects for the development of the northern territories.

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Problem of Forming Expert Groups in Regions with Different Levels of Socio-Cultural Development*

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Abstract. The relevance of studying the role of expert group formation in the preparation and implementation of national projects is due to the fact that their realization depends not only on the work of the links of the power and management vertical, but on the ability to attract target groups of specialists interested in a common cause. In practice, the authorities attract an inner circle of known people for this role for specific tasks. As a result, there is a problem of adequate selection of experts in decision-making groups. The purpose of the research is to experimentally identify the nature of real expert group formation, used in regional decision-making, and potential (latent) group formation as a resource of population's

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social activity. The scientific novelty of the research is related to the attempt to identify expert structures that allow qualitatively realizing national projects and programs for public administration reform in the regions. The basis for experts' involvement is their membership in various socio-professional groups, and the establishment of evaluation positions in relation to the activities of regulatory and administrative authorities. The authors use an online survey of qualified specialists in four pilot regions of the Russian Federation with different levels of socio-cultural modernization. To analyze these data, we use the correlation analysis and construct contingency tables.

Key words: real and potential expert group formation, social group formation, regional administration systems, regions' socio-cultural modernization, online survey of specialists as qualified experts, national projects.

Introduction

The research focuses on the process of expert group formation in the context of the implementation of "breakthrough" national projects and programs for the territories' modernization and management in the regions. According to the developers, they should be realized through specific strategic measures with broad involvement of target groups to ensure the most balanced and effective socio-economic and socio-cultural modernization of the regions.

The relevance of studying this phenomenon is due to a number of reasons, but the main thing is the fact that at present, scientifically-based (rational) procedures for identifying and selecting target groups of experts-stakeholders are not used in the management practice. Based on this, we can make an assumption about the deformation of the processes of forming decision groups. The deformation leads to the alienation of a large number of interested citizens, potential experts from the procedures for the development and implementation of program activities within the framework of national projects and programs for the management modernization. This can be traced in modern works devoted to the problem analysis of public participation in national projects at the regional and municipal levels [1; 2], and information and organizational support for their implementation [3]. Currently, we are faced with the practical and scientific-methodological problem of selecting stakeholders as participants in expert groups for making management decisions.

This context maintains the purpose of our research. This purpose is related to the definition of the structures of real expert groups of decision-making, as well as latent experts through the establishment of their socio-managerial features and qualitative characteristics.

Conceptual foundations

We believe that groups consisting of various social agents (subjects) can participate in the implementation of national projects and programs for the regions' modernization. The latter may differ in their characteristics and functionality, but at the same time, demonstrate common socio-economic, socio-political, and socio-professional positions. We distinguish three types of such groups.

A) The first type is *real groups* that are able to implement projects and programs for the region's development. These effective groups represent government bodies, labor collectives, various types of public organizations, business structures, etc. E. Mayo studied such types of groups in the framework of the Hawthorne experiment [4].

B) The second type is various *associative communication groups* that form public opinion. They were studied in one form or another by G.P. Schedrovitsky [5], P. Bourdieu [6], and a

team led by A.V. Tikhonov [7], who diagnosed the public support degree for the ability of the power and management vertical to successfully perform its functions within the framework of a longitudinal study.

C) The third type is *expert groups* that analyze technical, economic, and socio-cultural characteristics of the regions, and participating in creation and implementation of program solutions for the regions' development. This type of group is the subject of our article.

When considering expert groups, it is necessary to understand that they differ significantly in their nature and properties, namely, communicative, interactive, and perceptual processes, from the implementation groups of the first type [8]. Groups of the third type are a type of target groups, but they are created to perform the functions of monitoring (evaluating) the object of social transformation or forecasting its changes, planning the vectors of changes in the object. In the case of creating expert groups to form a strategy for the development of business organizations, sectors of the national economy or regions, the function of forming groups of the first type is added to the listed functions [9].

Expert groups consist of a specific number of participants; each of them has their own idea about the object of social transformation and pursues their own goal. Interaction can be carried out in the examination procedure, involving or not involving communication between the participants. Such a group also has a structure that reflects the role positions [9; 10].

The successful implementation of the expert group's functions directly depends on the elements. This applies to achieving the effect of solidarity (consistency of opinions) [11] and correct cooperation arrangements [12; 13].

Thus, the members and quality of expert groups are the process result of expert group formation. The scientific explication of the definition of expert group formation in the branch sociological disciplines is currently absent, so we introduce three definitions that meet the purposes and tasks of our research: 1) general, **social group formation** as a spontaneous formation of population groups from interested citizens with pro-government and opposition attitudes for the implementation of national projects that have common and different interests in social transformations in their settlements areas; 2) **real expert group formation** is the actual distribution and members of experts in decision-making groups regarding the implementation of national projects and programs of management modernization in regions with different levels of socio-cultural modernization; 3) **latent (potential) expert group formation** is the potential for respondents' participation as experts in decision – making groups, established through special sociological measurement procedures.

It is worth especially noting that the expert groups differ in their characteristics. In this regard, we should use the following parameters to identify them: people's motivation to participate in groups, the presence of constant participants' interactions, agreement (or disagreement) on the key issues [14; 15; 16]. They are the basis for determining the effect of expert group formation in our work.

Taking into account the selected parameters for studying the group formation processes, we rely on the interaction theory according to which people get to know each other in the process of frequent contacts. They form a sense of sympathy or antipathy, stable interaction forms and signs of collective subjectivity appear [13]. In addition, the authors use the provisions of the equilibrium theory according to which people with similar attitudes and values usually unite. Relationships become unstable if there is no balance there [13; 17; 18].

The article also takes into account the experience of applying expert assessments in the regional management practice. This refers to the organization of expert evaluation, experts' selection (criteria), determining the type of experts'

interaction (offline or online, collective discussion or individual assessments), and methods of processing expert opinions for making a final decision [18; 19; 20].

Our research focuses on the importance of expert selection procedures. By now, there is no unified technology for selecting experts according to scientists' opinion [14; 21].

Many researchers have noted the competence importance [22] or recommendations in the experts' selection (expert group recruitment on the "snowball" principle) in the practice of managing organizations or technological forecasting. The scientists also often consider the level and profile of education, work experience in the subject area, job competencies for solving problems, personal qualities (mind flexibility, creative thinking, social activity, authority of the expert opinion), and the practice of working in expert groups (objectivity, independence, variability in assessments) [23].

However, in the regional management practice, these approaches need to be refined and reformatted. The diversity principle of expert positions and activation of stakeholders' (subjects') interest should be taken into account [24].

In our opinion, rather important is the assessment of value orientations and the experts' attitude to the activities of regional authorities in the implementation of regional development programs. In this regard, the most appropriate ways to include a person in the expert group are not a posteriori and a priori methods of assessing an expert's quality (participation or non-participation in past examinations), but test methods that determine an expert's position in the system of key agents and their value orientations [25].

Testing and implementing experimental test approaches to identify the structures of real decision-making groups and latent (potential) experts is becoming the main task of our research and, undoubtedly, can improve the quality of regional governance and key strategic decisions.

Research design and methodology

The primary task of our research is to use the methodology of management sociology to test the possibilities of the sociological dimension of expert group formation as a management mechanism in regions with different levels of socio-cultural development.

There can be quite a lot of signs of group formation. It is often difficult to fix them, so we note the most important ones that can be determined by the expert survey method. First of all, we are talking about identifying the presence of experts' interaction in solving a certain range of problems. As the context of our task is related to the solution of management problems of the region's development, this parameter can be indirectly recorded by evaluating the experts' participation in the activities of a particular project or program for the region's modernization (state programs for the modernization of regional management systems and national projects). Their participation determines the activity vector or experts' passivity.

The second parameter of group formation is the similarity of the views and the identity of expert opinions in the context of solving issues of socio-cultural modernization and regions' strategic development. These grounds became the key for constructing the scale "supporting decisions" – "not supporting decisions", representing data through the interpretation of expert assessments of the functioning and decisions of various parts of the power and management vertical, "support-non – support" of the general political and managerial course of the authorities and management. In fact, we define a pro-government group of experts (supporting) and the opposition (not supporting).

In the decision-making practice, the development of tools for establishing and fixing the combination of these two groups becomes a scientific and methodological task of our research.

To find a balance in the solution group, the authors use an approach borrowed from rationalizing social diagnostic technologies (A.V. Tikhonov, V.V. Shcherbina [26]). According to this approach, in order to form socially-oriented goals in management practice and overcome unforeseen consequences from management decisions, it is necessary to use special rational and cognitive procedures. They allow diagnosing the management nature (at different levels of society: societal, institutional, regional, managerial-corporate and local self-government) and designing the achievement of balanced decision groups with subsequent access to the creation of info-communicative feedback technologies.

As a result, the article carries out the experimental development of integral features of expert group formation which allow diagnosing and identifying not only real, but also latent (potential) groups of solutions. This point of view can either coincide with the authorities' point of view or be oppositional.

Research progress

The research was conducted in 2019 in four pilot regions out of 12 ***(Tab. 1)*** that N.I. Lapin have selected according to the rating of the regions' socio-cultural modernization [27].

In general, the authors have collected and developed a database of 347 experts from four regions; 59.6% (207) of them took part in the survey and gave high-quality detailed answers to open questions.

The work has achieved the target of at least 50 experts from each region taking into account geographical affiliation, various activities, and status characteristics (managers, specialists).

Research results

Due to the fact that we chose two types of projects in which experts could participate, it was necessary to analyze the activity combination ***(Tab. 2)***. The experts' participation in both projects indicates the group constancy and the interaction of its members, i.e. confirms the expert group formation according to the interaction theory.

Table 1. Entities of the Federation where the study is conducted

No.	Region's name	Status of a Federal entity	Federal District	Level of socio-cultural modernization in points and text abbreviations (2016, according to the data of the CISI IF RAS) *	Rating of the socio-economic situation of the regions of the Russian Federation, in points (2020, according to RIA-rating)**
1	Moscow Oblast	Oblast	Central	6 (H)	77.595
2	Republic of Bashkortostan	Republic	Privolzhsky	3 (A)	60.505
3	Belgorod Oblast	Oblast	Central	(1) (BA)	57.103
4	Republic of Kalmykia	Republic	Southern	(1) (L)	17.361

* Integral indicators (in points) of the socio-cultural and socio-economic levels of the studied regions as a whole correlate in accordance with the presented rating data.

** Russian regions' rating on the quality of life – 2020. *Official website of the "RIA Rating Agency"*. Available at: https://riarating.ru/infografika/20200602/630170513.html (accessed: January 20, 2021).

Level estimates of socio-cultural modernization are from the works of RAS Institute of Philosophy, led by Lapin N.I. (Source: *Atlas Of Modernization Of Russia and Its Regions: Socio-Economic and Socio-Cultural Trends and Problems*. Ed. by Lapin N.I. Moscow: Ves Mir, 2016, pp. 346–348), his co-authors or indicated by him personally; the points in parentheses are from the *Map-Scheme of Modernization of Russia's Regions* (2010). Available at: http://ecsocman.hse.ru/data/2013/01/28/1251412165/Lapin.pdf (accessed: July 25, 2017). A.V. Tikhonov. A detailed description of the regions' selection for the study is provided in: Russia: *Reforming the Power and Management Vertical in the Context of the Problems of Socio-Cultural Modernization of the Regions: Monograph*. Ed. by A.V. Tikhonov. Moscow: FNISC RAN, 2017, pp. 36–41.

Acronyms: H – high, AA – above average, L – low, BA – below average, A – average.

Table 2. Experts' participation in the implementation of national projects and programs of regional governance reform (aggregated data of expert assessments of four pilot regions), % of a number of experts

Participants in public administration reform programs	Do you participate in the implementation of national projects?				
	I participate in the development or implementation	I do not participate, but I would like to	I do not assume my participation	Not sure	Total
Already participate	6.3				6.3
Yes	12.1	15.5	1.4	1.0	30.0
Rather yes than no	9.2	18.4	6.3	3.9	37.7
Rather no than yes	1.4	2.9	6.8	1.4	12.6
No	0.5	0.5	3.9	1.0	5.8
Not sure	1.5	2.4	1.4	2.4	7.7
Total (207 experts)	30.9	39.6	19.8	9.7	100.0
Source: own calculations.					

Only 6.3% of experts actively participate in these two programs (see tab. 2). In fact, this is an active and permanent core. However, 21.3% of experts can be added to this group; they are involved in the implementation of national projects and would like to participate in public administration reform programs. Their non-participation in the reform program is rather an evidence of the closeness of a group of decision-making subjects. In total, there are 27.6% of active experts, i.e. almost a third of the entire surveyed expert audience.

There is a fairly significant group of experts (33.9%), among whom there are those who are potentially set to participate in regional modernization programs, but, for reasons beyond their control, they were not included in the active groups. This also confirms the mechanism relevance for recruiting expert groups "from above". There was also a group of experts who had information about the state of affairs in the region and the governance nature, but were not interested in participating in the decision groups. This is a passive part of the expert audience which makes up 10.7%.

There are those who found it difficult to answer: among them, 7.7% chose this answer in relation to the issue of improving regional governance and 9.7% – on the issue of participation in national projects. Difficulty in identifying the expert position on both projects was recorded only among 2.4% of experts. This group can be activated under certain circumstances to participate in the region's management.

As a result, out of the entire expert group, the share of active experts is 30.9%, potentially active – 52.2%, and passive – 14.5%. The data indicate the existence of expert group formation in the civil management of regional development and also indicate a great potential, i.e. the presence of latent expert group formation in the regions.

Next, we consider the second feature of expert group formation – "supporting solutions" and "not supporting solutions". The authors calculate it as the attitude to the authorities' activities, namely, through the assessment of satisfaction and trust in the authorities in the management of the region and the country as a whole. This parameter allows determining the nature of existing groups, the consistency of their value orientations which are important in making managerial decisions. We have fixed this attitude by determining the position of experts regarding the activities of various authorities and management bodies.

To determine the assessments' structure, we have initially carried out a correlation analysis of the assessments of the authorities' activities using the Kendal coefficient, as the assessments were an ordinal five-point scale. The analysis proved that all estimates significantly correlate with each other at the significance level of $p < 0.01$. However, not all correlations presented a noticeable relationship. The authors have selected those relationships that had a correlation coefficient greater than 0.51. As a result, it was possible to build a pleiad that reflects the structure of the relationships of assessments.

The scores are clearly divided into two groups. The first includes assessments of federal authorities, the second – regional ones. The similarity of expert assessments of the authorities and management indicates a certain and potentially possible integration both within regional authorities and within federal structures. At the same time, the activities of the federal authorities differ from the activities of the regional ones, i.e. a certain gap in the work of the power's vertical is fixed. It is quite interesting that the second group also includes assessments of the activities of the internal affairs bodies (police). Apparently, experts evaluate their activities based on regional experience. The estimates of the enterprise administration were weakly correlated with other ones, as the parameter had a small variation. The assessments of the judicial system and the regional media were quite interesting. These parameters are the link that connects two selected groups. The judicial system is evaluated from the top down, so it reflects the activities of the federal and regional levels. As for the regional media, on the one hand, they focus on the practice of the central media and, on the other, show the city government's interests. This fact lets assuming that the regional media's activities are more dependent on local authorities which, in turn, exclude the possibility of broadcasting diverse points of view there about solving certain problems in the region.

The expert opinions' analysis made it possible to integrate the estimates of the studied parameters in each group and to aggregate the estimates of the work of federal and regional authorities on the basis of arithmetic averages. Due to the fact that the parameters "enterprise administration", "judicial system", and "regional media" were closely related to both groups, they were excluded from the indices which ultimately helped to achieve a higher purity of the estimates of the two main groups.

Further, we have converted the evaluation indices into a nominal scale by gradation (negative and positive ratings) and created their combination. As a result, we got four expert groups. The first one consisted of experts who were satisfied with the work of all authorities. The second group is satisfied with the federal authorities' work and is not satisfied with the activities of the regional ones. The third group is satisfied with the activities of the regional authorities and is dissatisfied with the federal authorities. The fourth group of experts is dissatisfied with the activities of all authorities. A fifth group was also created. It included experts who found it difficult to assess the activities of the authorities and management.

Tables 3–6 provide an opportunity to assess the balance of the distribution of expert group formation in the implementation of strategic decisions of national project taking into account the experts' commitment (approval) to the course of federal and regional management.

Next, it is worth considering the group structure of decision-making entities. It will show what the success of managing the region depends on.

It turned out that the share of active experts in the Moscow Oblast is 27.4%, Bashkortostan – 26.0%, Belgorod Oblast – 33.3%, Kalmykia – 40.0%. First of all, these data indicate that there is a real expert group formation in the regions. Probably, important stakeholders are included in the practice of managing subjects. However, in more developed regions, the percentage of active

experts is lower, i.e. people get into the expert group after a certain selection. As for the latent group formation, its effects are present in all regions. In the Moscow Oblast, the share of those who want to take part in the management of the region is 52.9%, Bashkortostan – 46.0%, Belgorod Oblast – 64.7%, Kalmykia – 50.0%. The peripheral nature and alienation of this latent group of experts from management may be a consequence of the prevalence of the "authoritarian-clan" management style in the regions and the focus on reporting to higher authorities which was established in our previous study (RSF project 2015–2017).

The percentage of experts, involved in the development and decision-making on a permanent basis (the core of the group), is quite small: 9.8% in the Moscow Oblast, 6% in Bashkortostan, 7.8% in the Belgorod Oblast, and 2% in Kalmykia. Low percentages indicate a constant restructuring of the expert group to solve certain types of problems which is adequate in management practice (G. Simon). However, in the Moscow Oblast, as a region with a high level of socio-cultural modernization, the percentage of the core is slightly higher compared to other subjects.

The presence of latent groups, which are experts with different value orientations, allows managing the solution group and restructure it depending on the tasks. This possibility exists in all regions, as the ratio of pro-government and opposition experts are approximately equal. But it is worth noting that, in Bashkortostan, the share of potentially active and oppositional experts (who criticize all authorities) among the entire expert body is quite small (6%).

In our opinion, in the decision groups (experts involved in the implementation of modernization programs), it is necessary to achieve a balance in the distribution of expert groups that have different attitudes and assessments about the activities of government and management bodies. This will allow achieving a balanced and constructive nature of strategic decision making at the regional level.

Table 3. Groups of experts included / not included in the decision groups, in accordance with their assessments for federal, regional, and municipal authorities (aggregated data of experts from the Moscow Oblast, 2019), %

Groups included/not included in the decision groups	Positive assessment to all authorities	Positive assessment of federal authorities and negative assessment of regional authorities	Positive assessment of regional authorities and negative assessment of federal authorities	Negative assessment of all authorities	Hard to respond	Total	Pro-government group	Fluctuating group	Opposition group	Total
Distribution across the entire data set										
In the solution core	3.9			3.9	2.0	9.8	13.7	4.0	9.8	27.4
Active expert group	9.8		5.9		2.0	17.6				
Interested, but not participating	23.5	3.9	9.8	15.7		52.9	23.5	0.0	29.4	52.9
Passive expert audience	5.9	2.0	3.9	5.9	2.0	19.6	5.9	2.0	11.8	19.6
Total	43.1	5.9	19.6	25.5	5.9	100.0	43.1	5.9	51.0	100.0
Distribution in the group of active experts										
Core	40.0			40.0	20.0	100.0	50.0	14.3	35.7	100.0
Active expert group	55.6		33.3		11.1	100.0				
Interested, but not participating	44.0	7.4	18.5	29.6		100.0	44.4		55.6	100.0
Source: own calculations.										

As a result, we can expect real social effects with the least negative consequences. Due to the fact that the Moscow Oblast is a more developed territory, it accounts for the most optimal distribution of expert groups ***(Tab. 3)***.

The decision core includes not only those experts who fully share the planned course of the authorities and their current activities on all levels of the power and management vertical (3.9%), but also an expert group that gives negative assessments to all authorities and systematically criticizes their functioning (3.9%; see Tab. 3).

As a result, the ratio of experts in the core is 40:20:40, i.e. there is a balance of pro-government and opposition groups, while 20% are undecided experts who, when making a decision, tend to side with those whose arguments are more significant.

However, if we consider the entire active group of experts, the proportion changes (50:14:36). Apparently, when making decisions, there is a problem of lack of consensus. To eliminate it, experts are recruited in such a way that half of them support the programs proposed by the authorities. A third is the opposition which can attract waverers to its side and, in this way, change the course of the vote. This opposition is represented to a greater extent by experts who share the course of the regional authorities, and to a lesser extent by "pure" oppositionists (who criticize all levels of government). There is a situation when a number of pro-government experts begins to prevail, the probability of making decisions in favor of the government increases, but the opinion of the opposition, which shares regional interests, is taken into account. A small "pure" opposition acts as a group that conveys alternative (inconvenient for the authorities) information, but its opinion is also taken into account when making a decision.

The Moscow Oblast has latent expert groups representing different points of view on the practice of regional management. They form the basis for managing the solution group (the re-structuring).

We should note that this is not an ideal picture, but rather the most satisfactory one compared to other regions, related to the balance of expert group formation in decision groups.

In the Republic of Bashkortostan, which is at a lower level of socio-cultural development, the picture is slightly different ***(Tab. 4)***.

The core group includes a group that positively assesses the authorities' activities (2%). However, there are also two other groups, the first of which positively assesses only the work of regional authorities (2%), the second one negatively assesses the activities of all authorities (2%). The result is a combination of experts 33:0:67. There is a clear opposition group. It can act in its own interests, and their vector is not always aimed at humanization. However, the percentage of the core is small, and, when considering the entire active group, the ratio will be approximately 70:7:23. We see that the group is selected in such a way that the majority are pro-government experts. Then there is a large group of oppositionists who share the policy of the regional authorities, and a smaller group of "pure" oppositionists. However, in Bashkortostan, the share of pro-government experts is much higher than in the Moscow Oblast. In the region, in our opinion, there is a deliberate "squeezing" of the opposition from the decision group. There is no possibility of correcting the balance, as the number of "pure" oppositionists in the latent groups is relatively small (6%), and there is no potential for recruiting oppositionists from among passive experts.

In the Belgorod Oblast, only pro-government experts represent the core (7.8%; *Tab. 5*). If we consider the entire active group of experts, the ratio will be 88:0:12. Here, the bias toward pro-government opinion is obvious, and the experts' selection does not change the situation in the core. The detected bias can be corrected by latent groups, as the potential for expert group formation is quite large.

Table 4. Groups of experts included / not included in the decision groups, in accordance with their assessments for federal, regional, and municipal authorities (aggregated data of experts of the Republic of Bashkortostan, 2019), %

Groups included/not included in the decision groups	Positive assessment to all authorities	Positive assessment of federal authorities and negative assessment of regional authorities	Positive assessment of regional authorities and negative assessment of federal authorities	Negative assessment to all authorities	Hard to respond	Total	Pro-government group	Fluctuating group	Opposition group	Total
Distribution across the entire data set										
In the solution core	2.0		2.0	2.0		6.0	18.0	2.0	6.0	26.0
Active expert group	16.0		2.0		2.0	20.0				
Interested, but not participating	24.0	2.0	2.0	6.0	12.0	46.0	24.0	12.0	10.0	46.0
Passive expert audience	26.0	2.0				28.0	26.0	0.0	2.0	28.0
Total	68.0	4.0	6.0	8.0	14.0	100.0	68.0	14.0	18.0	100.0
Distribution in the group of active experts										
Core	33.3		33.3	33.3		100.0	69.2	7.7	23.1	100.0
Active expert group	80.0		10.0		10.0	100.0				
Interested, but not participating	52.2	4.3	4.3	13.0	26.1	100.0	52.2	26.1	21.7	100.0
Source: own calculations.										

Table 5. Groups of experts included / not included in the decision groups, in accordance with their assessments for federal, regional, and municipal authorities (aggregated data of experts of the Belgorod Region, 2019), %

Groups included/not included in the decision groups	Positive assessment to all authorities	Positive assessment of federal authorities and negative assessment of regional authorities	Positive assessment of regional authorities and negative assessment of federal authorities	Negative assessment to all authorities	Hard to respond	Total	Pro-government group	Fluctuating group	Opposition group	Total
Distribution across the entire data set										
In the solution core	7.8					7.8	29.4	0.0	4.0	33.3
Active expert group	21.6	2.0	2.0			25.5				
Interested, but not participating	33.3	2.0	15.7	11.8	2.0	64.7	33.3	2.0	29.5	64.7
Passive expert audience			2.0			2.0	0.0	0.0	2.0	2.0
Total	62.7	3.9	19.6	11.8	2.0	100.0	62.7	2.0	35.3	100.0
Distribution in the group of active experts										
Core	100.0					100.0	88.2		11.8	100.0
Active expert group	84.6	7.7	7.7			100.0				
Interested, but not participating	51.5	3.0	24.2	18.2	3	100.0	51.5	3	45.5	100.0
Source: own calculations.										

The Belgorod Oblast occupies a special position, as the Center for the Sociology of Management and Social Technologies of the ISRAS has identified a fairly well-organized management system that achieves the planned strategic goals at the regional level (according to experts) regardless of a low level of socio-cultural development according to the RAS Institute of Philosophy. There is also an active audience of independent social actors (agents) who are ready to participate in the development and implementation of management decisions at the level of their municipalities and the region as a whole. This fact is confirmed by the data of our research: the share of potentially active experts is 64.7%. The identified latent group is mixed. The opposition is represented by 15.7%. These experts give positive assessments to regional authorities and negative assessments to federal authorities, as well as 11.8% of absolutely oppositional experts. The last group is not allowed managing. Perhaps, if this were not the case, the region would be higher in the rating of socio-cultural modernization.

In the Republic of Kalmykia, the core consists of only 2% of experts, i.e., in the region, in fact, real expert groups are not represented *(Tab. 6)*. The groups are modified each time, and in such a way that the total share of experts making decisions is greater than in the rest of the regions as a whole, it is 40%.

We can assume that "extra" experts are invited to the groups for solving certain issues in Kalmykia, who can change the decision in an unconstructive way. They are selected in approximately the same way as in the Moscow Oblast. Their ratio is 55:0:45. We can note a small preponderance of pro-government experts and a fairly large opposition group. A potentially balanced group is not traceable. At the same time, we note that there is only 10% of "pure" oppositionists in the opposition group. Unlike the Moscow Oblast, where there is a fairly large group of opposition experts who share the policies of the regional authorities, there is no such group in the studied region. It has been replaced by a group that supports the federal authorities, i.e.

Table 6. Groups of experts included / not included in the decision groups, in accordance with their assessments for federal, regional, and municipal authorities (aggregated data of experts of the Republic of Kalmykia, 2019), %

Groups included/not included in the decision groups	Positive assessment to all authorities	Positive assessment of federal authorities and negative assessment of regional authorities	Positive assessment of regional authorities and negative assessment of federal authorities	Negative assessment to all authorities	Hard to respond	Total	Pro-government group	Fluctuating group	Opposition group	Total
Distribution across the entire data set										
In the solution core	2.0					2.0	22.0	0.0	18.0	40.0
Active expert group	20.0	8.0		10.0		38.0				
Interested, but not participating	20.0	10.0		12.0	8.0	50.0	20.0	8.0	22.0	50.0
Passive expert audience	4.0			2.0	4.0	10.0	4.0	4.0	2.0	10.0
Total	46.0	18.0		24.0	12.0	100.0	46.0	12.0	42.0	100.0
Distribution in the group of active experts										
Core	100.0					100.0	55.0		45.0	100.0
Active expert group	52.6	21.1		26.3		100.0				
Interested, but not participating	40.0	20.0		24.0	16.0	100.0	40.0	16.0	44.0	100.0
Source: own calculations.										

the opinion is shifted toward supporting the federal authorities. When addressing issues of regional development, there is an imitation of considering different points of view. The region's needs are represented to a small extent. There is a potential for recruiting opposition members from among the latent groups in the region.

As a result, based on a general analysis of the data, we naturally record that in regions with higher socio-cultural development (Moscow Oblast), the decision-making group on management issues contains a fairly large proportion of opposition experts which allow looking at the problem situation from a different angle. Opposition groups provide more relevant information and more often represent the interests of the active part of the population in decision-making. Less developed regions create expert groups in such a way that they are dominated by pro-government experts who support the point of view of the authorities, and they will broadcast it to the masses. In the Moscow Oblast, the ratio of pro-government and opposition experts was 50% and 50%, in Bashkortostan – 69% and 23%, in the Vologda oblast – 88% and 11%, respectively. However, this pattern is violated by the experts of the Republic of Kalmykia. Here, the ratio of pro-government and opposition experts turned out to be 55% to 45%, so the revealed pattern will need to be confirmed on a larger array of data from other entities of the Federation.

Currently, the successful combination of decision-making groups is 3:2:1 (pro-government, supporting regional authorities, "pure" oppositionists). This combination: a) allows the regions not to go against the federal policy and maintain the internal integration of the country at the same time; b) to take into account and, if possible, defend the region's interests; c) to receive unexpected information from absolutely opposition groups. The opposition can produce irrational (dangerous) decisions that run counter to the course of pro-government strategies, so the share of "purely" opposition-minded experts in the decision group is always lower than in other groups. Focusing on the expert ratio in the Moscow Oblast, it is worth considering another distribution – 2:1 (confident in their position, fluctuating; see tab. 3), so that a positive opinion can be formed in the floaters' group at the expense of more evidential arguments of the pro-government or opposition groups.

Latent groups of active experts represent different positions and attitudes. Their presence indicates the possibility of managing expert group formation. In addition, the regions do not practice the use of a single biased group (only the core) of experts to solve all issues. Management potential (the presence of latent expert groups with different value orientations) is possessed by all the entities considered, with the exception of Bashkortostan, where the latent group is large, but the share of the opposition is small.

As for the entire expert group as a whole, it is less active in developed regions than in undeveloped ones. The share of passive experts in the Moscow Oblast and Bashkortostan is 19.6% and 28%, respectively, and in Belgorod and Kalmykia – 2% and 10%. This can be interpreted as follows: in more developed regions, an institutional management system has already been formed. It does not require manual management including the invitation of a large number of experts. Development and management go their own way; so many experts are busy with professional responsibilities and do not see the point of participating in the expert groups of the solution.

Conclusion

Based on the explication of expert assessment, we have managed to establish the nature and state of real and latent expert group formation in four pilot regions with different levels of socio-cultural modernization. In particular, the authors consider the sociological features of expert group formation in the context of "activity vs passivity", "supporting decisions" and "non-supporting decisions".

The data analysis shows that the established nature of export group formation depends on the degree of the regions' socio-cultural development. More developed regions have more diverse decision groups with experts having the largest range of opinions and attitudes. The inclusion of opposition experts in the main group allows achieving the most constructive solutions in the practice of implementing national projects and programs for the regions' modernization. However, this pattern manifested itself only in three out of four regions; to confirm it, data on a larger number of entities are required.

We also have recorded that there really is a large active group of experts involved in the practice of making managerial decisions in the four pilot regions. It is modified depending on the nature of the solutions being developed at the level of a specific area. As for the decision group, its core more often includes the experts whose opinions and attitudes reflect and support the strategic course of federal, regional, and municipal authorities (except Moscow Oblast).

The research assumes that the authors will collect the necessary data in the course of further study to confirm the correctness of the selected balance of expert assessments and groupings. In addition, in the future, we are planning to consider the coherence of expert assessments of the government's activities and management bodies, as well as assessments of political decisions that allow determining the essence of discontent or support. This data may need to adjust the attributes of the selected group balance.

In the management practice, the system of balance assessments of decision groups can become the basis for studying the candidates' potential for expert groups. In our opinion, this is an important practical management and research task of the branch scientific discipline of the management sociology.

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Charity Work of Local Community: Results of the Sociological Research in the Russian Region*

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Abstract. In recent years, the participation of citizens in the solution of social problems and society's self-organization has become an important research agenda. Public practices are perceived as a crucial resource for socio-economic development at the state and local levels. The purpose of this paper is to identify the development level and features of motivation for participation/non-participation in charitable activities from the standpoint of the Russian region's local community. We present an approach to the essence and components of charity based on a critical analysis of academic literature. Through a mass public opinion survey in the Vologda Oblast, 2019; N=1900), we revealed the level of local community's involvement in certain charity forms (helping behavior, monetary donations, volunteerism as part of public organizations' activities). A low level of population's participation in formal charitable practices, related to work of voluntary associations, and high informal charitable activity in various forms of helping behavior draw some attention. Using a factor analysis of latent variables, the authors determined that social norms and religious values are among the main factors that encourage a local community to engage in charity work. In addition, we revealed that the formed idea about the predominance of other entities' social responsibility (primarily – the state) and suspicious attitude to a charity system become serious obstacles to the inclusion of a local community in charitable activities. The study on the current state of charitable activity in Russia's local communities can provide an empirical basis and theoretical impetus for basic research in this area and for practical work aimed at studying specific types of activities to increase population's involvement in local charity.

Key words: charity, local community, territorial development, social capital, helping behavior, monetary donations, volunteerism.

Introduction

Involvement of population in the solution of socially important issues is an important state and local resource promoting socio-economic development. Through social self-organization, social groups become more willing, ready, and capable to change living conditions.

A major way of population's participation in public life is charity, which can be carried out through voluntary associations (mostly NPOs – nonprofit organizations) and informal (situational) forms. Charity includes many proactive manifestations of efficient altruism, which contribute, among other things, to development of education, science and culture; preservation of traditions; rooting of social innovations; harmonization of social life [1]. Thus, the essence of charity is not only to help those in need, but also to promote socio-economic development, to improve the quality of life, to strengthen moral foundations, and solidarity in society. As P. Singer rightly noted, charity can be one of the most important forms of moral behavior in the modern world [2].

The importance of charitable practices increases during global crisis periods. The success of national governments in coping with the COVID-19 pandemic will largely depend on citizens' charitable participation in solving social problems and society's cohesion. Studies of the largest international charitable foundation "CAF" shows that the demand for charitable purposes is higher than ever due to the coronavirus pandemic: from people affected by it and from the devastating consequences to economic and social life[1].

[1] *A COVID-19 Philanthropy Stimulus Package: Unlocking Further Fiving 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-and-consultations-library/covid-19-philanthropy-stimulus-package (accessed: February 6, 2020).

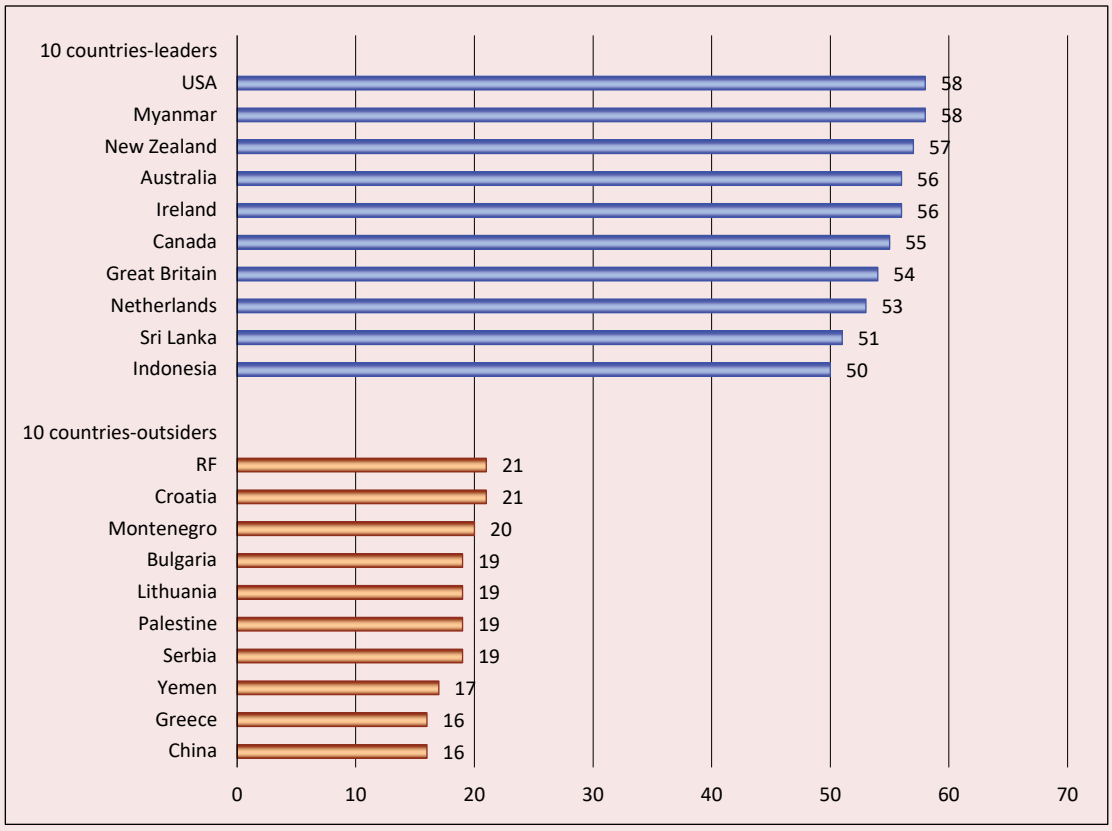
However, charity development levels significantly differ in cross-country comparison. Sociological data of the CAF World Giving Index project shows an indicator of the countries with the highest and lowest involvement in charity in out of 143 countries for 2009–2019 (*Fig. 1*).

Figure 1 shows that Russia lags behind in the cross-country comparison. According to the CAF World Giving Index rating for 2009–2019, it is among ten outsider countries in terms of the charity development level. This fact determined a research interest in the study of charitable activities in Russia.

Considering the importance of charity as a diverse resource for social development, it is extremely important to explore its state in Russian civil society. The analysis of issues at the level of local communities, where there are dense horizontal and vertical social ties, is of particular interest. Researchers note the globalization of civil society's sphere. Local communities remain strengthened and of great importance despite global transnationalization trends [3].

There are various interpretations of the "local community" concept. It usually implies a locality, as well as real social groups with a special quality of relationships. It "feels more direct than society" and includes various types of local organizations and initiatives' activities [4].

Figure 1. Countries with the highest and lowest average charity levels for 2009–2019 (aggregate indicator for such practices as helping a stranger, monetary donations, and volunteering in public organizations), %*



* CAF World Giving Index is based on a simple averaging of responses to three questions about participation in practices. They were asked in each country. Estimates are presented in percentage on the basis of which countries have been assigned an appropriate rank. Then, average scores for 10 years were calculated.

Source: *Ten Years of Giving Trends.* CAF World Giving Index. October 2019.

Clearly, many community initiatives go beyond its geographical boundaries, which develops communities of interest. Nevertheless, in our opinion, a local community consists of people living and working in a certain place, which makes this group more willing to participate in activities focused on the socio-economic development of a particular territory [5, p. 93].

The purpose of our research is to identify the level, motivation, and obstacles to the involvement of a local community in various charity forms. For this purpose, we selected an entity of the Northwestern Federal District of the Russian Federation – the Vologda Oblast. Statistics show that the region lags behind the all-Russian development level according to most analyzed socio-economic indicators[2]. The region's low levels of socio-economic development indicate the importance of using various development resources, such as the charitable activities of the local communities.

The link between charity and socio-economic development

The presented research contributes to the academic debate linking civic participation to solve socially significant problems and promote socio-economic development in their local communities [6; 7; 8; 9]. The literature shows that the involvement of population in charity helps to achieve a balance between elite and mass behavior, since communities focus their attention and resources on solving social problems [8; 10; 11].

However, the link between charity and socio-economic development is not always direct. There is enough evidence in the literature that charitable activities can contribute to socio-economic development, but it can also provoke development of dependent relationships between donors and beneficiaries, preventing investment in a long-term productive activity [12; 13]. In this regard, some scholars argue that charity becomes socially useful only when its purpose is to provide emergency assistance during economic crises – not achieve long-term development goals [13].

Charity is often interpreted as a form of "impure altruism". A benefactor acts not just as a donor working for the benefit of other people, but also as a person who finds moral satisfaction or beneficial public recognition in altruistic activities [14]. In other words, a desire to engage in charity is understood by the authors as a form of social capital. People invest time and resources in their local social relations to improve their social status (for example, obtaining public recognition through any collective or individual actions). Thus, participation in charitable activities is a way for members of society to gain social recognition by voluntarily using their human or financial resources for the common good [15; 16].

Within the social capital concept, it is crucial to address the study of attitudes, such as social trust and norms that motivate charitable practice [7; 8; 17; 18]. The literature shows that socio-psychological foundations in society – trust, willingness to help each other, public approval, faith in justice, need for care, loyalty in a group, respect for authorities –influence the level of potential and real participation in charitable activities [19].

Availability of social capital can lead to a high level of social trust when formal and informal charitable organizations in society achieve their stated goals [6; 10]. On the contrary, achievement of stated goals by charitable communities means that they have a positive experience of working together, while showing their participants that they can take risks by investing their resources, regarding other members of a community, since these social investments are likely to bring returns in the future [20; 21]. The motivation to participate in charity, according to the researchers, should positively correlate with the level of trust [7].

[2] *Regions of Russia. Socio-Economic Indicators. 2020*: Stat. Coll. Rosstat. Moscow, 2020. 1242 p.

The academic literature also discusses how religious and secular norms affect the motivation for charitable activities. The fact that individuals firmly adhere to a religious faith, which usually corresponds to conservative political views, explains their more frequent participation in charitable organizations or making charitable donations [22; 23; 24; 25]. On the other hand, people with secular tendencies, who usually adhere to progressive political views, also tend to act pro-socially, as they are motivated to help or solve structural social problems, such as poverty or inequality [26].

The scholars show that socio-demographic and economic conditions also affect the motivation for charity. There is evidence of a positive correlation between the level of education, financial resources, life in a city and participation in charitable activities [22; 27; 28]. Moreover, charitable activity tends to increase in countries where there is no reliable state-funded social protection system [29]. In many countries, charity among local communities makes up for the lack or absence of a welfare state. However, there is insufficient evidence that socio-demographic conditions have a greater explanatory power for understanding attitudes to charity than, for example, social norms.

The problems of Russian charity are also explored in the academic literature. Scientists have conducted a comprehensive study of the history and current trends of Russian charity in comparison with other countries [30]. The literature on charity in Russia has also explored other topics, such as charity subject and the Internet [31], charity among elderly people [32], impact of trust on charity levels [33], and attitudes of a regional community toward charitable organizations [34].

Despite a significant number of works studying charity at the local community level, the literature analyzes only specific aspects regarding charity, which does not provide a comprehensive understanding of the link between charity participation and socio-economic development. In addition, empirical data on the study of charity is limited. On the one hand, there are many available statistical materials on various aspects of charitable activities. On the other hand, the literature uses varying data collection, and, as a result, the findings are often incomparable.

Sources and methods

The lead author's sociological survey conducted by the Vologda Research Center of RAS in May–June 2019 on a representative sample of the adult population (over 18 years old) in the Vologda Oblast (N = 1900; hereinafter – the survey of VolRC RAS)[3] constitutes the source of data. We used a three-stage territorial stratified sampling: the first stage – selection of the administrative districts of the Oblast according to the socio-economic development level (a technique of grouping areas was developed under the guidance of Professor T. V. Uskova); the second stage – selection of polling stations; the third stage – selection of households using the routing method. The selection of a respondent in a household was carried out using gender and age quotas (a connected quota). The sampling error does not exceed 3%. The survey was conducted according to a formalized questionnaire at the respondents' places of residence. Technical processing of the information was performed through the SPSS program version 25.

To achieve our goal, we used general scientific research methods – discourse analysis, comparison, synthesis, generalization, and induction/deduction – and special methods of working with mass sociological data – construction and analysis of linear (one-dimensional) and paired (two-dimensional) frequency distributions and tables, one-factor analysis of variance, and factor analysis.

[3] The survey's sociological tools were developed by the authors' team of the Russian Foundation for Basic Research grant no. 19-011-00724 (head – Yu.V. Ukhanova).

Research results

According to the Russian legislation, charity is a voluntary activity of citizens and legal entities to selflessly transfer property, including money, to citizens or legal entities, to perform work for free, or to provide other support[4]. According to the Concept for Promoting Charity in the Russian Federation up until 2025, charity plays a crucial role in the country's development[5].

General state support is aimed at activating the potential of charity as a resource that contributes to the formation and dissemination of innovative practices of social activities. The promotion of charity by the state allows supplementing budget sources for solving social problems with extra-budgetary funds and attract the labor resources of volunteers to the social sphere[6].

In studying charity, a main issue is the essence of this social phenomenon. Charitable activities of local community are diverse: they can include voluntary donations of financial and material resources, free use of people's abilities, time, and energy in an individual or collective form. Based on the methodology of the CAF World Giving Index international project, we analyze charitable activities in three main areas: individual assistance to those in need (situational unorganized helping behavior), monetary donations, and formal volunteering in the framework of public organizations' activities.

Helping behavior

According to our original survey data conducted in the Vologda Oblast in 2019, most local community members are somehow involved in various forms of helping behavior: only 27% of respondents did not help those in need, and another 9% hesitated to respond *(Fig. 2)*. The most common practices (in relation to non-family members, relatives, and close friends) are emotional support (39%), help with things (31%), and money assistance (in the form of a non-interest debt – 20%).

In general, the level of the local population's involvement in practices related to moral and material assistance to those in need is noteworthy, such as helping people financially and providing psychological support was between roughly 20 and 40%. These charity levels exceed, for example, the level of involvement in intellectual practices, which are the free provision of professional services, transfer of knowledge and skills, including contacts with authorities (4–5%), or participation in the elimination of consequences of natural disasters and emergency situations (1%).

Monetary donations

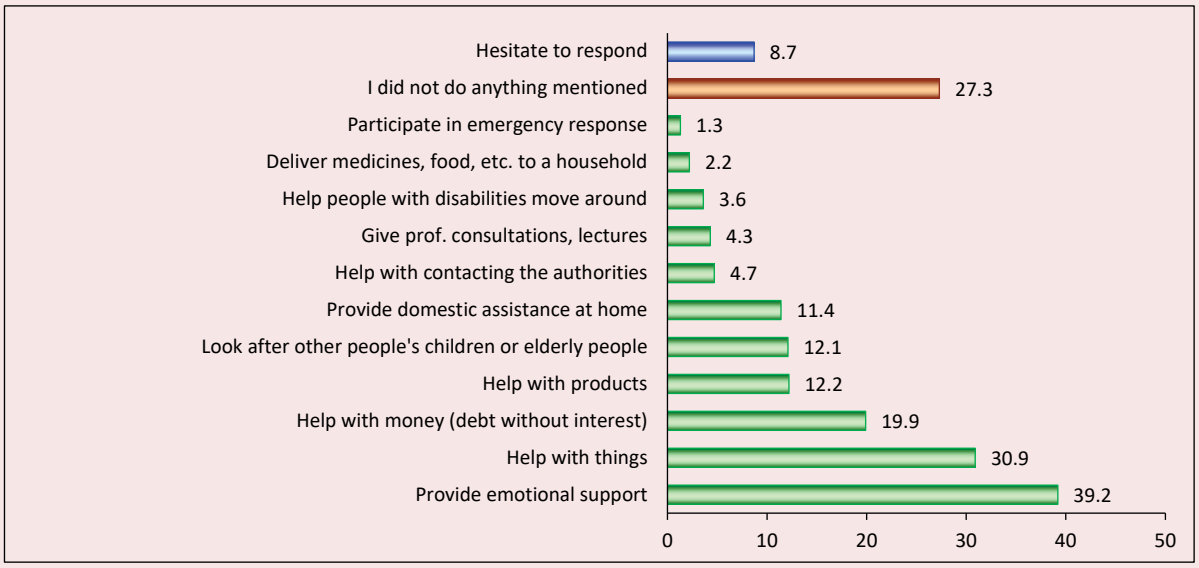
In 2019, only 9% of the region's surveyed residents gave money to people in need (free of charge), while monetary donations are more often made by people living in large towns than in districts (14 vs. 7%; *Fig. 3*). In addition, a small part of the local community, which organizes the collection of donations (4%), is noteworthy. In general, as data show, monetary charity has not become common among the local community.

[4] On charitable activities and volunteering: Federal Law, dated August 11, 1995 (amended on December 18, 2018). Available at: http://www.consultant.ru/document/cons_doc_LAW_7495/ (accessed: July 1, 2020).

[5] Concept for promoting charity in the Russian Federation up until 2025: Decree of the RF Government no. 2705-p, dated November 15, 2019. Available at: https://www.garant.ru/products/ipo/prime/doc/72943544/ (accessed: July 1, 2020).

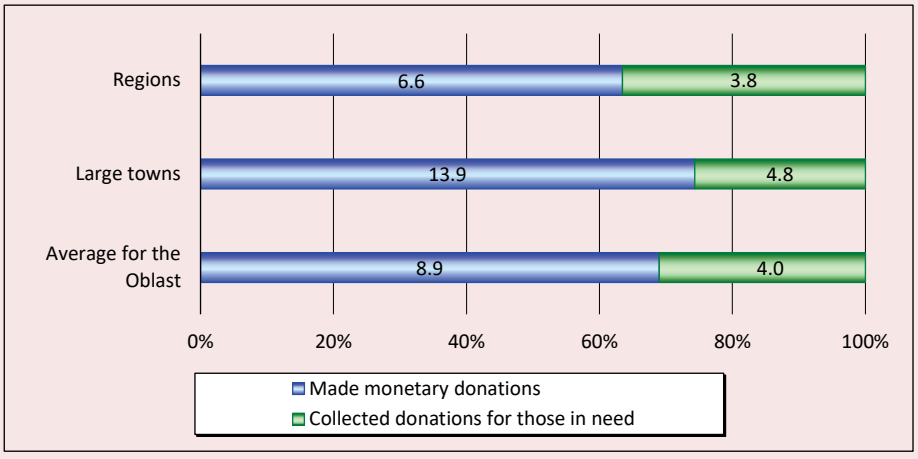
[6] Benevolenskii V.B., Ivanov V.A., Ivanova N.V., et al. Volunteerism and charity in Russia and national development challenges: report for the XX April International Academic Conference On Economic and Social Development, Moscow, April 9–12, 2019. Ed. by I.V. Mersiyanova. Moscow: HSE Publishing House, 2019. 120 p.

Figure 2. Participation of the local community in various practices of helping behavior, the Vologda Oblast, 2019 (share of positive responses for each judgment), %



Source: VolRC RAS sociological survey, 2019.

Figure 3. Level of involvement of the local community in monetary donations, the Vologda Oblast, 2019, % of respondents



Source: VolRC RAS sociological survey, 2019.

Volunteer activities in public organizations

A volunteer activity is an important area of the charity development. The Concept for the Development of Volunteerism in the Russian Federation until 2025 clarifies that this implies "pro bono perfor-mance of works and (or) provision of services in order to solve social problems..."[7]. L. Salomon, based on a set of criteria developed and described by the International Labor Organization (ILO), identifies five functional features that define volunteerism: 1) it benefits others; 2) it is not a casual activity and conducted for a significant period of time; 3) it is pro bono; 4) it is not intended to benefit family members or close relatives; 5) it is not a mandatory activity [35].

Volunteers can carry out their activities individually (according to the methodology used, this form of charity is referred to as helping behavior) or as part of non-profit organizations. At the same time, we believe that special attention should be paid to studying volunteerism in activities of public organizations, since such charitable activity has the most stable connections and requires a certain regularity and affiliation.

According to the survey of VolRC RAS, only 13% of the local community members of the Vologda Oblast participated in volunteer activities through non-profit organizations, and this figure is even lower (not exceeding 7%) for regular activities (at least twice)[8]. At the same time, 20% of the Vologda Oblast residents say that they may participate in the NPOs volunteerism in the future, which indicates the potential for its development through the formation of a culture of self-assistance and support in the local community.

A descriptive analysis of differences in the level of involvement of the local community in charitable practices, depending on the awareness and trust in NPOs, showed that people who know about NPOs and trust them participate in charity more often, compared to the average level (43 and 53% vs. 33% in the sample as a whole; *Tab. 1*). Therefore, even though that the region had low engagement in formal volunteering, associated with activities in any organizations, and high informal volunteer activity, non-profit organizations play a significant role in the development of local social solidarity.

Table 1. Interconnection between the level of public awareness about NPOs and trust in them, and the participation of the local community in charity, % of respondents

Level of awareness and trust in NPOs	Yes, I participate	No, I do not participate
Do you know about the activities of NPOs in your town (district)?		
Yes, I know it well; I heard something	43.3	56.7
No, I do not know	21.2	78.8
How much do you trust NPOs?		
I fully and mostly trust them	52.9	47.1
I fully and mostly do not trust them	27.1	72.9
Sample average	32.8	67.2
Source: VolRC RAS sociological survey, 2019.		

[7] Concept for the development of volunteerism in the Russian Federation until 2025: Order of the RF Government no. 2950, dated December 27, 2018. Available at: http://static.government.ru/media/files/e6LFLgABRP4MyQ8mW7HClCGR8esYBYgq.pdf (accessed: March 9, 2020).

[8] VolRC RAS sociological survey, 2019. Response to the question: "How many times in the last 12 months have you worked as an NPO volunteer?".

Thus, our study showed that the local community of the Vologda Oblast is more involved in such forms of charity as helping behavior outside of institutional structures (64%); involvement in volunteer activities through non-profit organizations is less developed (13%), as well as practices of monetary charity (9%; *Fig. 4*).

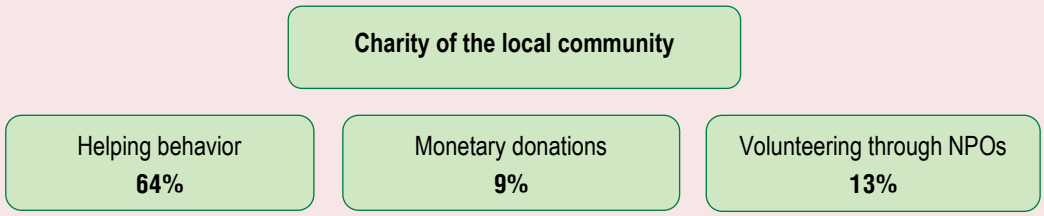
In general, the obtained regional findings correlate with the national situation. According to the international research of the CAF World Giving Index, over the past 10 years, Russians have been more likely to help strangers (35%)[9], less likely to be involved in volunteer work through NPOs (16%), and less likely to make monetary donations (12%) *(Tab. 2)*. The global community, on average, is more involved in such practices as helping strangers (48%), but, at the international level, monetary donations are more common than, for example, volunteerism in public organizations (26 vs. 20%).

Motivation and obstacles to charitable activities of the local community

The study of the current level of the local community's charitable activity and motives for participation/non-participation in such activities is an important aspect of exploring charity.

A third of the region's population (32%) says that solidarity is the main motive for participating in charity ("anyone can be in trouble"), another third of respondents (28%) seeks to gain public recognition through charity, and every fifth respondent (20%) mentions that it is a way of expanding

Figure 4. The level of involvement of the local community in charitable activities in three areas, % of respondents



Source: own compilation according to the results of the VolRC RAS sociological survey, 2019.

Table 2. Development of charity in the countries in three areas for 2009–2019 (average value for the period), % of respondents

Helping strangers		Monetary donations		Volunteerism in public organizations	
Country	%	Country	%	Country	%
Liberia	77	Myanmar	81	Sri Lanka	46
Sierra Leone	74	Great Britain	71	Turkmenistan	43
USA	72	Malta	71	Myanmar	43
Kenya	68	Thailand	71	Liberia	43
Zambia	67	Netherlands	71	USA	42
For reference: RF	35	For reference: RF	12	For reference: RF	16
Average for 143 countries	48	Average for 143 countries	26	Average for 143 countries	20
Source: *Ten Years of Giving Trends*. CAF World Giving Index, October 2019.					

[9] According to the survey methodology of VolRC RAS, we took into account not only assistance to strangers, but also to acquaintances, neighbors, etc. The reason is the fact that the sample covers, among other things, small towns where local communities are usually familiar with each other.

Table 3. Motives for participation/non-participation in charity based on self-assessments of the local community in the region, % of respondents for each judgment*

Motive for participation	%	Motive for non-participation	%
Trouble can happen to anyone	32	People should be helped by the state, not by benefactors	51
The desire to earn the approval of society (friends, acquaintances, relatives)	28	I do not believe that my help will really reach a recipient or will be used for its intended purpose	37
Opportunity to get connections, contacts	20	My family and I have a lot of problems of our own, there is no time to do charity work	20
I want to do something useful, to help people	15	I am not interested in it	12
Because me, my family, and friends once found themselves in a difficult situation	12	I am not sure about benefits of public activity	11
I have a lot of free time, I have nothing to do	5	It does not contribute to solving my own problems and problems of my family members	9
Get a financial reward	3	Such activities do not give me an opportunity for personal growth	9

* Distribution of respondents' answers to the questions: "Why do you participate in charitable activities?" and "Why do you not participate in charitable activities?".
Source: VoIRC RAS sociological survey, 2019.

social ties *(Tab. 3)*. The most important reason for not participating in charity, according to the population's self-assessments, is related to the belief that the state should help people, not philanthropists (51%). In addition, distrust in charity and charitable organizations also forms a barrier to involvement: 37% of respondents do not believe that their help will actually reach a recipient.

Researchers recognize the impact of charitable activities on a wide range of interested parties – volunteers, beneficiaries, communities, and society as a whole – and pay a lot of attention to the relationship between participation in charitable practices and individual areas of human life (social, cultural, psychological, economic) [36].

For in-depth understanding of the factors that affect motivation of community involvement in charity, the authors use the factor analysis to select latent variables (hereinafter – factors) of motivation with regards to charity. Latent variables or factors are non-directly measured constructs represented by two or more observable variables that correlate with each other ($p<0,05$). Grouping of the observed features and their fixing into latent variables lead to the indicators' independence [37].

To identify factors that determine the local community's motivation to participate in charity, we conducted a latent-structural analysis using the factor analysis method[10]. As a result, latent variables (factors) of the local community's motivation for charitable activities were identified. Factor analysis was performed using correlating variables (using the "Pearson Correlation" method).

Based on the analysis of extensive scientific literature on charitable behavior, we selected a wide list of independent variables that reflect the respondents' values, beliefs, and socio-demographic characteristics. We used an indicator that characterizes experience of the local community's participation in charity as a dependent variable. It was recorded during the response to the question: "Over the past year, have you participated in any kind of charitable activity (helping behavior, monetary donations, voluntary, gratuitous work)?". An empirical approach, the number of variables was lowered, and three factors were identified that

[10] Using the SPSS program, the data matrix was subjected to the Extraction Method factor analysis procedure: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A number of factors was determined using the Kaiser criterion.

Table 4. Results of factor analysis of local community's charity

Factor (latent variable)	Variable	Factor 1	Factor 2	Factor 3
Social norms	Z11 – Religion	.796		
	Z12 – Public recognition	.730		
	Z13 – Career	.682		
	Z5 – Civic engagement	.520		
Socio-demographic characteristics	Z3 – Age		-.662	
	Z9 – Presence of children		.619	
	Z7 – Financial situation		-.501	
	Z8 – Marital status		.401	
Psychological attitudes	Z10 – Life satisfaction			.672
	Z14 – Self-sufficiency			.631
	Z6 – Social trust			.543
	Z15 – Trust in NPO			.400
In the analysis phase, only observations are used for which v2101 = 1 ("Yes, I participate in charity work"). Source: VoIRC RAS sociological survey, 2019 (N = 1900).				

have a value greater than one and an explanatory power at a 65.7% level. While analyzing the factor structure, a load was considered significant at a 0.35 value on each factor scale.

The first identified factor (explaining 46.7% of total variance) combined variables that characterize life attitudes and values: importance of religion, public recognition, career in a person's life, as well as the level of civic engagement (*Tab. 4*). The maximum weight in this formation belongs to the religiosity indicator ("religion is important in my life") with a 0.796 factor load value. Less significant was the indicator of civic engagement through self-assessment (0.52). Conventionally, we have designated this factor as social norms.

The second factor (7.4% variance) includes the provisions that indicate the socio-demographic characteristics of charity subjects: age, children, financial status, and marital status (married). The lowest value of the load in this factor is the indicators that characterize respondents' marital status (0.401). Two indicators negatively load the factor: age (-0.662) and financial status (-0.501).

A positive value of the third factor (10,8% variance) indicates the impact of psychological attitudes on the motivation to participate in charitable practices, such as satisfaction with life (attitude "completely and mostly satisfied", 0.672 load variable), self-sufficiency (attitude "I can do without the government support", 0.631 load variable), social trust (attitude "most people can be trusted", 0.543 load variable), trust in non-profit organizations (attitude "completely and mostly trust", 0.4 variable load). It is designated as "psychological attitudes". A positive value of the factor indicates the importance of subjective well-being and trust for charity involvement. The data obtained show that the first factor (social norms) has the greatest impact on the local community's involvement in charity, and the factor combining socio-demographic characteristics has the lowest impact.

Discussion

The academic literature links charitable activities to positive social, cultural, psychological, and economic consequences for local communities and society as a whole. We attempted to analyze the level of development, motivation, and obstacles to the local community's involvement in public life through charitable activities using the case-study

of the Russian region. However, before proceeding to the discussion of the results obtained, let us turn to the foreign experience of the charitable activity development.

The earlier analysis of international data revealed that the Netherlands occupies higher positions in comparison with other countries in terms of charitable activities. This caused a research interest in studying the Dutch experience of developing charitable practices. According to sociological data, from 2012 to 2016, nearly half of the country's residents engaged in volunteer activities at least once a year [38]. A high level of participation in charity has been observed in the Netherlands not only in recent years, but also in a long-term perspective: according to data of the Dutch Central Bureau of Statistics, this figure has always fluctuated between 42 and 45% since 1977 [38]. Due to the ageing of population in the Netherlands, the demand for health-related services actively increases, and volunteering in this area becomes increasingly more important [39].

In the Netherlands, people are motivated to engage in charity by altruism, sense of usefulness, desire to expand social networks, gain new skills, or sense of duty [40].

There are certain demographic groups that are more likely to do charity work than others. Most volunteers have higher education. There is an obvious difference between rural and urban residents: those who live in rural areas are more likely to engage in charity work.

In addition, the most important factor is the characteristics of the work activity (or its absence). Unemployed people, part-time workers, and those who are unable to work in "standard" circumstances due to other obligations or obstacles are more likely to engage in charity work than an average Dutch person [41; 42].

P. Dekker underlines that unemployed people in the Netherlands often find themselves on long trajectories, where they are expected to volunteer to compensate for an unemployment allowance. This type of charitable activity is in the gray area between voluntary and involuntary. Often, an employee of the Insurance Agency (OST) encourages charitable activities for unemployed people, thereby contributing not only to the efficient usage of time, but also to their integration into society [43].

The case-study of the Netherlands is important for comparing conditions leading to a high level of participation in charity. In general, the Netherlands' experience shows that the existence of a strong and modern welfare state does not exclude participation in charity and vice versa (a common argument in the American literature). The study and comparison of successful charity development in different countries is a promising research area.

As previously mentioned, Russia lags behind other countries in terms of charity development. Descriptive statistics show that the Vologda Oblast is in a similar situation regarding the citizens' participation in charitable activities: helping behavior is the most common charity type – "small deeds" practices. The feature of such practices is that their time, effort, and finance costs are low; they are also situational, minimally organized and formalized, and they have quick results with tangible benefits. This trend is also global: the field of informal, self-organized, and decentralized initiatives, such as self-help groups, local community initiatives, as well as individual forms of helping behavior and support, is expanding [44].

Meanwhile, we should pay attention to a negative trend: despite the strengthening of the role of charity as a significant social phenomenon, there is a distrust among citizens to organized forms and types of charitable activities in Russian society; Russians have no associations with charity and volunteerism when it comes to specific gratuitous

assistance to a person in need without the participation of any organizations [45].

It was determined during the study that the main motives for participating in charity are linked not only to solidarity attitudes and desires to help, but also to a desire to gain public recognition and expand social ties. In this regard, charity is perceived as an encouraged phenomenon that brings people society's authority and respect. Regarding the public opinion of Russians, it seems relevant to discuss the prospect of forming an image of charity being not just a certain altruistic act, but a socially useful systemic activity aimed at achieving the common good[11].

The main reason for not participating in charity is related to the fact that respondents primarily see the state, not local communities, as the collective agent responsible for ensuring society's well-being (see tab. 3). In this regard, the post-Soviet Russian society is characterized by a paradoxical combination: distrust in the altruistic aspirations of other people and simultaneous expectation of the government altruism [30]. Consequently, the historical institutions of former Soviet Russia have a high degree of continuity.

Another major obstacle to the local community's involvement in charitable practices is the population's distrustful attitude toward charity and charitable organizations: they fear that their help will not reach a recipient (see tab. 3). Therefore, the fight against fraud is an acute problem for the image of the Russian charity. Recently, there have been increasing cases of calls to collect private donations backed by unscrupulous people[12]. Of course, each similar case lowers trust in charitable organizations and generally discredits the very system of charity.

The in-depth analysis shows that the main factors, motivating the local population to participate in charitable activities, are personal and social attitudes, such as respondents' religiosity, public recognition, career, life satisfaction, and self-sufficiency (see tab. 4). All coefficients for these factors are higher than 0.6. It shows their strong correlation with participation in charitable activities. The literature claims that there is a positive relationship between charity and increased satisfaction with life, personal achievements, social networks, and relationships, personal and career development [46]. P. Dekker and A. Brook state that the readiness of population for social activity increasingly depends on personal interests and needs, rather than on a sense of responsibility to society [47]. Individualistic views, as well as collective ones, can also stimulate prosocial behavior [48; 49], although they lead to a change of strictly formalized participation models to informal ones [50].

Religiosity and participation in religious organizations can be a significant source of social capital. This helps to explain why the factor of religion promotes involvement in charitable activities [51]. The literature claims that participation in religious organizations or communities increases life satisfaction, self-sufficiency, and efficiency, as religious communities create normal, often vertically organized, social networks [8; 52; 53]. It should be noted that social networks, created through participation in religious organizations, do motivate participants to engage in charitable activities, but at the expense of universal social trust. We encourage researchers to continue studying the relationship between religiosity and social trust in order to confirm or refute given interpretation.

It is revealed that financial situation as a motivational factor has a negative correlation to

[11] Non-institutional social activity of citizens: forms of implementation and possible support. Key findings of the comprehensive study (October 15, 2018). Zircon. Moscow, 2019.

[12] *Report on the State of Civil Society in the Russian Federation for 2019.* Moscow: Civic Chamber of the Russian Federation, 2019. Pp. 61–62.

engaging in charity work. This may be the result of personal and societal norms and values that transcend the socio-economic determinants of charity participation. However, it is theoretically possible that local communities must first achieve a certain degree of financial stability in order to have the emotional and financial resources to engage in charity [22; 27; 28]. Therefore, this alternative explanation would indicate an endogenous relationship between charity and the socio-economic development of local territories, which should be studied in the future.

Conclusion

Charity, as a practice of civic participation, is one of the most important resources for social development. Its essence is not only to help those in need, but also to promote innovative development, improve quality of life, strengthen moral foundations, promote solidarity, and social cohesion in society. Based on a comparison of the results of international sociological measurements, we revealed that, according to all presented charity practices, Russia is noticeably behind other countries. According to the CAF World Giving Index, Russia is among ten countries with the lowest level of charity development between 2009–2019. This caused a research interest in an in-depth study of Russian charity.

The analysis showed that the local community practices various forms of helping behavior more often than, for example, monetary donations. A low level of public participation in formal charitable practices, related to public organizations' activities, and a high level of informal charitable activity draw attention. At the same time, we revealed that non-profit organizations play a major role in the development of local social mutual assistance.

As a result of the factor analysis, we determined that the factor associated with life attitudes and values – importance of religion, public recognition, career in a person's life, etc. – has the greatest impact on the local community's involvement in charity. The main barriers to public participation in social activities are largely determined by two aspects: the belief that the government, not people, should be responsible for solving local social problems and sometimes distrustful attitudes to the existing system of charity and charitable organizations.

We believe that the theoretical comprehension and analysis of the extensive empirical basis of the local community's charitable activities can encourage fundamental research in this area and practical work aimed at studying specific activities with the aim of increasing the population's involvement in local charity.

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Assessing the Level of Social Adaptation among Young Migrants in the Megapolis

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Abstract. The purpose of the research is to develop a methodology for a sociological analysis. It should also be a basis for assessing the level of migrants' social adaptation, its impact on the solution of key accommodation problems, behavior reactions, social sentiments, ideas about Russia's adaptation strategies, personal acculturation strategies, and support for integration processes in the EAEU. The novelty of the research is the lack of a consistent theoretical model for the empirical measurement and explanation of these complex processes, as well as the necessity to study young Kyrgyzstan citizens living in Moscow as a group with the most serious adaptation difficulties, compared to migrants from other EAEU member states. The analysis of young Kyrgyzstan citizens' adaptation in Moscow is based on basic ideas of sociological theories on adapting a person to changing social environment: social adaptation creates a conceptual field that encompasses a wide range of interaction with such phenomena as accommodation, acculturation and integration as a result of successful integration into the structures of host societies, adaptation to the norms and ideas of the majority. Methodological strategy includes structured interviews of young migrants from Kyrgyzstan who live in Moscow. We selected participants using the snowball sampling with the following criteria: Kyrgyzstan citizens, aged 17–30, who arrived in Moscow after 2015 and lived there for more than a month. Unlike our previous works that analyze certain aspects of adaptation of migrants from Kyrgyzstan in the Russian regions, the current study achieves several objectives. It creates opportunities for expanding the study on the social adaptation features of young citizens from the Kyrgyz Republic. Our research enhances the migrants' social adaptation theory

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with new methodological content. This work also allows ensuring the implementation of further empirical studies on the social adaptation issues of migrants from the EAEU member states in Russia conceptually. It provides a differentiated approach to the development of adequate tools and mechanisms by social institutions in Kyrgyzstan, Russia, The Eurasian Economic Commission and creation of productive environment for social adaptation.

Key words: social adaptation, accommodation, acculturation, integration, migrants, Eurasian Economic Union, level of social adaptation.

Introduction

According to experts, there are currently 600–800 thousand[1] Kyrgyzstan citizens who work in Russia, and 16 thousand of those who study in this country – quota basis included[2]. Usually they are young people who could not find a job in the home country which would guarantee personal/professional growth and decent income. Some of them also want to get high-quality Russian education that gives broad employment opportunities in the post-Soviet countries.

Creation of the Eurasian Economic Union, which includes post-Soviet countries, provided Kyrgyzstan migrants with employment and education mobility rights equal to ones of other citizens of the EAEU countries. However, our studies show[3] that this group has more difficulties in adapting to Moscow society in comparison with migrants from other EAEU countries. It is important to assess problems, put forward suggestions to create resources for the complete realization of their human capital, sustainable and complementary interaction with the Muscovites, and to understand how the social adaptation level impacts sentiments, ideas, and attitudes toward Russia and the Muscovites, as well as support and development of the EAEU.

The novelty of the research is characterized by the necessity to clarify categorical apparatus for the empirical assessment of migrants' social adaptation level. The theory of migrants' adaptation has not really developed in the modern science. During the intensification of migration processes in the mid-20th – early 21st century period, which has been characterized by active emigration and mass immigration of citizens, the inclusion of many researchers from different countries and scholars from various scientific areas into studying migrants' social adaptation led to the formation of new schools and concepts that use diverse categories and put opposite meanings into the same terms. Considering the complexity of this process and its features, different countries developed many theoretical models that explain adaption of migrants in host communities (assimilation, segmental assimilation, cross-cultural adaptation, multiculturalism, transnationalism, methodological nationalism, multiculturalism, interculturalism). Eventually, a lot of synonyms, or categories used as such, emerged within them during an analysis of migrants' social adaptation and integration: acculturation, absorption, accommodation, assimilation, inclusion, incorporation, etc.; there were differences in defining the structure, functions, and factors of social adaptation. Researchers use different definitions, which range from simple ones to complex abstract-theoretical constructions.

[1] Kyrgyzstan authorities reported a number of migrants in Russia. Available at: https://www.interfax.ru/russia/629250 (accessed: June 1, 2020)

[2] MFA announced a number of Kyrgyz people studying in Moscow. Available at: https://24.kg/obschestvo/104718_skolko_kyirgyizstantsev_uchitsya_vrossii_rasskazali_vmid/ (accessed: June 1, 2020)

[3] FSBIS VolRC RAS has been monitoring integration processes in the EAEU since 2015. G.I. Osadchaya heads this project.

In this regard, the purpose of our research is to develop a methodology for a sociological analysis, to evaluate Kyrgyzstan migrants' social adaptation factors, to reveal issues, to work out suggestions for creating environment for the fullest realization of the human potential of Kyrgyzstan migrants. The scientific novelty could be characterized by filling the methodological content of the theory of migrants' social adaptation, conceptually ensuring the implementation of further empirical research of social adaptation of migrants from the EAEU member states in Russia, and assessing the level of social adaptation, their impact on attitudes, values, and behavior.

Methodology and methods characteristics

In this research, the sociological analysis of the adaptation level of young Kyrgyzstan citizens is based on basic ideas of sociological theories on a person's adaptation to changing social environment. E. Durkheim [1] reviews social adaptation as the assimilation (interiorization) of social norms by an individual in the "norm – pathology" continuum; M. Weber [2] argues that a rational person is better adapted than a normative one; T. Parsons [3] understands adaptation as the balance of mutual expectations of an individual and social environment; R. Merton [4] records the imbalance (contradictions of general cultural and institutional norms) in the structure of the society's normative system and believes that adaptation does not necessarily mean the assimilation of social norms by a person, and it is directed not from society to an individual, but vice versa; Chicago sociologists – R. Park, W.I. Thomas, and F. Znaniecki [5; 6] – initiated the study on the issues of migrants' adaptation in a host society and proved the importance of developing an adaptation strategy; American scholars R. Redfield, R. Linton, and M.J. Herskovits [7] understood adaptation as a result of social interaction between groups, activity, when both parties adopt – migrants and members of a host society, and they also proved the necessity to distinguish between "acculturation" and "assimilation".

The research methodology is based on our idea that social adaptation forms a semantic field that encompasses a wide range of interaction with phenomena like **accommodation**, **acculturation**, within which the interaction of certain individuals and entire social groups with a foreign cultural environment emerges, and **integration**, as a result of successful adaptation, integration into the structures of host societies, adaptation to norms and ideas of the majority [8–19].

We study social adaptation in a broad social context and in different areas of social life, because it can be selective and have selective effects. Despite the fact that the article analyzes the level of social adaptation among Kyrgyzstan young migrants, it is assumed that social adaption of each individual and its features are the basis of the study.

The methodological strategy includes a survey of young migrants from Kyrgyzstan living in Moscow (structured interviews with migrants from Kyrgyzstan within the project "Monitoring of integration processes in the EAEU", project manager G. I. Osadchaya), conducted in October–December 2019 and January–February 2020. 823 people were interviewed, selected by the snowball method using certain characteristics: Kyrgyzstan citizens, aged 17–30, who arrived in Moscow after 2015 and lived there for more than a month. The choice of an empirical object is determined by socio-demographic characteristics of migrants from Kyrgyzstan, and a number of respondents – by the need to identify statistically significant groups of young migrants from Kyrgyzstan in terms of the social adaptation.

Discussion of the results

In recent years, researchers have explored the social adaptation of migrants from Kyrgyzstan in the context of positive and negative consequences of labor migration from the KR for sending and host countries – Kazakhstan and Russia [20],

assessment of the developing conditions and transitional provisions for the application of the Kyrgyz Republic legal framework of the Eurasian Economic Union, including free movement of labor in the EAEU [21].

Some articles are devoted directly to the problems of adaptation of labor migrants from Kyrgyzstan in specific Russian regions: for example, Siberia and Saratov. Their authors identify the "adoption conditions" of migrants [22], determinants of changes in social attitudes and value orientations, and they substantiate the factors of ethnic and cultural identification of Kyrgyz people, taking into account local specifics [23]. The works about the adoption of migrants in Moscow analyze its specific aspects: possible "career trajectories" – from the position of a bed-renter to an "owner"; models of migrant residence – each implies a different degree of attachment to a place of living [24]; infrastructure of migrant workers (ethno-migrant associations, "ethnic" cafes and medical centers, intermediary firms and migrant networks) [25]. The scientists analyzed the Kyrgyz diaspora in Russia as a new stage of intercultural interaction. It is noted that the issues of the modern Kyrgyz diaspora formation, which emerged as a result of migration processes in the post-Soviet period, have not yet been studied [26]. Thus, the problems of the social adaptation of young Kyrgyzstan citizens in Moscow were not systematically studied.

Research results, their analysis, and explanation

Coming from Kyrgyzstan to Moscow, a young person changes a predictable and understandable environment, where common behavior patterns guarantee the achievement of a set goal, to uncertain one. In this regard, an initial adaptive need of an individual is to bring the conditions for everyday life in accordance with his capabilities and ideas: it includes search for accommodation and work, arrangement of leisure. Then, relatively quickly, young people learn dress manners and practices of everyday behavior. Value systems are the most difficult to change.

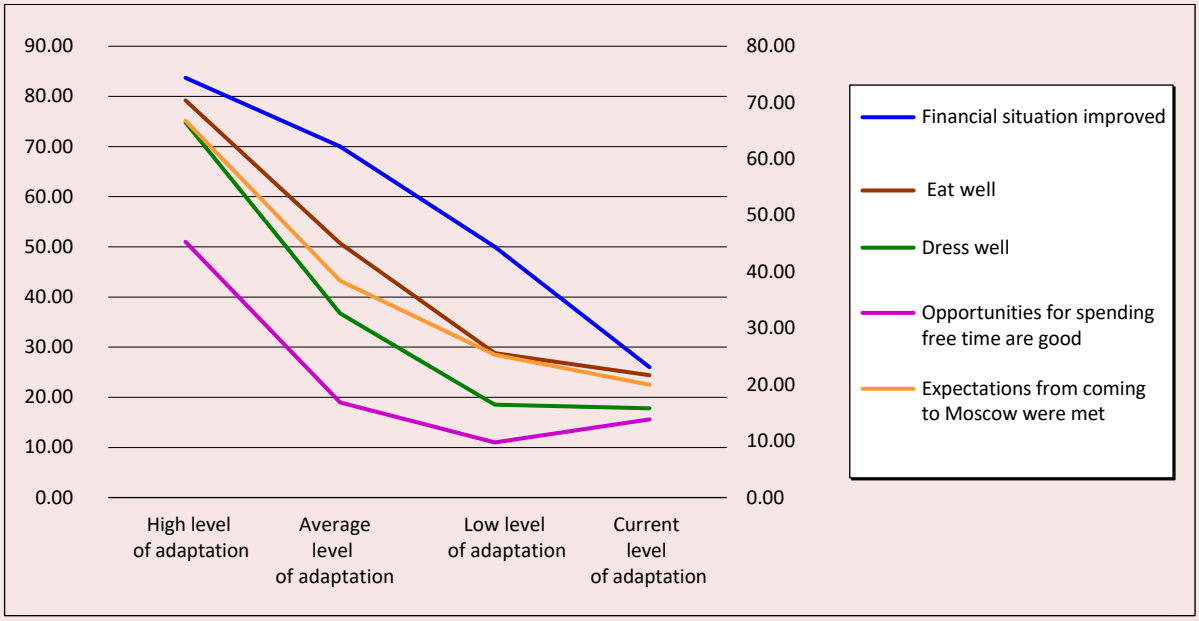
Newcomers from Kyrgyzstan solve all these problems with different results and speed, showing personal levels of the social adaptation. The analysis of obtained empirical data allowed us to distinguish four groups of migrants: with a high level of adaptation represented by approximately 25% of respondents, with a medium level – 52%, with a low level – 18%, and a small group with current adaptation – 5%, characterizing behavioral responses of respondents and unresolved key problems of adaptation to new environment.

The adaptation level is closely related to the migrants' assessment of various aspects of everyday life in Moscow: financial situation, quality of food, clothing, organization of leisure, satisfaction with the results of relocation. It characterizes the asymmetry of migrants' opportunities in the adaptation process. The higher it is, the more it helps to align the way of life of migrants with the youth of a host society ***(Fig. 1)***.

The adaptation level impacts social sentiments. Young Kyrgyzstan citizens who have successfully integrated into the Moscow society are three times more likely to have a good and optimistic mood than migrants with a low level of adaptation (high level – 36.6%, average level – 21.4%, low level – 12.3%); they are less likely to experience anxiety, irritation (high level – 8.4%, average level – 9.8%, low level – 19.9%). Special social sentiments exist in the current adaptation group. Here, in comparison with the third group, the proportion of respondents-optimists is higher (20.0%), but a number of those who are restless or irritated is nearly the same (17.8%).

Migrants from the group of the most adapted ones more often feel confidence in the future (respond options "Yes", "More likely yes than no": high level – 78.2%, average level – 70.4%, low level – 56.9%, current adaptation level – 51.2%). They are more likely to feel a sense of pride in Russia (high level of adaptation – 13%, average – 8.0%, low – 3.4%) and satisfaction with activities of the Russian government (high level – 42.0%, average – 33.0%,

Figure 1. Young Kyrgyz citizens' assessment of different aspects of life in Moscow depending on the level of adaptation, % of respondents



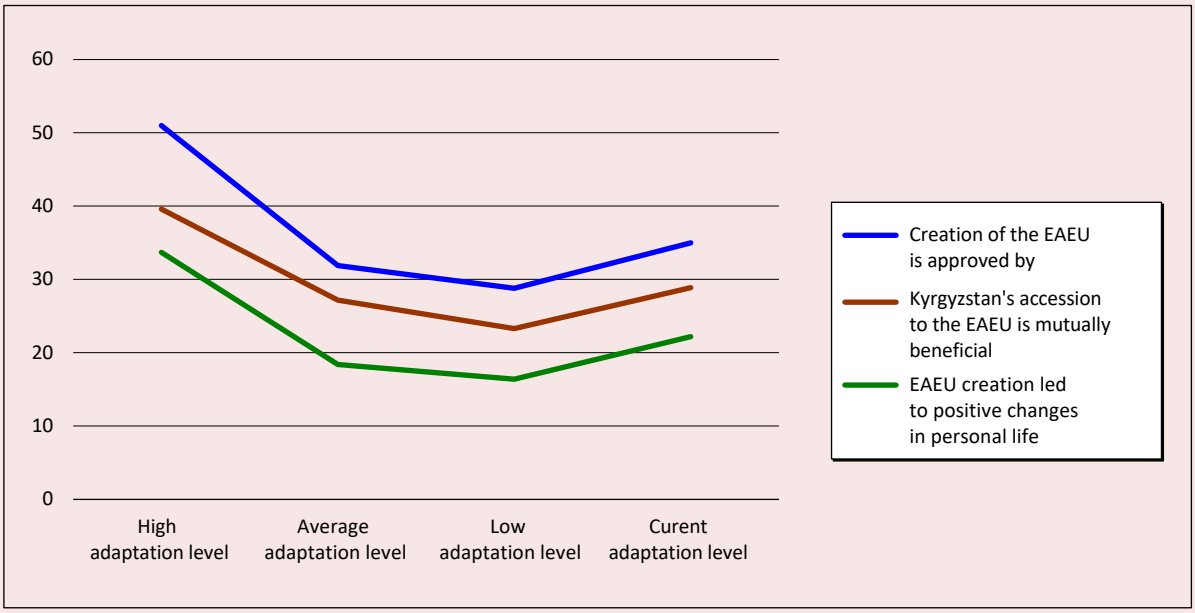
Source: own development.

low – 26.0%, current adaptation – 13.3%); they more often speak positively about young Muscovites. 82% of migrants with a high level of adaptation, as well as 74.2% with average adaptation level, 53.4% with low adaptation level, and 57.8% with current adaptation level, had a very positive and generally good impression of Muscovites.

The adaptation level of migrants also affects the attitude to the Eurasian integration problems. The most successfully adapted respondents are more likely to support the creation of the Eurasian Economic Union in the post-Soviet space ("Yes, I approve" – 51%), which is about 20 p. p. more than in the group with average (31.9%) and low (28.8%) adaptation. The rating of those who answered "Rather yes than no" should be added to these ratings. In general, the approval of the construction of the EAEU is at the level of 69%, the highest is in the groups with a high adaptation level – 77.8% – and the current adaptation – 73.4%. These informants more highly rate a mutually beneficial process of uniting states in the Eurasian Economic Union ("Yes" and "Rather yes" for migrants with a high level of adaptation – 75.2%, with a low adaptation – 65.7%) and Kyrgyzstan's entry into it ("Yes" and "Rather yes" for migrants with a high adaptation level – 78.2%, with a low adaptation – 63.7%), as well as the results that they personally achieved in the process of functioning of single and common markets of the Economic Union ("Yes" and "Rather yes than no" responses for migrants with a high level of adaptation – 67.4%, with a low adaptation – 42.4%; *fig. 2*).

The adaptation level affects the ideas of young people about the essence of Russia's adaptation strategy. According to 44.1% of respondents representing a group with a high degree of adaptation and 32.9% – with a low adaptation, the harmonization of an individual and an environment, ensuring the alignment of needs, interests, attitudes, and value orientations, is associated with the assimilation policy. At the

Figure 2. Share of respondents who support integration processes in each group according to the social adaptation level, % of respondents



Source: own development.

same time, they understand assimilation not "as a complete dissolution, but as the weakening of ethnic separation and subsequent reduction of cultural and social differences, the crossing of social borders of a host society" [27] due to the adoption of a new identity's attributes. These migrants are ready to meet a host society, which increases their adaptive capacity and ensures integration.

40.1–45.6% of respondents believe that migrants should be included in a life of a local community, recognizing their national and cultural identity. They are focused on the policy of biculturalism, which means assimilation of dominant norms in interaction with old ones and construction of their own system that everyone accepts on this basis. 3.0–6.7% of respondents believe that the most productive interaction between Muscovites and Kyrgyzstan migrants is possible within the segregation policy. Consequently, the better adapted a migrant is, the more likely he is to support Russia's policy of adapting migrants in the assimilation regime. We would like to note that with a lower level of adaptation of an informant, the proportion of those who found it difficult to answer this question was greater.

The study shows that the image of Russia depends on the level of migrants' adaptation. For Kyrgyzstanis with a high and medium adaptation level, Russia is primarily associated with opportunities for a good income (51.5–54.2%) and a comfortable life for them and their family members (26.7–23.7%). Among migrants with a low adaptation level, the share of responses "With certain difficulties and challenges to provide for myself and my family" was higher (16.3%). The image of Russia among migrants with a current adaptation is more often associated with obtaining a high-quality education (33.3%), opportunities to move to other countries (8.9%), constant problems and general unsettlement conditions (6.7%).

However, there are variables that are not determined by the adaptation level. They are first associated with value orientations, which are the most conservative and difficult to change. Migrants came to Moscow with their own norms, ideas, and behavior patterns, lifestyle standards, adopted in Kyrgyzstan or constructed by migrants themselves or preferred by them, which, due to their short stay in Moscow, could not change quickly.

The level of adaptation, for example, does not affect the choice of a country or association of countries to live in. The preference rating is as follows: Russia (36%), Kyrgyzstan (34%), the Eurasian Union (14.5%), with the exception of a small group of current adaptation. Here the preferences are as follows: Kyrgyzstan (51.1%), Russia (24.4%), and the EAEU (13.3%).

The adaptation level does not affect the identification either. Only 11.5% of respondents consider themselves to be a citizen of their country and a citizen of the Eurasian Union or a citizen of the Eurasian Union and a citizen of their country, regardless of their success. It should be noted that a dual identity (national and pan-Eurasian) is the most important condition for a viability of the Eurasian idea, an indicator of the integration processes effectiveness in the EAEU.

The focus of migrants on a degree of mastering a host society's culture, which affects the adaptive potential of young Kyrgyzstanis, is interesting. The assessment of migrants' strategic preferences in relation to the balance between the adoption of the dominant culture and the preservation of the old one justifies distinguishing three types of attitudes toward acculturation. The first type (about 20%) is the orientation toward their own culture and lack of acceptance of a new cultural environment ("I believe that all people in the world share or should share the same values: ones accepted in my country" + "I believe that the values of a foreign culture threaten a usual order of things for me and my way of living"). If it does not change, this attitude may contribute to non-recognition of a host society's values by such respondents. In the future, it may not allow them to adapt to the Moscow society and cause conflicts. This attitude generates a personal strategy, which can be called a marginalization strategy in the Moscow society.

The second type of attitudes is associated with a unifying opportunity of different cultures and features of intergroup contact, including the assimilation of a host society's culture by migrants. Nearly 42% of respondents consider it important to keep in touch with a native culture while adopting basic values of a host society's culture ("I believe that every culture has something in common, you should always look for features that unite different cultures" + "I can say that I know Russian culture well and ready to accept its fundamental values"). This type is focused on preserving the connection with a native culture and mastering elements of a host society's culture. This strategy can be called a "complementarity strategy".

38% of young Kyrgyzstanis share the third type of migrants' perception of the balance between accepting a dominant culture and preserving an old one. Nearly 23% of them believe that they can live in peace, following the rules, norms, and values of Russian culture; another 15% do not divide Kyrgyz and Russian culture: one might say that they are already members of Russian culture. This strategy can be called the strategy of assimilating dominant norms.

Social adaptation is ensured by a variety of factors and schemes. In our case, the adaptation process of young people from Kyrgyzstan is positively influenced by the closeness of values, value orientations, and meanings of life among young Kyrgyzstanis and the Moscow youth. In some way, this could be explained by the transfer of the values' significance by older generations, who have Soviet socio-cultural experience, to younger ones *(Tab.1)*.

Table 1. The most important values and value orientations of young Kyrgyz people, % of respondents, ranking

	High adaptation level	Average adaptation level	Low adaptation level	Current adaptation level
Values				
Family	65.3 Rank 1	70.7 Rank 1	64.4 Rank 1	55.6 Rank 1
Health	49.0 Rank 2	56.0 Rank 2	50.7 Rank 2	40.0 Rank 2
Money	28.2 Rank 3-4	24.0 Rank 3-5	28.8 Rank 3-4	26.7 Rank 3-4
Career, work	30.7 Rank 3-4	25.6 Rank 3-5	26.7 Rank 3-4	28.9% Rank -4
Ideas about living well				
To be financially secure	53.5 Rank 1-2	57.2 Rank 1-2	58.2 Rank 1-2	53.3 Rank 1
To have a good family, children	54.0 Rank 1-2	59.3 Rank 1-2	54.1 Rank 1-2	42.2 Rank 2-3
To have an interesting job, to work honestly	37.1 Rank 3-4	37.1 Rank 3-4	20.5 Rank 5-6	20.0 Rank 5-6
To live in peace and social justice	20.3 Rank 5-6	17.0 Rank 6	19.9 Rank 5-6	6.7
To be healthy, have healthy loved ones	40.1 Rank 3-4	43.0 Rank 3-4	39.7 Rank 3	39.7 Rank 2-3
Important for a respondent personally				
Strong family, good children	55.4 Rank 1	67.3 Rank 1	56.6 Rank 1	60.0 Rank 1
To have an interesting job that allows you to show your abilities and talents	41.1 Rank 2	34.1 Rank 3-4	25.5 Rank 5-6	42.2 Rank 2
To be a rich man, not to deny yourself anything	32.2 Rank 3-5	27.6 Rank 5-6	33.1 Rank 3-4	22.2 Rank 4-6
Respect from others	33.2 Rank 3-5	32.0 Rank 3-4	31.7 Rank 3-4	20.0 Rank 4-6
Confidence in the future, presence of favorable prospects	31.2 Rank 3-5	42.3 Rank 2	48.3 Rank 2	24.4 Rank 4-5
Source: own development.				

A significant factor of adaptation processes is the emphasis on Russian media in communication with the ethnic community and members of the host society. Young citizens of Kyrgyzstan, while in Moscow, are 1.5–2 times more likely to look through Russian Internet news resources and 2.5–3 times more likely to watch Russian television programs, compared to Kyrgyz ones *(Tab. 2)*.

At the same time, the adaptation potential of migrants is somewhat reduced by a relatively high association of migrants with members of their diaspora. It does not contribute to eliminating cultural and ethnic boundaries between migrants and a host society and may lead to selective adaptation. 47.0–61.0% of respondents mostly maintain friendly relations with their compatriots. At the same time, the lower the adaptation level is, the greater the share of informants who maintain a communicative connection with their cultural group.

Around 15% of respondents visit Kyrgyz clubs (organizations) or places (restaurants, etc.), where Kyrgyz people like to meet during their current stay in Moscow. It provides additional support for close communication with their compatriots.

Table 2. Characteristics of communication among Kyrgyzstan young citizens in Moscow, % of respondents

	High adaptation level	Average adaptation level	Low adaptation level	Current adaptation level
Visit Russian Internet news resources during their stay in Moscow				
Daily	62.4	47.9	50.0	57.8
Do not visit	12.4	20.5	21.2	11.1
Visit Kyrgyz Internet news resources during their stay in Moscow				
Daily	29.7	32.8	37.0	48.9
Do not visit	25.2	24.2	25.3	17.8
Watch Russian television during their stay in Moscow				
Daily	54.5	47.7	47.9	48.9
Do not watch	20.3	17.2	23.3	35.6
Watch Kyrgyz television during their stay in Moscow				
Daily	18.8	16.5	15.1	28.9
Do not watch	52.0	52.1	55.5	48.9
Source: own development.				

The most important factor in the adaptation process is a common social context, i.e. the relationship between Kyrgyz and the host community. The Moscow society essentially has a migration origin: it is multi-ethnic, and its ethnic structure is diverse. It is tolerant of multiple memberships, overlapping collective identities that had previously existed as mutually exclusive, dual citizenship, and the institutionalization of immigrant religions, including their public recognition. Despite the fact that the dominant values in Russia, as a host society, are Christian, there are four large mosques and a cultural center in Moscow, so Kyrgyzstanis can publicly show their religion preferences and not feel alienated from their culture. According to their self-assessment, from 25.7% (high level of adaptation) up to 33.6% (low level of adaptation) of respondents often or regularly visit a mosque in their free time. If the immigrant culture does not contribute to the adaptation of young citizens in Moscow, then the fulfillment of migrants' religious and cultural needs may make it difficult to adapt. According to scientists, the more migrants are alienated from the national Muslim religion, the more effective their adaptation and integration are [28].

Despite the fact that many respondents think that Muscovites and government officials (46.9 and 30%, respectively) treat them amicably, and only 6.4 and 15% (respectively) do it unfriendly, nearly half of informants experienced emotional pressure, psychological discomfort, and received insults and threats. The lower the level of adaptation was, the more often such events with young Kyrgyzstanis occurred. It could be explained by the growing distance between the host society's everyday culture and migrants' cultural standards in the identified groups.

Aforementioned adaptation factors are common (favorable or limiting) for the integration of migrants into the Moscow society. However, we also record personal differentiating factors that determine success. These include orientation to self-realization in work and independence, activity, openness to a host society and communication with people of different nationalities ***(Tab. 3)***.

The adaptation level among migrants from Kyrgyzstan is determined by education, professional status, language proficiency level, age, and time of residence in Moscow. It should be noted that the study on young Kyrgyzstanis does not record, unlike among older migrants, the influence of a population number of a respondent's homeland locality.

The key to understanding and explaining success of the first group of young migrants is a large proportion of respondents who have a higher

Table 3. Personal factors of successful/unsuccessful adaptation of migrants in Moscow, % of respondents

	High adaptation level	Average adaptation level	Low adaptation level	Current adaptation level
What is important to you personally?				
To have an interesting job that allows you to show your abilities and talents	41.1	34.1	25.5	42.2
Your friends in Moscow are mostly				
Russians	41.6	27.7	21.9	37.8
I do not have friends in Moscow	2.0	3.3	6.8	6.7
Are there any people of other nationalities among those you constantly communicate with?				
Yes, there are, and I communicate with them with pleasure	73.3	70.2	61.0	62.2
Yes, there are, but this communication is not pleasant	8.9	8.1	11.0	6.7
Yes, there are, but it all depends on nationality: I like to communicate with some people, but not with others	14.4	18.4	24.0	22.2
There are no members of other nationalities in my social circle	3.5	3.3	4.1	8.9
Do you consider international marriage?				
Yes	37.6	25.1	19.2	17.8
Can you imagine that you would call your child by a Russian name?				
Yes	35.6	21.6	17.8	17.8
You arrived in Russia				
By yourself	64.9	56.7	50.0	44.4
Your relatives and friends took you with them	12.9	19.3	21.9	17.8
You were invited by relatives and friends who are already in Russia	14.9	16.7	21.9	26.7
Where do you live in Moscow?				
In a rented room or apartment	67.8	51.9	47.9	35.6
With friends or relatives	16.3	24.4	19.9	15.6
In a dormitory	14.9	22.8	31.5	48.9
Source: own development.				

education, high professional status, better knowledge of the Russian language, and a longer time of residence and employment in Moscow. More optimistic assessments, on the one hand, and anxiety, on the other, among the respondents of the fourth group are explained by a larger share of respondents (two times more as compared to the first group), aged 17–21, who have little experience of living in Moscow (group 1: 53% of respondents have lived and worked in Moscow for 3–5 years; group 4 – 26.7%). A third of them came to the Russian capital only in 2019.

The third group is the most problematic in terms of adaptation. The respondents, representing it, gave the most pessimistic assessments of their everyday life in Moscow. Their adaptation is hindered by the limitations of their personal competencies, existing skills, and opportunities to ensure sufficient or expected living standards in accordance with the standards adopted in the Russian capital. They more often perform unskilled work; they do not have a higher education, although they have been living in Moscow for a relatively long time (from 3 to 5 years – 44.5%).

A successful adaptation of young migrants is defined by actions of social institutions of Kyrgyzstan, Russia, the Eurasian Economic Commission, which have done much over the past five years to enforce the guarantees of movement freedom provided by the Treaty on the EAEU.

However, the majority of migrants still face many problems in Moscow, which hinders successful adaptation. Only a third of respondents who successfully adapted to the metropolitan society (group 1), nearly 15% of respondents from the average-level adaptation group, and 7% of the low-level adaptation group did not face any difficulties.

The main problems are related to getting a job, finding a place to live, and the lack of information about rights and responsibilities, with increasing importance as the adaptation level decreases. Every seventh respondent noted discriminatory behavior of authorities, including the police; about 15% of respondents in groups 2 and 3 mentioned problems with healthcare; 15% of respondents in group 3 discussed strained relations with neighbors; and 18% of members of the first group spoke about difficulties in developing their own businesses.

The solution of these problems is possible by creating sets of services that are convenient for economic entities and citizens, interactions regarding the provision of interstate electronic services, with rules, requirements and obligations that are transparent to a consumer, i.e., the formation of a digital platform for the single labor market [29].

Conclusion

The proposed methodology for the empirical assessment of migrants' social adaptation level, which is based on the idea that social adaptation forms a single semantic field that encompasses a wide range of interaction with such phenomena as accommodation, acculturation and integration, allowed us to distinguish four groups of migrants. They are characterized by the solution of key adaptation issues to the conditions of a host society, respondents' special behavioral responses, social sentiments, ideas of young people about the nature of the Russian adaptation policy for the harmonization of an individual and environment, dependence of Russia's image on the level of adaptation successfulness, support of integration processes in the EAEU, type of migrants' attitude toward acculturation, which generate personal adaptation strategy in the Moscow society. The group with a high adaptation level in the study included approximately 25% of informants, average-level group – 52%, low-level group – 18%, and current adaptation group –5%. Favorable factors of social adaptation should include the closeness of values, value orientations, meanings of life among young Kyrgyz citizens and the Moscow youth, focus of young Kyrgyz people on Russian media in communicating with the ethnic community and members of the host society, overall positive social context of Moscow, tolerance between Kyrgyzstan people and the Muscovites.

The adaptation potential of migrants somewhat deteriorates due to their relatively high association with members of their diaspora, which increases as the level of adaptation decreases. Emotional pressure and psychological discomfort in Moscow, which nearly half of respondents experienced when they received insults and threats, as well as problems and difficulties related to getting a job, finding a place to live, and lack of information about their rights and obligations which increase as the level of adaptation decreases, hinder successful adaptation. The adaptation level among young migrants from Kyrgyzstan is determined by education, professional status, language skills, age, time of residence in Moscow, as well as personal characteristics that differentiate a degree of success: orientation toward self-realization in work, activity, openness to the host society, communication with people of different nationalities.

The conducted work creates conditions for expanding the study on social adaptation peculiarities among young Kyrgyzstan citizens, adds new methodological content to the theory of migrants' social adaptation, and allows conceptually ensuring the implementation of further empirical studies on social adaptation problems of migrants

from the EAEU member states in Russia. The identification of adaptation levels among migrants and characteristics of these groups will allow social institutions of Kyrgyzstan, Russia, and the Eurasian Economic Commission to ensure a differentiated approach to creating productive conditions, developing adequate tools and mechanisms for social adaptation.

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Road Traffic Accident Rate in Russia: Main Socio-Economic Factors of its Formation and Spatio-Temporal Features*

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Abstract. For more than a decade, the Russian state has been actively engaged in issues of preservation of people, but the positive effects of this work quickly disappeared (2014–2016), and the trend again changed to a negative one. The First (2006–2012) and the Second (2013–2020) Federal Target Programs on Road Safety were aimed at reducing the number of deaths in road traffic accidents, and made a positive contribution to the field of preservation of people. For instance, in 2006–2019, the annual number of deaths in road traffic accidents decreased from 32,724 to 16,981 people per year, or almost twice. Nevertheless, there are still many problems in ensuring road safety. One of them is the complexity of

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the system processes of road safety management in such a large country as the Russian Federation. Russia consists of 85 heterogeneously developed economically and socially entities on the territory of which representatives of 190 peoples live. The article analyses a wide range of issues related to the assessment of the impact of the sociocenosis features on one of the most important characteristics of road traffic accident rate – the severity. The purpose of the research is to study the influence of the characteristics of representative socio-economic factors on road traffic accident severity in Russian regions, and to develop the most effective differentiated approach to the financing of regional road safety programs on this basis. The scientific novelty of the research consists in the model confirmation of the previously put forward ideas about the positive impact of the basic socio-economic institutions that shape road users' transport behavior on its safety. The authors consider these ideas in relation to Russia as a whole and to the relationship of regional road traffic accident rate with the economic and demographic characteristics of Russians' life. The paper presents the rank patterns of influence on road traffic accident severity of such characteristics of regional sociocenosis as the population's median age, the share of population with income below the minimum wage, and the average monthly income. We show the conceptual considerations for improving road safety in the Russian Federation in the spatiotemporal continuum.

Key words: road safety, road traffic accident, Russian Federation, road safety management, road traffic accident severity, regional sociocenosis, impact factor, spatio-temporal features.

Introduction and problem urgency

Vital security is one of the most important modern global values[1]. The value of an individual's life is recognized almost everywhere [1], and its economic equivalent can reach values of 5–10 million dollars [2; 3]. Road traffic accident has been and continues to be one of the leading causes of death worldwide. "If an appropriate action is not taken, traffic injuries may become the third leading component of the global burden of disease and injury by 2025" [3, p. 16]. The paper notes that the socio-economic damage from road traffic accident rate in the world reaches hundreds of billions of dollars [3] (for example, in the United States in 2016 – 256 billion dollars, or about 1.5% of GDP [4]).

The problem of improving road safety and road traffic accident rate issues are also relevant for the Russian Federation[2]. Over the previous three years (2017–2019), a steady trend of natural population decline has been formed in Russia[3]. In 2019, the number of deaths exceeded the number of births by 316.16 thousand people (*Tab. 1*). Road traffic accident rate plays a very significant role in this negative process. The number of Russians, dead in road traffic accidents in 2019, amounted to 16.98 thousand people, or about 13.3% of the number of deaths from external causes (see tab. 1).

Despite the generally positive trends, expressed in a decrease in overall mortality (≈ -6% in 2014–2019) and very impressive results in reducing the number of deaths from external causes (≈-26% over 6 years), the structural share of road traffic accident injuries in Russia remained stable all these years,

[1] Gritsanov A.A. *Universal Values*. Newest Philosophical Dictionary, 1999. 896 p.

[2] Federal Target Program "Road Safety Increasing in 2006–2012". Available at: https://fcp.economy.gov.ru/cgi-bin/cis/fcp.cgi/Fcp/ViewFcp/View/2008/187; Federal Target Program "Road Safety Increasing in 2013–2020". Available at: http://www.fcp-pbdd.ru

[3] Natural population movement in the context of the entities of the Russian Federation. Available at: https://www.gks.ru/free_doc/2019/demo/edn12-19.htm

Table 1. Russian population dynamics in 2014–2019 and road traffic accident rate contribution to the death rate of the country's population, people per year

Year	Population dynamics		Natural increase (+), decrease (-)	Number of deaths from external causes	Number of deaths in road traffic accidents	
	Number of births	Number of deaths			Absolute value	Share of the number of deaths from external causes, %
2014	1947301	1913613	33688	173523	26963	15.5
2015	1944136	1911413	32723	164276	23114	14.1
2016	1893256	1887913	5343	153517	20308	13.2
2017	1689884	1824340	-134456	138784	19088	13.8
2018	1604589	1827827	-223238	134916	18214	13.5
2019	1484517	1800677	-316160	128142	16981	13.3

According to: Natural population movement in the context of the entities of the Russian Federation. Available at: https://www.gks.ru/free_doc/2019/demo/edn12-19.htm; Road traffic accident rate in the Russian Federation for 12 months of 2019. *Informational and Analytical Review*. Moscow: Research Center of Road Security of the Ministry of Interior of the Russian Federation, 2020, 21 p. Available at: https://нцбдд.мвд.рф/dop_stranici/%D0%BE%D0%B1%D0%B7%D0%BE%D1%80%D1%8B-%D0%B7%D0%B0-2019-%D0%B3%D0%BE%D0%B4

amounting to 13–14%. In fact, the socio-economic damage of the Russian Federation from road traffic accidents reaches 1.5–2.0% of GDP[4], i.e. at least 1.5–2.0 trillion rubles per year[5].

Real statistics indicate a very serious role of the road safety in the life of Russian society. The study of the cause-and-effect links of ensuring road safety process and establishment of patterns of priority factors' influence on road traffic accident rate formation are the mechanism's spring for implementing the target function to improve the quality of Russians' life declared in the Road Safety Strategy in the Russian Federation[6].

The generally accepted approach to the features' analysis of the functioning of any road transport system [5] involves its differentiation into the subsystems "Driver – Car – Road – Environment". Over the past 50–80 years, scientists around the world paid maximum attention [6] primarily to the features of the subsystems' functioning "Car" and "Road" (separately and in conjunction) which contributed to a qualitative change in the design of vehicles and improved approaches to the construction and reconstruction of roads, and as a result there was a change in the road safety paradigms. At the same time, the influence of factors related to the "Driver" ("Person" will be more correctly) and "Environment" subsystems on road safety has not yet been fully studied [6].

E. van Beeck and the co-authors have shown that many factors, external to the car, can be conditionally differentiated into the enlarged groups "Economic conditions", "Social conditions", "Demographic features" [7]. These factors are more or less interrelated and have an indirect but very significant impact on the current level of road safety.

The authors repeatedly use such terms as "road safety", "road traffic accident", "sociocenosis". In this regard, it is necessary to give their definitions.

According to the Federal Law no. 196-FZ "On Road Traffic Safety", dated December 10, 1995[7], *road safety is the state of the process of moving people and goods with or without vehicles within roads reflecting the degree of its participants' protection from road traffic accidents and their consequences*.

[4] *Global Status Report on Road Safety 2015.* Geneva, World Health Organization, 2015. 326 p.

[5] Dynamics and structure of Russia's GDP. *Bulletin on Current Trends in the Russia Economy,* no. 48, April 2019. Available at: file:///C:/Users/E8E5~1/AppData/Local/Temp/21979-1.pdf

[6] *Road Safety Strategy in the Russian Federation for 2018–2024.* Available at: file:///C:/Users/E8E5~1/AppData/Local/Temp/g6BXGgDI4fCEiD4xDdJUwlxudPATBC12-1.pdf

[7] On road safety: Federal Law no. 196-FZ, dated December 12, 1995. Available at: http://www.consultant.ru/document/cons_doc_LAW_8585/

Unfortunately, in the article 2 of the "Key terms" of the act there is no definition of "road traffic accident". However, experts of Moscow Automobile and Road Construction State Technical University (MADI), the authors of reverence book of road terms[8], think that *"... the term "Accident" identifies the indicator of road safety in the absolute number of car accidents, number of deaths and injuries or as a ratio of the number of road traffic accidents to the number of vehicles, population or mileage vehicles for a certain period of time"*.

In fact, in the world practice, there are some other criteria to assess road traffic accident. For example, in 1949, the English statistician R. Smeed [8] proposed using such indicators as transport (*TR*) and social (*HR*) risks. Their essence is to estimate the specific indicators "Number of deaths in road traffic accidents per 10 thousand vehicles" and "Number of deaths in road traffic accidents per 100 thousand inhabitants". Later, the indicator of "Road traffic accident severity" was introduced into the practice of assessing in road traffic accident [9]. This indicator reflected the proportion of deaths in the total number of injuries of road traffic accident.

It is the road traffic accident severity that is the most expressive indicator for assessing the road traffic accident state today [10–13]. J.G.U. Adams has given the most complete explanation of the priority importance of this assessment of road safety state among others: *"The road accident severity is the embodiment of a comprehensive approach to assessing the actual situation in the field of road safety. The percentage of deaths among the injuries of road traffic accidents indirectly indicates both the design level of the vehicle's quality (active and post-accident safety), used by road users, and the actual state of the system of injury's rescue in an accident by the medical aid forces"* [10, p. 83]. That is why the researchers join the authors' opinion and choose the criterion "Road traffic accident severity" as the most important evaluation characteristic of road traffic accident.

Cenosis is a time-and space-limited community with weak ties and common goals [14]. The term "cenosis" originally came from biology, but at present there are already 42 essentially similar concepts with the ending "cenosis" including "technocenosis" which is a set of technical products generalized by any attribute, and "sociocenosis" is a set of any living entities united by a separate attribute [14; 15; 16].

Sociocenosis is a set of social individuals limited on any grounds. The peculiarity of cenosis is fuzzy boundaries between these individuals (both in technology and in society), their constant mixing in space [15; 16]. The experience proves that in sociocenosis, some of them are rarely not exactly the same, but even simply comparable in specific characteristics. However, sociocenosis significantly differ in some characteristics. For example, the median age is one of the characteristics of the sociocenosis of the region's population, and it is very different for the Chechen Republic (24.1 years in 2010 and 26.0 years in 2018) and the Tambov Oblast (42.3 years in 2010 and 43.7 years in 2018)[9].

Selection of impact factors, scientific novelty, purpose, and tasks of the research

One of the important issues of the research is the choice of characteristics of regional sociocenosis that have a significant impact on road traffic accident rate, in particular on road traffic accident severity. There are many indicators of territories' socio-economic development. For example, the collection "Russian Regions. 2019"[10] presents hundreds of indicators, differentiated by 23

[8] *Reference Book of Road Terms.* Available at: file:///C:/Users/E8E5~1/AppData/Local/Temp/spravochnik_dorozhnykh_terminov.pdf

[9] *Russian Demographic Data Sheet, 2016.* Available at: https://yandex.ru/search/?text=Russian%20demographic%20data%20sheet%202016&lr=55; *Russian Demographic Data Sheet, 2019.* Available at: file:///C:/Users/E8E5~1/AppData/Local/Temp/RussianDemographicDataSheet2019_web.pdf

[10] *Russian Regions. Socio-Economic Indicators. 2019.* Available at: https://gks.ru/bgd/regl/b19_14 p/Main.htm (accessed: July 15, 2020).

sections. The analysis of the long-term work of foreign specialists[11] and the experts of the World Health Organization[12] allows distinguishing three most important characteristics from the group of socio-economic impact factors:

– Population's median age;

– Share of the population with income below the minimum wage;

– Average monthly income of the population.

Different sources often mention them [7; 17–22] in the context of their influence on the formation of potentially dangerous situations on the road as very significant. Let us try to argue their choice.

L. Evans writes: "The greatest risk is typical for the youngest drivers" [17]. This finding has appeared so frequently in studies of driver risk that it should be considered a "law of nature".

A.V. Korotaev and his colleagues conducted an in-depth analysis of changes in values under the influence of age in the context of psychosocial theories of ageing [18]. Analyzing 75 reputable sources (A.V. Pisarev, A.B. Kogan, R. Fischer, P.B. Baltes, J. Baltes, Brandtstädter, L.L. Carstensen, W.M. Evan, G.L. Zellman, J.C. Campbell, and others), devoted to the study of psychosocial theories of development in the process of growing up and ageing, they have proved that with age, the value of issues of safety, order, and health increases for almost any person. This statement has a significant impact on the correction of drivers' behavior.

The choice of the characteristics "Share of the population with income below the minimum wage" and "Average monthly income of the population" as representative of road safety is less obvious. These indicators belong to the group of economic indicators of which there are a lot. Nevertheless, their choice was determined by the recommendations of authors specializing in this research topic.

In the section "Impact of economic development on road safety: a literature review" of the report, prepared by specialists of the International Traffic Safety Data and Analysis Group (IRTAD)[13], the authors have considered the results of 50 works in details (among them such authoritative experts in the field of road safety as E. van Beeck, R. Elvik, W. Evans, J.G. Graham, S.C. Partyka, S. Peltzman, A.C. Wagenaar, G.J.S. Wilde, and others). With no details, the paper presents only a general conceptual scheme of the impact of economic conditions in the country on the final results in the field of road safety *(Fig. 1)*. The impact of the country's economic well-being on road safety is very clearly represented in the work of M.J. Koornstra *(Fig. 2)*.

A deep analysis of the foreign experts' works [7; 19–22] let arguing the choice as representative indicators of the society from the economic perspective, the criteria is "Share of the population below the minimum wage" and the "Average monthly income of the population".

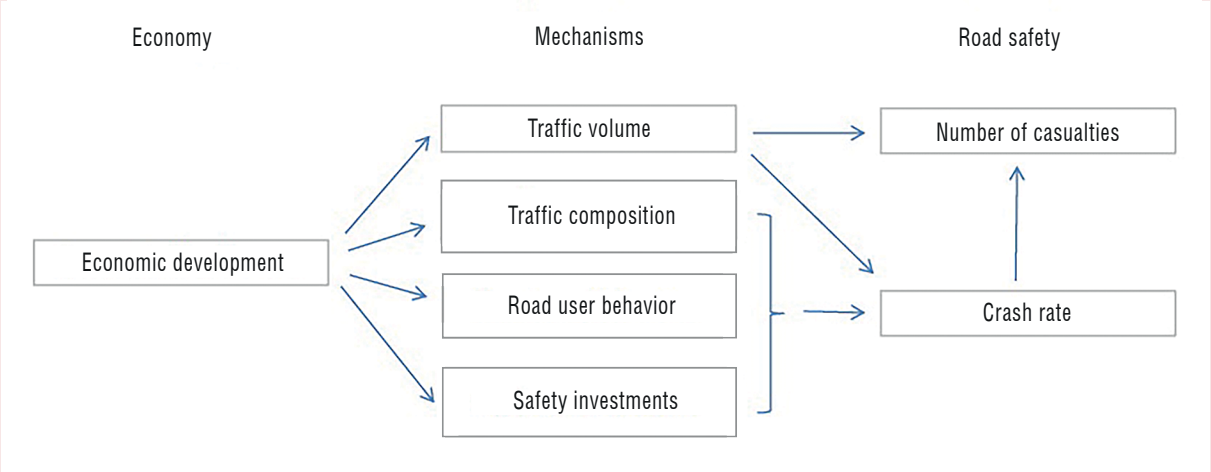
The scientific novelty of the research lies in the pattern confirmation of the ideas of J.G.U. Adams [10] and M.Ya. Blinkin [6] about the positive impact of the basic institutions that shape the road users' transport behavior on road safety. In the course of this work, the authors of the article have tried to consider these ideas in relation to Russia taking into account its regional diversity and the connection of regional car accident with the economic and demographic characteristics of Russians' life.

[11] El'vik R, Myusen A.B., Vaa T. *Reference Book on Road Safety. Overview of Road Safety Measures.* Ed. by Sil'yanova V.V. Oslo – Moscow – Helsinki, 2001. 754 p.

[12] *Principles and Instruments for Improving Traffic Safety on Rural Roads. The International Experiences.* Available at: www.ador.ru/data/files/static/bdd_01.pdf (accessed: July 19, 2020).

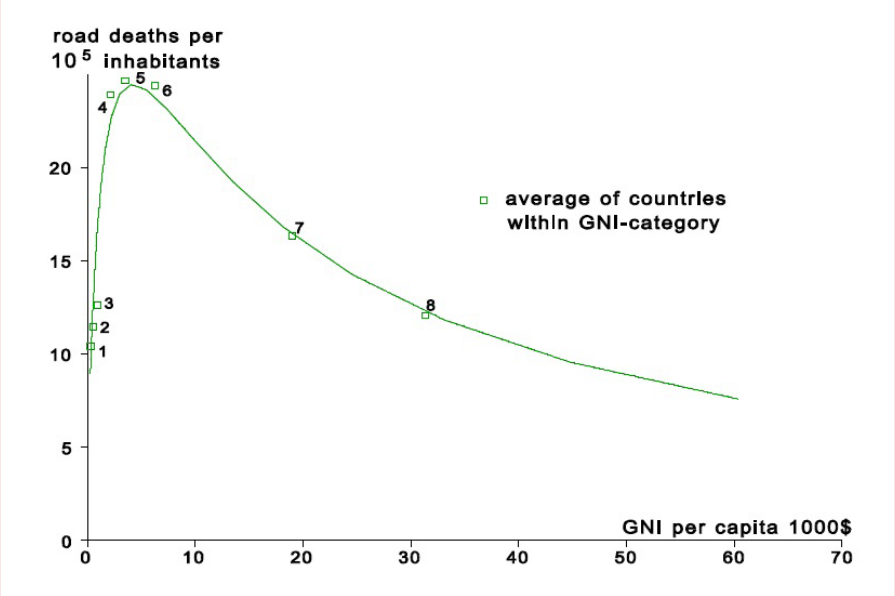
[13] *Why Does Road Safety Improve When Economic Times Are Hard? IRTAD Research Report.* OECD/ITF, 2015. 228 p. Available at: www.itf-oecd.org›sites... docs/15irtadeconomictimes.pdf (accessed: July 22, 2020).

Figure 1. Conceptual foundations of the link between economy and road safety



Source: Evans L. *Traffic Safety*. Bloomfield, Mich.: Science Serving Society, 2004. 457 p.

Figure 2. Impact of the specific gross national income on the citizens' death rate in road traffic accidents



Source: Koornstra M.J. Prediction of traffic fatalities and prospects for mobility becoming sustainable safe. *Sadhana*, 2007, vol. 32, pp. 365–395.

The hypothesis of the research is formulated as follows: "The road traffic accident severity in Russian regions is statistically related to the characteristic features of the regional society".

The purpose of the research is to study the impact on road traffic accident severity in Russian regions of the selected characteristics of representative socio-economic factors (the median age of the region's population; share of the population with income below the minimum wage; the average monthly income of the population) and on this basis to develop the most effective differentiated approach to financing regional programs for road safety.

The tasks of the research are structured as follows.

1. To conduct a primary analysis of the trends of changes in road safety in the Russian Federation in 1991–2019; compare the Russian trend of changes in road safety with analogues in other countries.

2. To justify the choice of a rank pattern in order to study the influence of regional sociocenosis on the car accident features.

3. To prepare data for analysis, process them and set the type of rank patterns *road traffic accident severity rank = f (Regional sociocenosis rank characteristics of the Russian Federation)*.

4. To analyze the results in the context of the "space of the territory of the Russian Federation – time (2010/2018)".

5. To present conceptual considerations for improving the road safety in the Russian Federation in the spatiotemporal continuum.

To solve these tasks, the researchers of the article propose a methodology based on the consistent use of such tools as the method of ranking features [23]; the method of conducting rank analysis [24]; the method of constructing regression rank patterns [25]; the method of pair comparison of patterns [26].

The results of the study can be used in the development of the Federal Target Program of the Russian Federation on Road Safety for the period 2021–2030, especially due to the necessity to achieve the targets set out in the Road Safety Strategy in the Russian Federation.

Primary analysis of trends in road safety changes in 1991–2019 in the Russian Federation. Comparison of the Russian trend of road safety changes with analogues in other countries

In 2019, in Russia, the level of social risk was HR_{2019} = 11.57 deaths in road traffic accidents per 100 thousand people, and road traffic accident severity in 2019 was 7.45%. *Table 2* shows statistical data describing the road safety state in Russia in 1970–2019.

The data in Table 2 clearly illustrate the positive dynamics of road safety indicators in Russia over the previous 15 years. At the same time, the Russian road transport system was changing qualitatively. In 1991–2019, Russian vehicle fleet grew from 12.1 to 61.8 million units, i.e. more than fivefold. However, the length of highways in the country did not grow so intensively. In particular, in the post-Soviet period, the network of public roads in the country increased from 455.4 thousand kilometers[14]

Table 2. Dynamics of road safety indicators in Russian in 1970–2019

Year	Population, thousand people	Vehicle fleet, thousand units	Number of road traffic accidents, cases per year	Number of injuries in road traffic accidents, people per year	Number of deaths in road traffic accident, people per year	Road traffic accident severity, %
1970 (RSFSR)	130079.2	2881.0	≈ 120000	≈ 140000	≈ 20000	14.29
1980 (RSFSR)	138126.6	7180.0	≈ 150000	167615	27615	16.48
1990 (RSFSR)	147665.1	11861.0	≈ 170000	250366	35366	14.13
1991 (RF)	148273.7	12098.0	≈ 171200	262754	37875	14.41
2000 (RF)	146890.1	24476.0	157596	208995	29594	14.16
2005 (RF)	143474.2	33355.3	222475	307667	33858	11.00
2010 (RF)	142856.3	41649.0	199083	276762	26544	9.59
2015 (RF)	146267.3	56470.0	184000	254311	23114	9.09
2019 (RF)	146780.7	61739.2	164358	227858	16981	7.45

According to: Indicator of road safety state. *Official website of the State Road Traffic Safety Authority of the Russian Federation*. Available at: http://stat.gibdd.ru/ (accessed: July 31, 2020).

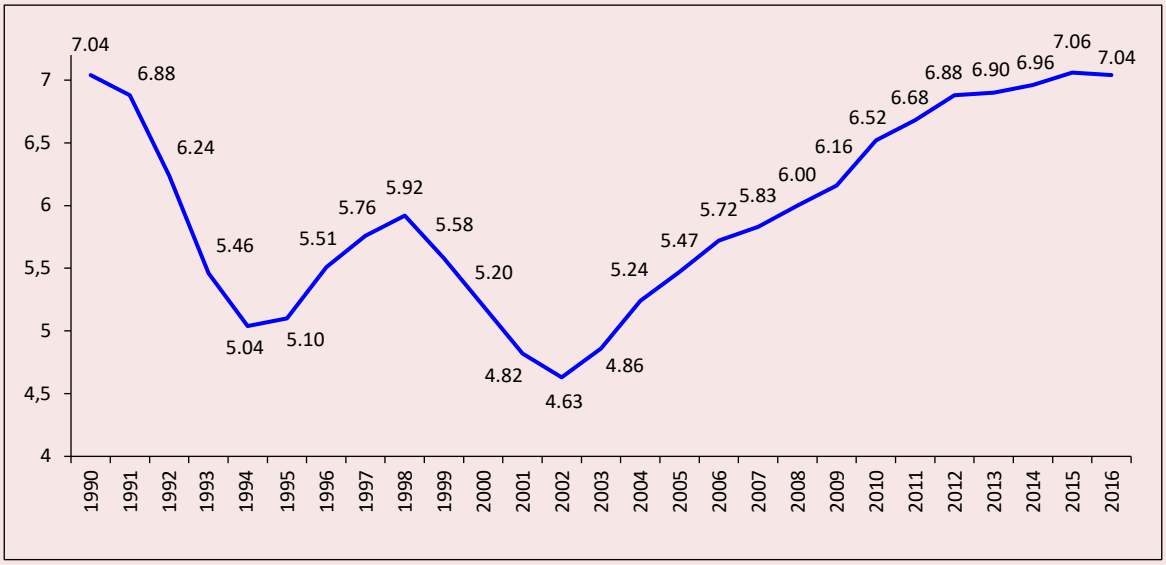
[14] Andrienko L. Period of change. What did the Soviet five-year plans bring to Russian roads? Available at: https://rg.ru/2010/10/18/avtoistoria.html

to 565.5 thousand kilometers[15], or 24%. According to R. Smeed's law [6; 8; 9] the road traffic accident risks are reduced with motorization growth, especially in conditions of a shortage of capacity of cities' street and road network. But this is not the only and, more important, not the main factor influencing the road safety characteristics. As table 2 shows, the annual number of people dead in road traffic accidents decreased from 23,114 to 16,981 people (or 26%) in four years (2015–2019) while during the same period the total length of roads in the country increased from 528.2 to 565.4 thousand kilometers (or 7%). To a much greater extent, other factors than the characteristics of the road transport system contributed to this process. In particular, the experts of the International Traffic Safety Data and Analysis Group (IRTAD) believe that socio-economic characteristics or the living standards have a prerogative in terms of importance over other impact factors. They also include demographic indicators that characterize the living standards indirectly. As an argument, the authors can give an example of changes in the post-Soviet period of the macropsychological index of the state of modern Russian society. According to A.V. Yurevich [27], in 2005–2016 the index value increased from 5.47 to 7.04 *(Fig. 3)*. At the same time, road traffic accident rate decreased.

Assessing the global trends of road safety and comparing with them the similar Russian dynamics, it is necessary to note the following main points:

- In all economically developed countries of the world (especially with a specific per capita GDP of more than 30 thousand dollars), indicators characterizing road traffic accidents rates have been steadily decreasing over the previous 15–20 years *(Fig. 4)*.
- The rate of the downward trend *(Fig. 5B)* varies and depends mainly on the road safety level, actually achieved in the country (the higher road safety level, the lower rate of reduction of car accident). The leaders in the field of road safety

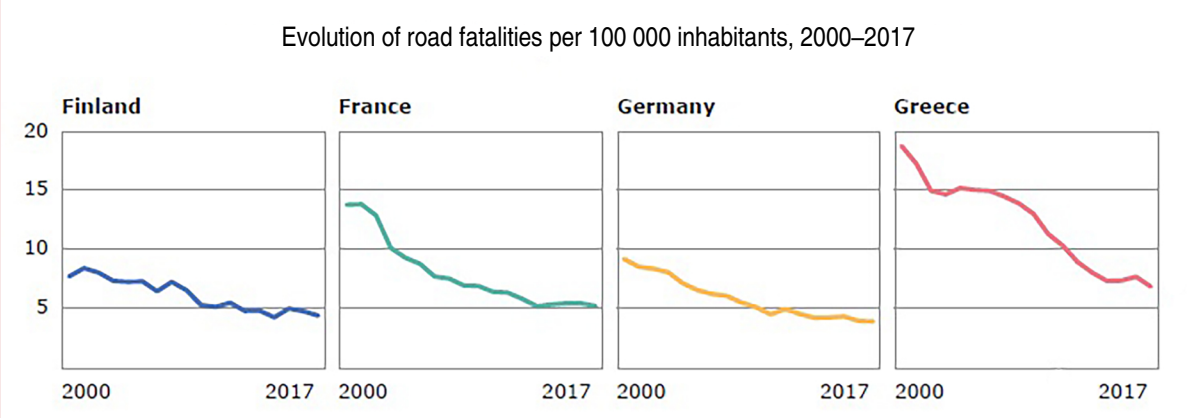
Figure 3. Dynamics of changes in the macropsychological index of the state of modern Russian society



Source: Yurevich A.V. Methodology of quantitative assessment of psychological state of modern Russian society. *Methodology and History of Psychology*, 2018, vol. 1, pp. 155–173.

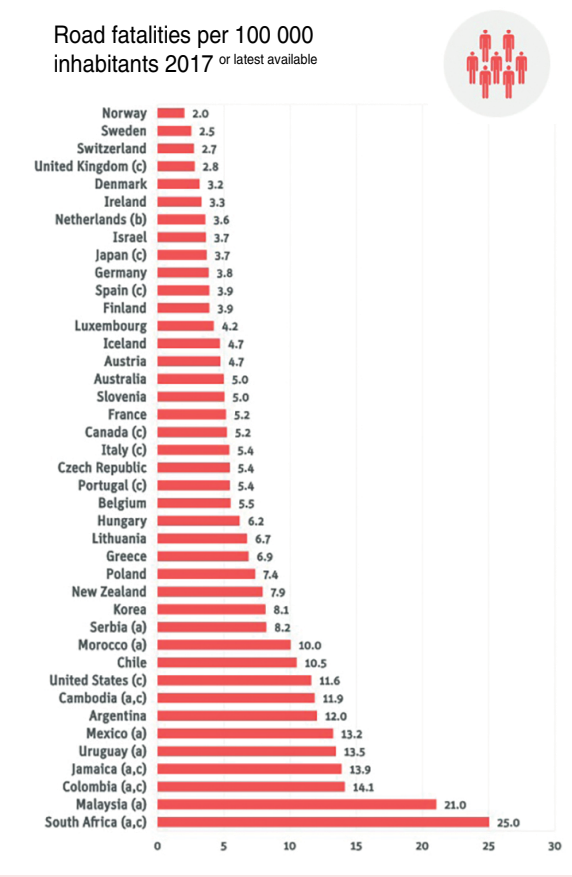
[15] *Official website of the federal Road Agency "Rosavtodor"*. Available at: https://rosavtodor.gov.ru/

Figure 4. General dynamics of the HR social risk change in European countries

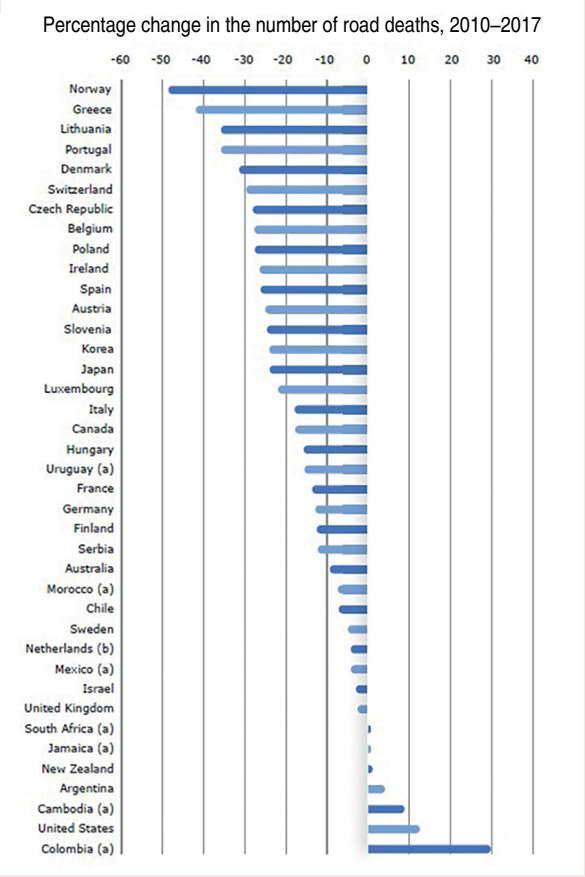


Source: *Road Safety. Annual Report 2019.* IRTAD Research Report. OECD / ITF, 2020. 60 p. Available at: https://www.itf-oecd.org/road-safety-annual-report-2019 (accessed: July 31, 2020).

Figure 5. Current situation with road traffic accident rate in the countries



A) HR Social risk (2017)



B) HR change trends

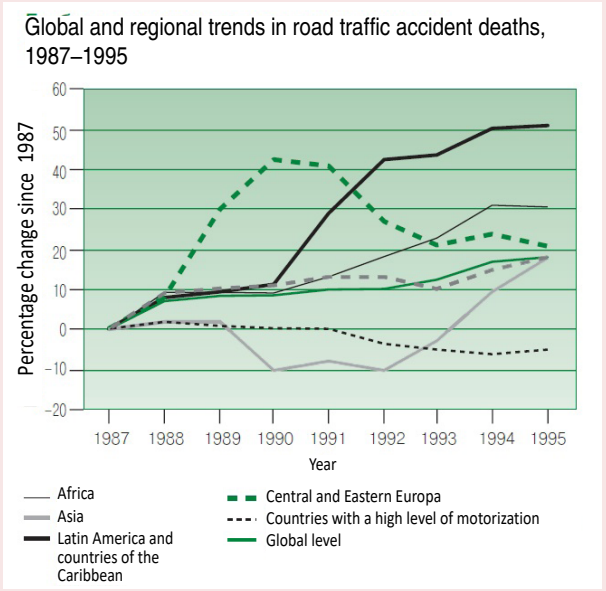
Source: *Road Safety. Annual Report 2019.* IRTAD Research Report. OECD / ITF 2020, 60 p. Available at: https://www.itf-oecd.org/road-safety-annual-report-2019 (accessed: July 31, 2020).

Figure 6. Comparative dynamics of changes in HR social risk

Death rate changes of road accidents (number of deaths per 10 thousand people), 1975–1998

Country or region	Change (%)
Canada	–63.4
China	
Hong Kong Special Administrative Region	–61.7
Taiwan Province	–32.0
Sweden	–58.3
Israel	–49.7
France	–42.6
New Zealand	–33.2
USA	–27.2
Japan	–24.5
Malaysia	44.3
India	79.3[a]
Shri-Lanka	84.5
Lesotho	192.8
Columbia	237.1
China	243.0
Botswana	383.8[6]

A) In separate countries of the world



B) In the continental context

Source: Peden M. et al. *World Report on Traffic Injury Prevention.* Moscow. Moscow: Ves Mir, 2004. 280 p.

are the Scandinavian countries (Sweden, Norway, Denmark), Switzerland and the United Kingdom, where the social risk is $HR_{2016–2018}$ = 2,0–3,2 deaths in road traffic accident per 100 thousand people; the car accident severity$_{2018}$ = 2,0–3,5% *(Fig. 5A)*.

In most countries of Africa and Asia (with a few exceptions), on the contrary, in the previous 20–50 years, the road traffic accident indicators have been gradually increasing *(Fig. 6)*, and to a greater extent in those states, where the specific per capita GDP does not exceed 1–3 thousand $, and the median age does not exceed 20–22 years[16].

In the sphere of ensuring road safety, Russia belongs to the group of countries with catching-up development (HR_{2019} = 11.57 deaths per 100 thousand people, and the road traffic accident severity$_{2019}$ = 7.45%), gradually approaching the leading countries (HR_{2019} = 2.0–2.5 deaths per 100 thousand people, and the road traffic accident severity$_{2019}$ = 2–3%). An important role in this process is played by a gradual increase in living standards, improving macroeconomic state of modern Russian society [27] and related effects (e.g., the gradual improvement of the vehicle fleet quality with a corresponding increase in the level of active and passive safety; reducing the number of "drunken accident"; the overall growth of the driving culture).

Data and methods of their processing. Rank patterns advantages in the research of sociocenosis features

The problem of qualitative analytics is always related to the quality of quantitative estimates. Any measurement is carried out using the appropriate scales, i.e. an ordered series of marks corresponding to the ratio of successive values of the measured values. There are five types of scales: names, order, intervals, ratios, and absolute values.

Considering the relationship between the sociocenosis features and regional road traffic accident rate, it is worth noting that the most acceptable tool for its assessment is rank patterns,

[16] Peden M. et al. *World Report on Traffic Injury Prevention*. Moscow: Izd. "Ves Mir", 2004. 280 p.

based on the use of an ordinal scale (or rank, or non–metric). The seats of the estimated values in the timeline of the order, referred to as ranks. In such a scale, its constituent numbers are ordered by rank (i.e., occupied places), but the intervals between them cannot be accurately measured. Scale of order or ranking scale allows determining the nature of inequality in the form of judgments of "more – less", "better – worse", etc. Given the fact that sociocenosis has no exact boundaries, and, for example, the drivers from a particular region may cause an accident in another region, it is irrational to use the scale relations or absolute values for building pattern link *the Road traffic accident severity = f (Socio-economic development characteristics of the Russia's population)*. S.D. Haitun says the following about it: "Rank patterns show a fundamental tendency of impact factor on the resulting one, discarding everything small and unimportant for the purposes of analysis" [28, p. 106].

The specifics of parametric identification of the distribution function based on rank analysis are considered in [29], and examples of identification of rank distribution patterns in problems of car accident analysis are considered in [30].

The standard methodology for conducting rank analysis and subsequent construction of rank patterns includes the following stages-procedures [31]:

• *The definition of the boundaries of the regional sociocenosis*. In this case, the authors use the division of Russian territory and its population by the entities of the Federation.

• *The definition of species forming signs of sociocenosis*. The population's median age, the share of the regional population with income below the minimum wage and the average monthly income of the regional population were selected as such indicators.

• *A parametric description of the regional sociocenosis*. It is worth creating a database on regional sociocenosis and adding all of the numerical values of the selected representative characteristics of car accident, car accident severity Y and species forming signs of sociocenosis X_i (listed above).

• *Plotting the rank distribution in the form of a table*. The tabulated rank distribution is a table of several (in this case, four) columns: the parameters of the regional characteristic Y, arranged by rank, and the rank number r of the signs of sociocenosis $X_{1\text{-}3}$. At the same time, the researchers keep the rule of assigning the first rank to Russian region that is characterized by the maximum rating (parameter value), and then in descending order. The most important circumstance to pay attention to is a clear justification of the fundamental relationship between the predictor and the resulting one (an increase or decrease in Y with an increase in the values of X).

• *Plotting a graphical rank distribution*. This step is desirable, but not mandatory.

• *Carrying out the procedure for approximating the desired pattern, the Road traffic accident severity rank = f (Rank of the species-forming sociocenosis feature)*. The method's essence is to find such parameters of the analytical dependences that minimize the sum of squares of deviations observed in the course of the ranking analysis of sociocenosis of empirical values of Y from the values calculated by the approximation dependences.

Tables 3 (2010 data) and *4* (2018 data) present sample data (the first and last ten regions of the Russian Federation in the accounting order) used in the construction of the declared dependencies.

The authors have processed the regions' data in order to construct the corresponding rank distributions. For example, for the 2018 data, the researchers have obtained pairs of values "Median age" – "Road traffic accident severity" (the first and last dozen values), arranged in rank order *(Tab. 5)*.

Table 3. Road traffic accident severity in the entities of the Russian Federation and the values of representative characteristics of regional sociocenosis, 2010

No.	Entity of the Russian Federation	Road traffic accident severity, dead per injuries, %	Values of the characteristics of regional sociocenosis		
			Median age of the regional population, age	Share of the population with income below the minimum wage, %	Average monthly income of the population, rubles per month
1	Belgorod Oblast	12.17	39.8	8.4	16,993
2	Bryansk Oblast	10.85	39.9	13.6	13,358
3	Vladimir Oblast	9.16	41.0	18.3	12,956
4	Voronezh Oblast	10.02	41.4	19.1	13,883
5	Ivanovo Oblast	6.28	40.8	20.5	11,124
6	Kaluga Oblast	10.24	40.7	11.4	15,477
7	Kostroma Oblast	6.45	40.5	17.3	13,315
8	Kursk Oblast	8.69	41.7	10.8	14,685
9	Lipetsk Oblast	8.81	40.7	10.0	15,936
10	Moscow Oblast	12.09	39.4	10.3	22,641
.....					
76	Republic of Sakha (Yakutia)	9.82	31.2	19.1	23,088
77	Zabaykalsky Krai	13.41	32.9	19.3	14,205
78	Kamchatka Krai	8.04	36.1	19.8	27,010
79	Primorsky Krai	8.25	37.5	16.3	17,298
80	Khabarovsk Krai	9.39	36.3	15.8	22,479
81	Amur Oblast	9.46	35.7	24.3	14,323
82	Magadan Oblast	7.36	37.1	13.8	27,801
83	Sakhalin Oblast	10.02	37.1	10.9	30,727
84	Jewish Autonomous Okrug	10.23	34.8	19.7	15,348
85	Chukotka Autonomous Okrug	20.83	33.6	10.5	38,147

According to: Indicator of road safety state. *Official website of the State Road Traffic Safety Authority of the Russian Federation*. Available at: http://stat.gibdd.ru; *Russian Regions. Socio-Economic Indicators. 2019*. Available at: https://gks.ru/bgd/regl/b19_14 p/Main.htm

Table 4. Road accident severity in the entities of the Russian Federation and the values of representative characteristics of regional sociocenosis, 2018

No.	Entity of the Russian Federation	Road traffic accident severity, dead per injuries, %	Values of the characteristics of regional sociocenosis		
			Median age of the regional population, age	Share of the population with income below the minimum wage, %	Average monthly income of the population, rubles per month
1	Belgorod Oblast	8.83	41.1	7.5	30,778
2	Bryansk Oblast	10.56	41.6	13.6	26,585
3	Vladimir Oblast	7.69	42.1	13.1	23,539
4	Voronezh Oblast	10.31	41.7	8.9	30,289
5	Ivanovo Oblast	4.45	41.9	14.7	24,503
6	Kaluga Oblast	8.66	41.4	10.4	29,129
7	Kostroma Oblast	6.24	41.4	12.7	23,716
8	Kursk Oblast	8.98	42.2	9.9	27,275
9	Lipetsk Oblast	9.52	42.0	8.7	30,010
10	Moscow Oblast	11.44	39.3	7.3	44,707
.....					
76	Republic of Sakha (Yakutia)	8.52	33.1	18.6	42,669
77	Zabaykalsky Krai	12.52	34.8	21.4	23,992
78	Kamchatka Krai	6.64	37.9	15.8	48,758
79	Primorsky Krai	7.91	39.2	13.9	34,619

End of Table 4

80	Khabarovsk Krai	6.31	37.3	12.2	39,084
81	Amur Oblast	8.1	37.4	15.6	30,937
82	Magadan Oblast	8.7	39.0	9.5	59,774
83	Sakhalin Oblast	9.53	38.7	8.5	51,783
84	Jewish Autonomous Okrug	9.61	37.2	23.7	24,696
85	Chukotka Autonomous Okrug	5.71	36.1	8.8	78,812

According to: Indicator of road safety state. *Official website of the State Road Traffic Safety Authority of the Russian Federation*. Available at: http://stat.gibdd.ru; *Russian Regions. Socio-Economic Indicators. 2019*. Available at: https://gks.ru/bgd/regl/b19_14 p/Main.htm

Table 5. Sample data used in the construction of rank dependencies, 2018

No.	Median age of the regional population, age	Road traffic accident severity, dead per injuries, %		No.	Median age of the regional population, age	Road traffic accident severity
1	26.0	21.76		76	42.1	5.86
2	28.4	18.41		77	42.2	5.71
3	28.8	14.39		78	42.2	5.67
4	30.4	13.55	…	79	42.2	5.52
5	33.1	12.52		80	42.3	5.22
6	33.6	12.27		81	42.3	5.21
7	34.4	11.44		82	42.7	4.65
8	34.8	10.82		83	42.8	4.45
9	34.8	10.56		84	43.2	4.25
10	34.9	10.56		85	43.7	2.93

According to: Indicator of road safety state. *Official website of the State Road Traffic Safety Authority of the Russian Federation*. Available at: http://stat.gibdd.ru; *Russian Regions. Socio-Economic Indicators. 2019*. Available at: https://gks.ru/bgd/regl/b19_14 p/Main.htm

It is important to focus on the fact that, when constructing a rank distribution, it is necessary to understand in advance the fundamental physical meaning of the relationship between the variables X and Y. For example, for the dependence of the *Road traffic accident severity = f (Median age of the regional population)*, the leftmost points identify the Chechen Republic (Y_1 – Road traffic accident severity = 21.76 deaths per 100 injuries; X_1 – Median age = 26.0 years) and the Republic of Tyva (Y_2 – Road traffic accident severity = 18.41 deaths per 100 injuries; X_2 – Median age = 28.4 years). The rightmost point rank based on identify most regions of the Central Federal District of the Russian Federation, for which Y_i is the minimum value, X_i is the highest in the data set values. It means that according to *the Road traffic accident severity rank = f (Rank of the median age of Russian population)* characteristic is inversely proportional to a linear connection.

The subsequent analysis has showed that for the dependence of the *Road traffic accident severity = f (Rank of the share of Russian population with income below the minimum wage)* characteristic is directly proportional linear connection, and according to *the Road traffic accident severity = f (Rank of the average monthly income of the population)* – a power connection.

Research results and their analysis

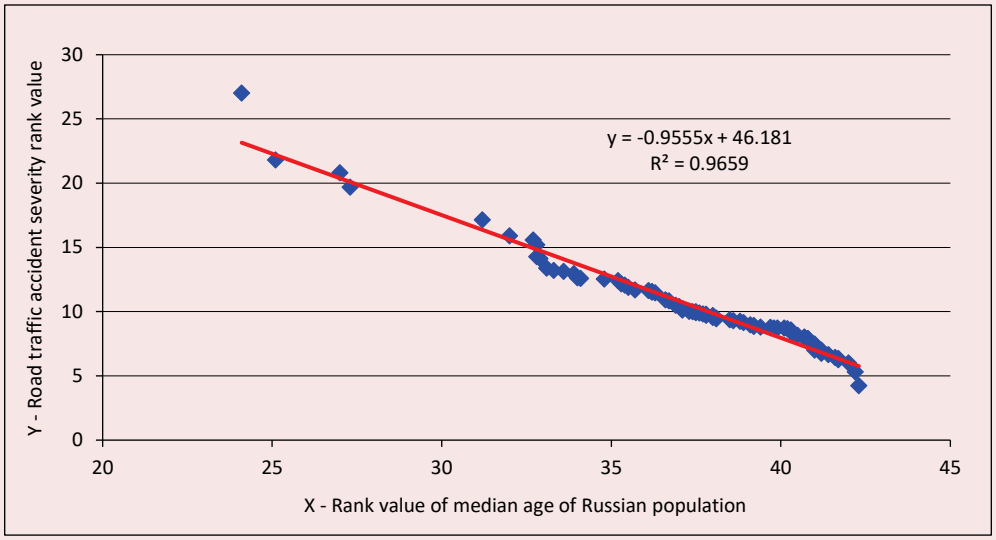
This section presents rank patterns of the impact on the road traffic accident severity of such characteristics of regional sociocenosis as the median age; the share of the population with income below the minimum wage; the average monthly income of the population.

Figures 7–12 graphically show the rank patterns. For the convenience of identifying temporary changes in the situation in the field of road safety, the patterns are constructed for a set of data from 2010 and 2018.

Comparing the patterns of *the Road traffic accident severity rank = f (Sociocenosis characteristic rank)* in 2010 and 2018 *(Tab. 6, 7, 8)* the authors note the main fact for all three patterns. In general, the severity of the road traffic accident outcome in 2018 decreased slightly compared to 2010. The parameter value *a* of the patterns (1)–(3) proves this statement. At the same time, each of the patterns is characterized by certain specifics.

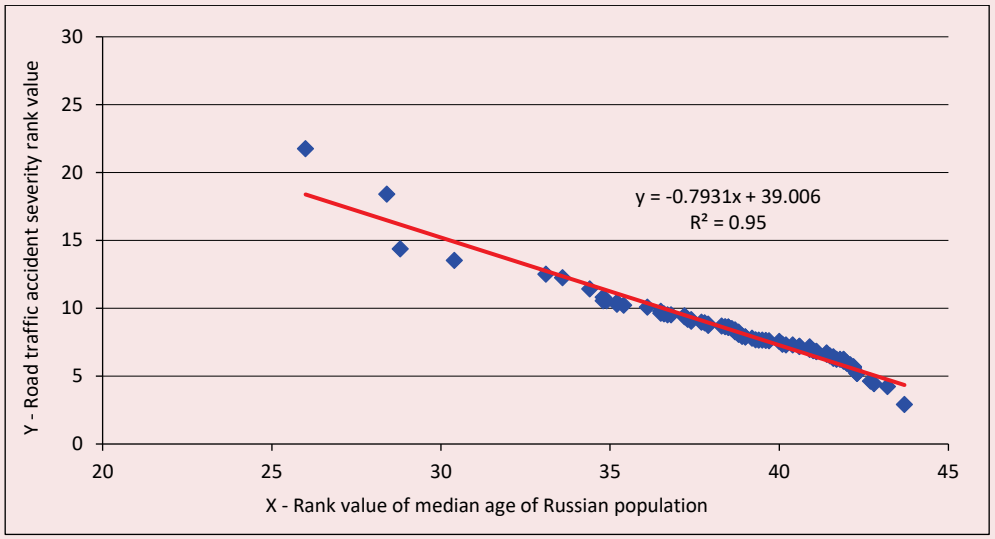
Road traffic accident severity rank pattern = f (Rank of the median age of Russian population). Figures 7–8 show graphic images of the pattern (1).

Figure 7. Rank pattern (according to 2010 data)
Road traffic accident severity rank = f (Rank of the median age of Russian population)



Source: own calculations.

Figure 8. Rank pattern (according to 2018 data)
Road traffic accident severity rank = f (Rank of the median age of Russian population)



Source: own calculations.

Table 6. Parameters and coefficient of determination R^2 of the pattern (1)
Road traffic accident severity rank = f (Rank of the median age of Russian population)

Year	Numerical values of the pattern parameters (1) $Y = a - b \cdot X$		R^2
	a	*b*	
2010	46.18	0.955	0.965
2018	39.00	0.793	0.950

Source: own calculations.

Table 6 shows the numerical values of the pattern parameters (1) that are typical for the compared databases taking into account the median age of the regional sociocenosis.

Comparing the patterns of the *Road traffic accident severity rank = f (Rank of the median age of Russian population)* in 2010 and 2018, it is worth noting the following:

• In 2018, the median age played a much smaller role in determining the road traffic accident outcome in terms of severity than in 2010. The value of the pattern parameter *b* proves it (1).

• Both in 2010 and in 2018 in a number of Russian regions (about 10% of the total number) the car accident severity was significantly different from the typical national level. These are mainly national republics with a fairly young population.

Road traffic accident severity rank pattern = f (Rank of the share of Russian population with income below the minimum wage). *Figures 9–10* show the graphic images of the pattern (2).

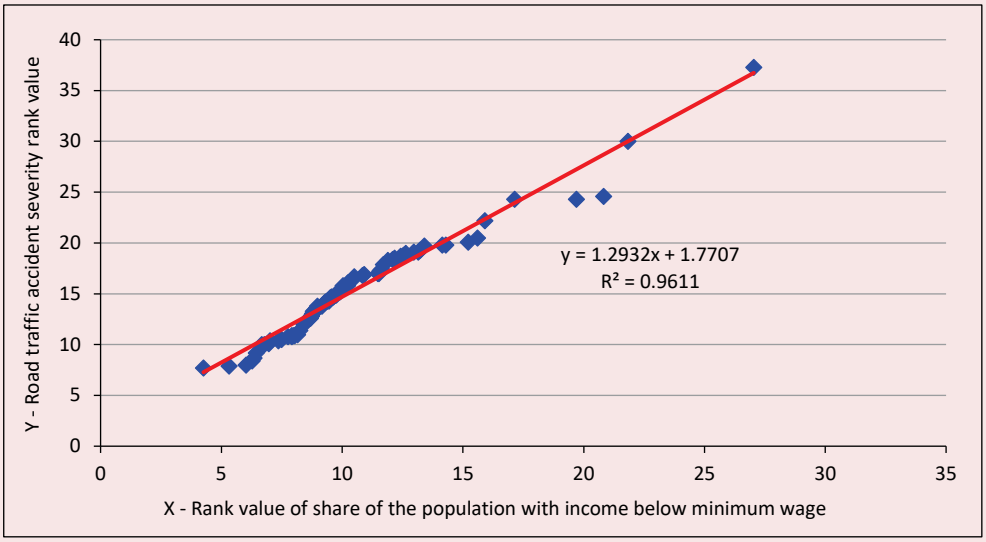
Table 7 shows the numeral values of the required pattern parameters (2).

Comparing the patterns of *the Road traffic accident severity rank = f (Rank of the share of Russian population below the minimum wage)* in 2010 and 2018, it is worth noting the following:

• In 2018, the share of Russian population with income below the minimum wage played a significantly smaller role in shaping the road traffic accident outcome in terms of severity than in 2010. The value of the pattern parameter *b* indicates it (2).

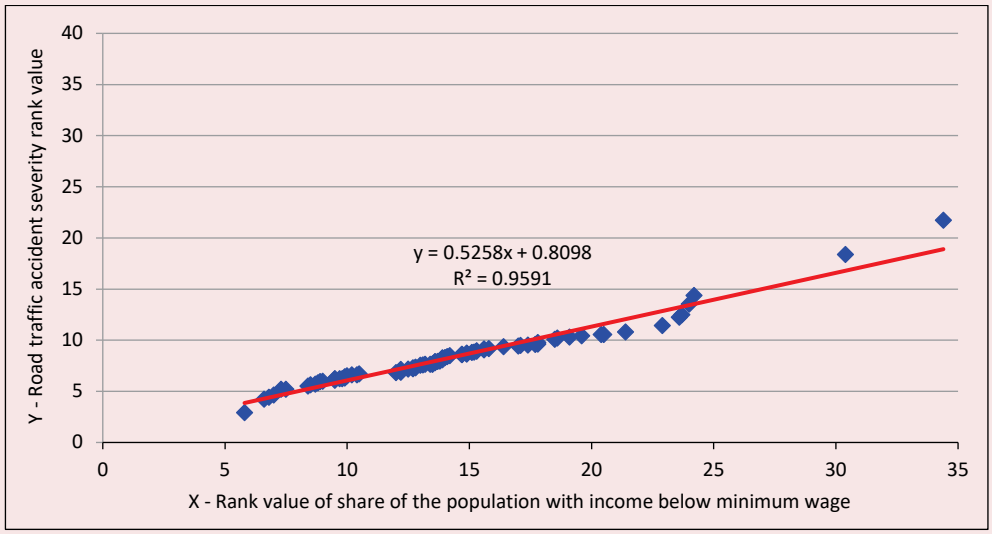
• In the pattern of 2018, the number of Russia's regions, where the road traffic accident

Figure 9. Rank pattern (according to 2010 data)
Road traffic accident severity rank = f (Rank of the share of Russian population below the minimum wage)



Source: own calculations.

Figure 10. Rank pattern (according to 2018 data)
Road traffic accident severity rank = f (Rank of the share of Russian population below the minimum wage)



Source: own calculations.

Table 7. Parameters and coefficient of determination R^2 of the pattern (2)
Road traffic accident severity rank = f (Rank of the share of Russian population below the minimum wage)

Year	Numeral values of pattern parameters (2) $Y = a + b \cdot X$		R^2
	a	*b*	
2010	1.770	1.293	0.961
2018	0.809	0.525	0.959

Source: own calculations.

severity significantly differs from the typical national level, decreased slightly compared to 2010. It means that the impact of the "share of poor people" factor on the car accident severity in 2018 was somewhat leveled, compared to 2010.

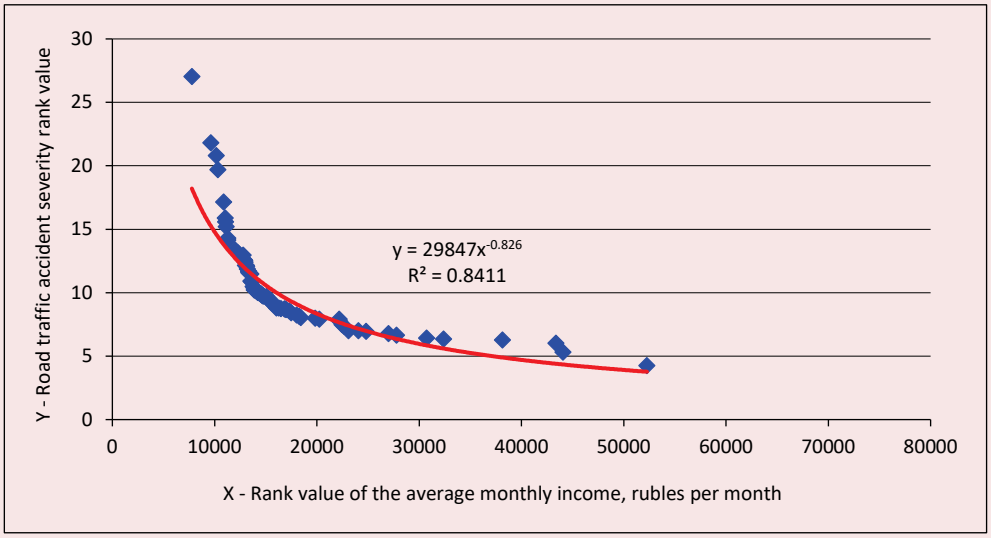
Road traffic accident severity rank pattern = f (Population's average monthly income rank). *Figures 11–12* show graphical representations of the pattern (3). *Table 8* shows the numerical values of the pattern parameters (3) of the Road traffic accident *severity rank = f (Population's average monthly income rank)*.

It is necessary to note that the numerical values of the exponent of the patterns (indicator *b*) for 2010 and 2018 are the same (*b = -0.82*). This suggests that the spatial heterogeneity of the regional road traffic accident severity in relation to the average income has not changed. The "right tail" of dependence has lengthened which characterizes both an increase in the living standards and inflationary processes in Russian regions.

Conceptual considerations for improving road safety in the Russian Federation in the spatiotemporal continuum

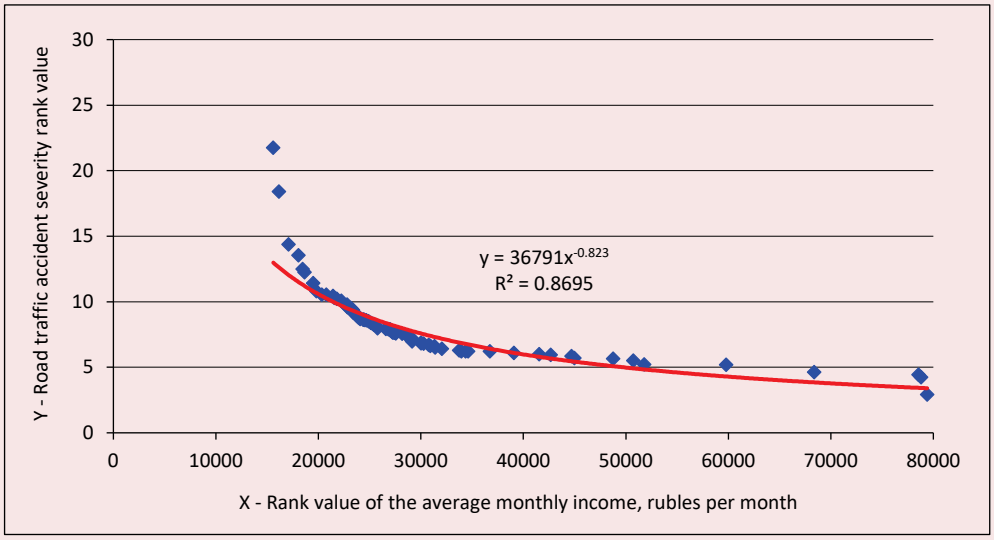
The purposes of the Road Safety Strategy are highly specific and incredibly ambitious. Russia should achieve 4.0 deaths per 100 thousand people (or about 6 thousand deaths in road traffic accidents per year) for 2024 in the field of road safety target levels of social risk, and 0 deaths per 100 thousand people – by 2030. It took Russia a decade and a half to double the annual death toll (2005–2019),

Figure 11. Rank pattern (according to 2010 data)
Road traffic accident severity rank = f (Population's average monthly income rank)



Source: own calculations.

Figure 12. Rank pattern (according to 2018 data)
Road traffic accident severity rank = f (Population's average monthly income rank)



Source: own calculations.

Table 8. Parameters and coefficient of determination of R2 pattern (3)
Road traffic accident severity rank = f (Average monthly income rank)

Year	Numeral values of pattern parameters (3) $Y = a \cdot X^b$		R^2
	a	*b*	
2010	29847	- 0.82	0.841
2018	36791	- 0.82	0.869
Source: own calculations.			

and no more than five years are provided for a further three-fold reduction (from 16.9 to 5.9 thousand people per year). It is almost impossible to reach the level of zero mortality. In the road safety position the safest countries are: Norway, Sweden, Denmark, Great Britain, and Switzerland. In 2017–2018 the social risk level was 2.0–3.2 deaths in car accidents per 100 thousand people (despite the fact that in the Scandinavian countries there is the so-called "Vision Zero", or the concept of zero mortality, that has been working for more than 20 years [32]). Today, discussing the future development prospects toward achieving zero mortality, foreign experts come to the conclusion that car accident acquires a specific ethnic and economic-social character in European countries [32; 33].

Using the methods of synectics [34] and analogies [35], and the results of the author's research [36; 37], the article states that, in Russia's spatiotemporal continuum, the problems of improving road safety are largely determined by the demographic and socio-economic specifics of Russian living conditions. It is practically impossible to imagine that relatively young and poor society of the republics of the North Caucasus will daily manifest the safe behavior principles on the roads in the same way as relatively more mature and economically successful citizens that form the sociocenosis basis of the regions of Central and Northwestern Federal Districts of the Russian Federation. In this regard, the researchers note the need to differentiate the state policy in the field of ensuring road safety taking into account the regional characteristics of the population's behavior of federal districts and even particular Russian regions.

Currently, the federalization principles imply the Russian Federation as a single state political and legal legislative space, within the boundaries of which all aspects of public administration are uniform. However, despite some slight convergence of the country's regions in terms of road traffic accident characteristics, the gap between the relatively safe regions and their antipodes-regions with a high risk of death in a road traffic accident is still very high. The statistics of the State Road Traffic Safety Authority of the Ministry of the Interior of the Russian Federation and the pattern (2) show a four-fold difference in the car accident severity between the most and least safe regions.

In fact, currently, all measures to improve the road safety in the regions have three sources of funding: from the federal, regional and municipal budgets. Relatively rarely, funds for measures to improve road safety are allocated from extra-budgetary sources. How should the share of budget expenditures for items related to road safety provision correctly be determined? Nowadays, in most Russia's regions, the share of budget expenditures for ensuring the regional programs' implementation does not exceed 0.1–0.3% of the budget resources. For example, according to the Federal Target Program for Road Safety (2013–2020)[17], in 2017, the maximum amount of actual expenditures under the Road Safety Program among the regions was recorded in the Republic of Tatarstan – 1,722 million rubles with annual budget expenditures in the amount of 231,088 million rubles[18]. In 2017 in the Republic of Tatarstan the unit costs of measures to road safety improvement were 0.745% of the total amount of annual budget expenditures. Perhaps, it is this factor that has allowed the territory to be in the group of leading regions for road safety for a decade. Of course, it is necessary take into account the regional budgeting opportunities which are very different for the

[17] Efficiency assessment of Federal Target Program implementation in 2013–2020. *Official website of the Federal Target Program on Road Safety*. Available at: http://www.fcp-pbdd.ru/achievements/efficiency

[18] On the budget execution of the Republic of Tatarstan in 2017: Law of the Republic of Tatarstan, dated May 28, 2018, no. 36-ZRT. Available at: https://minfin.tatarstan.ru/byudzhet-2017.htm?pub_id=1411001

Table 9. Differentiated approach to financing of regional road safety programs

Group of entities of the Russian Federation	Example of a representative entity of the Russian Federation	Actually achieved level (2018) of road traffic accident severity	The share size of regional budget expenditures under the item "Road safety ensuring", %
I	Moscow	4.25	0.20
II	Republic of Tatarstan	6.24	0.35
III	Republic of Bashkortostan	9.06	0.50
IV	Zabaykalsky Krai	12.52	0.65
V	Chechen Republic	21.76	0.80
Source: own calculations.			

Russian entities. Nevertheless, it is the entities of the Federation that ought to bear the main burden of responsibility for solving regional problems, and it is the regional budget that should be rationally structured.

Table 9 shows the authors' proposals for the specific amount of budget expenditures under the item "Road safety ensuring" taking into account the current car accident state in the regions.

Conclusion

Summarizing the results, presented above in the form of final conclusions, the authors note the following.

Road traffic accident, as an objective manifestation of the achieved road safety level, is changing in time and space. The specific of this change depends on the dynamics of sociocenosis characteristics. In turn, the sociocenosis is changing in time and space, primarily essentially, at the level of universal values. Not only the results of this article, but also data of R. Fisher and D. Beer [38], confirm the conclusion.

In recent years (2010–2019), Russia has achieved quite serious success in the field of ensuring road safety, but it is still among the countries of catching up development.

Road traffic accident severity, as a very representative indicator of car accident, varies in a very wide range of values in Russian regions (even without considering the federal cities of Moscow and St. Petersburg in 2018, this range was [4,5-21,5]). This fact once again characterizes Russia as the largest country in the world, and it is extremely heterogeneous in the manifestations of life conflicts.

Road traffic accident severity rank patterns = f (Socio-cenosis characteristics rank) identify the statistical relationship between demographic and socio-economic living conditions in Russian regions and car accident as a generalized abstract resultant of living standards.

Analysis of *the road traffic accidents severity rank patterns = f* (*Sociocenosis characteristics rank*) showed that in 2018, compared to 2010, has changed the degree of influence of the Russian sociocenosis on the road traffic accident formation. In particular, the numerical values of the pattern parameter *b,* which identifies the connection degree between the predictor and the outcome, decreased for the influence cases of the median age and the share of the population with income below the minimum wage. At the same time, in 2010–2018, the impact on the road traffic accident severity of the regional average monthly income of the population did not change. This fact once again suggests that the criterion "The average monthly income of the population" can not fully be an economic indicator.

Road traffic accident severity rank patterns = f (Socio-cenosis characteristics rank) also illustrate the spatial features of road traffic accident in Russia. In particular, the road traffic accident severity varies very widely in the spatial context reaching maximum values in the national border regions (republics of the North Caucasus, Kalmykia, Tyva, and Buryatia).

The proposed differentiation of the regional approaches to the required financing of road safety programs is based on the research results of the statistical relationship between the results achieved by 2018–2020 in the field of road safety provision and actual sociocenosis characteristics. The authors believe that, if Russia's regions focus management attention on the need to improve the road safety (their importance awareness, the formation of targeted approaches, increased funding), the country will form objective conditions for achieving the ambitious goals of the Road Safety Strategy of the Russian Federation.

In conclusion, it is necessary to note that the methods and practices of road safety management in the constituent entities of the Russian Federation should take into account regional specifics not only in terms of financing regional road safety programs, but also at the level of organizing traffic and pedestrian flows, means of influencing violators of traffic regulations, and other specific aspects of road safety.

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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 (February 2021), as well as for the period from December 2019 to February 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.

In December 2020 – February 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 50–52%, negative – 31–33%, which is slightly lower than in February 2020 when the share of positive assessments of the President's work was 45% (negative – 31%)[2].

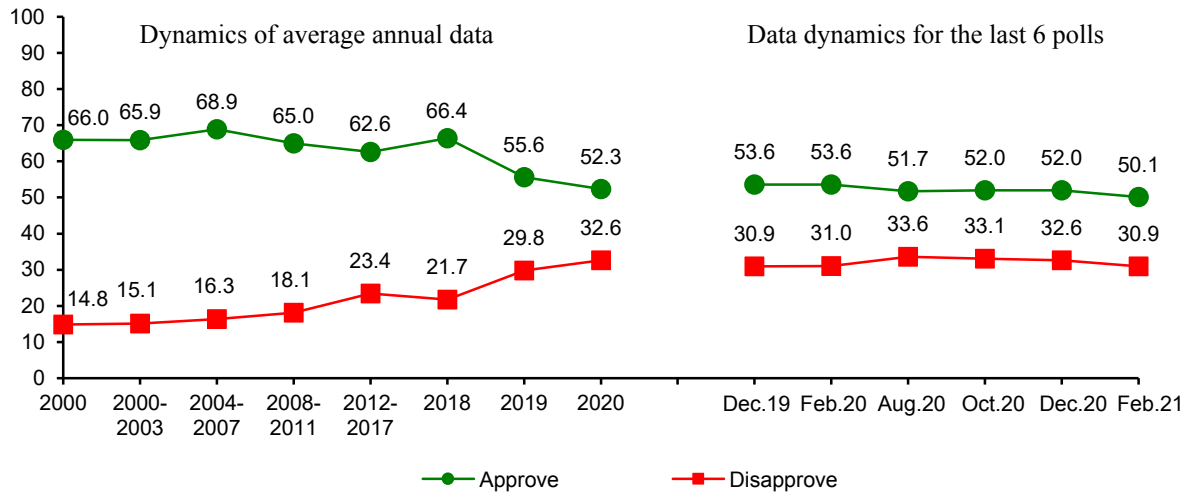
In yearly dynamics, there is a continuing decrease of positive assessments: in 2018 – 66%, 2019 – 56%, 2020 – 52%; in February 2021 – 50%.

[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] Hereinafter, the results of a comparative analysis of survey data, conducted in February 2021, and the results of a last-year monitoring "wave" are given in the frame (February 2020).

In general, do you approve or disapprove of the work of the President of Russia?
(% of respondents, FSBIS VolRC RAS data)*



* Hereinafter, all graphs show average annual data for 2000, 2018, 2019, 2020, as well as average annual data for 2000–2003, 2004–2007, 2008–2011, 2012–2017, corresponding to the periods of presidential terms.

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 (+/-), Feb. 2021 to Feb. 2020
	2000	2007	2011	2012	2018	2019	2020	Dec. 2019	Feb. 2020	Aug. 2020	Oct. 2020	Dec. 2020	Feb. 2021	
RF President														
I approve	66.0	75.3	58.7	51.7	66.4	55.6	52.3	53.6	53.6	51.7	52.0	52.0	50.1	-4
I disapprove	14.8	11.5	25.5	32.6	21.7	29.8	32.6	30.9	31.0	33.6	33.1	32.6	30.9	0
Chairman of the RF Government*														
I approve	-*	-*	59.3	49.6	48.0	41.1	38.7	41.1	37.9	38.9	38.8	39.1	37.6	0
I disapprove	-	-	24.7	33.3	31.6	38.4	40.4	38.9	40.9	40.9	40.8	38.8	38.8	-2
Governor of the Oblast														
I approve	56.1	55.8	45.7	41.9	38.4	35.7	35.0	35.6	36.2	35.2	35.5	32.9	33.9	-2
I disapprove	19.3	22.2	30.5	33.3	37.6	40.2	42.5	40.8	41.8	41.9	42.1	44.2	42.4	+1

* The question was first asked in 2008. In 2020, the first poll was conducted in January 24–February 12.. The current chairman of the RF Government M. V. Mishustin has just started his new work (January 16, 2020), therefore, respondents were asked about work of the former Prime Minister – Dmitry Medvedev.

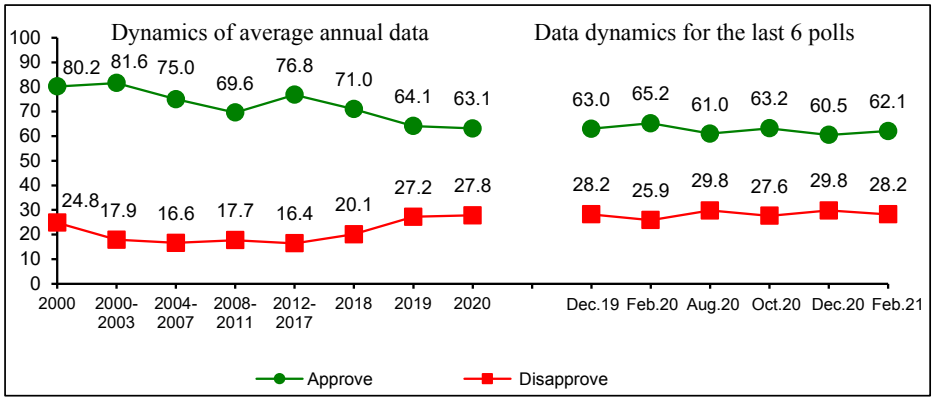
For reference:

According to VCIOM, the level of approval of the President's work in December 2020 – first half of February 2021[3] was 61–62%, and the share of negative assessments was 28–30%.

According to latest Levada-Center data (November 2020 – January 2021[4]), assessment of the President's work has not changed: the share of positive assessments was 64–65%, negative – 34%.

At the same time, according to data of VCIOM and Levada-Center, yearly dynamics gradually change in a negative way (since 2012–2017).

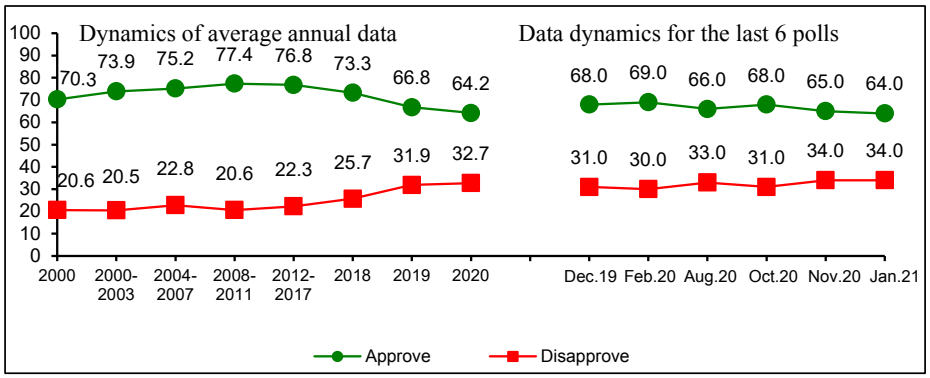
In general, do you approve or disapprove of the work of the President of Russia?
(% of respondents, FSBIS VolRC RAS data)



Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Approve	-3
Disapprove	+2

Source: VCIOM data. Available at: https://wciom.ru/
Data for February 2021 – average value for two polls: conducted on February 7, 2021 and February 14, 2021.

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 (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Approve	-5
Disapprove	+4

Source: Levada-Center data. Available at: https://www.levada.ru/

[3] At the moment of writing this article, VCIOM latest data were dated February 14, 2021. Source: VCIOM. Ratings. Available at: https://wciom.ru/ratings/dejatelnost-gosudarstvennykh-institutov/

[4] Source: *Levada-Center. Indicators*. Available at: https://www.levada.ru/indikatory/

From December 2020 – February 2021, there have been no significant changes in the assessment of the success with which the President solves the country's key problems:

- ✓ 46% of the Oblast's residents think that the President is successful in strengthening Russia's international positions (the share of opposite assessments is 34%);
- ✓ 41% of citizens positively assess the President's work in restoring order in the country; (the share of opposite assessments is 34%);
- ✓ 32% of people think that the President is successful in protecting democracy and strengthening the freedoms of citizens (the share of negative characteristics in higher – 48%);
- ✓ 25% of respondents positively assess V.V. Putin's efforts aimed at boosting the economy and increasing the welfare of the population (the share of those who support the opposite opinion has been stable since August 2020 – 61–62%).

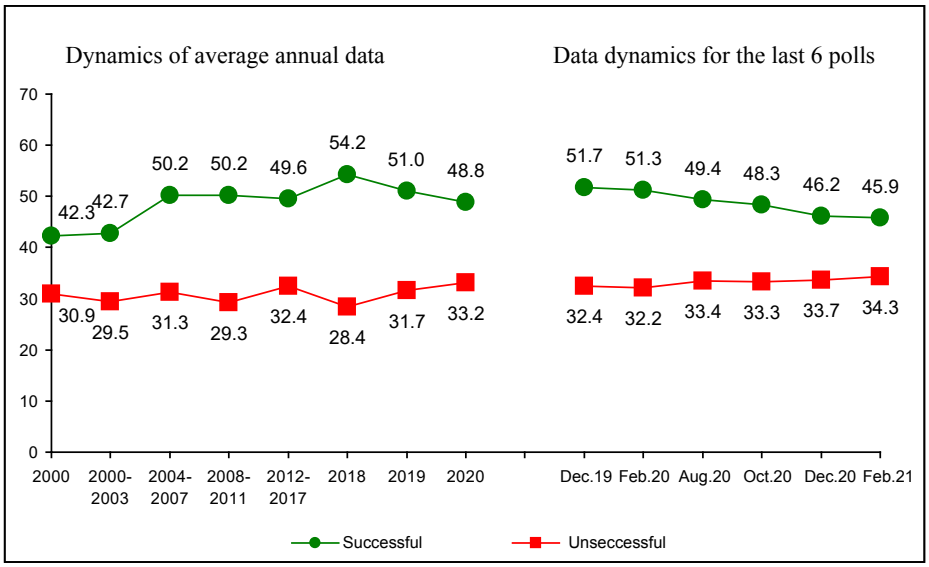
Compared to February 2020, the share of positive assessments, regarding successfulness of the President's work, decreased in nearly all key issues:

- ✓ strengthening Russia's international positions – by 5 p. p. (from 51 to 46%);
- ✓ restoring order in the country – by 3 p. p. (from 44 to 41%);
- ✓ protecting democracy and strengthening the freedoms of citizens – by 3 p. p. (from 35 to 32%);
- ✓ boosting the economy and increasing the welfare of the population – by 1 p. p. (from 26 to 25%; there are no major changes, but it is necessary to remember that the lowest number of the Oblast's residents positively assesses the President's work in solving these problems – 24–26%).

In yearly annual data dynamics, negative trends have been recorded since 2018; regarding successfulness of the President's work in boosting the economy and increasing the welfare of the population – since the mid-200s (from 2004–2007).

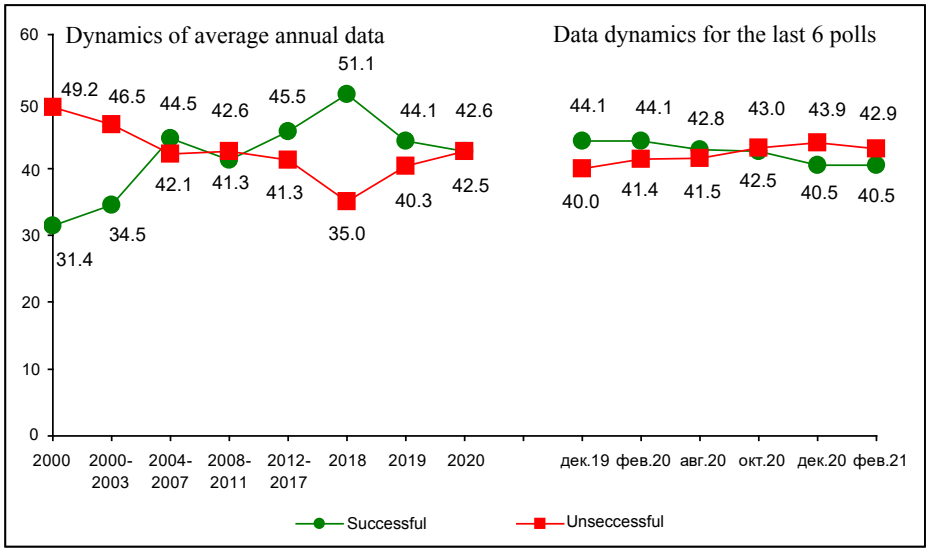
In your opinion, how successful is the RF President in coping with challenging issues..?
(% of respondents; FSBIS VolRC RAS data)

Strengthening Russia's international positions



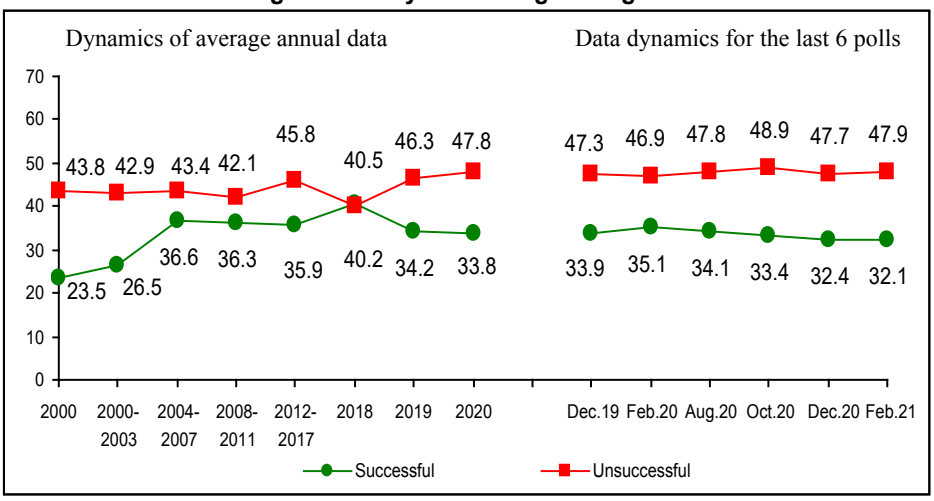
Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Successful	-5
Unseccessful	+2

Imposing order in the country



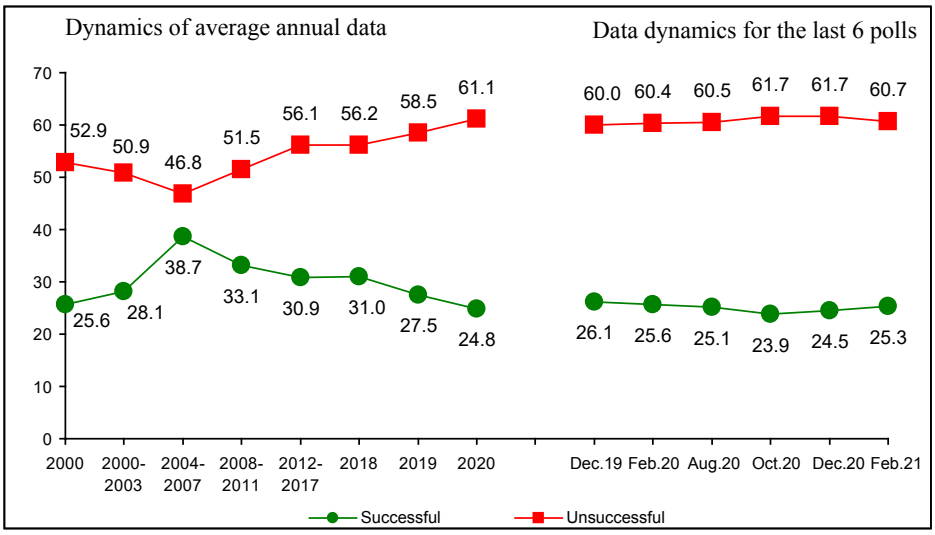
Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Successful	-3
Unseccessful	+2

Protecting democracy and strengthening citizens' freedoms



Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Successful	-3
Unsuccessful	+1

Economic recovery and increase in citizens' welfare



Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Successful	-1
Unsuccessful	+1

In December 2020 – February 2021, the structure of people's political preferences in the Vologda Oblast has not significantly changed. The United Russia party still prevails (the share of its supporters is 31%), and the support for other parties is much lower: LDPR – 10%, KPRF – 8%, the Just Russia party – 4%.

At the same time, the opinion of the Oblast's population that none of the political forces represented in the State Duma express their interests is the most common. 34–36% of respondents share it.

A similar structure of political preferences was recorded in February 2020 and on average for 2019 and 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						Change (+/-), Feb. 2021 to Feb. 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	Dec. 2019	Feb. 2020	Aug. 2020	Oct. 2020	Dec. 2020	Feb. 2021	
United Russia	18.5	30.2	31.1	33.4	29.1	35.4	38.0	37.9	33.8	31.5	33.7	33.2	30.9	31.1	30.9	30.5	-3
KPRF	11.5	7.0	10.3	16.8	10.6	8.3	14.2	9.2	8.8	8.4	9.2	8.9	8.6	8.8	7.3	8.3	-1
LDPR	4.8	7.5	7.8	15.4	7.8	10.4	21.9	9.6	9.1	9.5	9.4	9.9	9.3	9.4	9.5	10.1	0
Just Russia	-	7.8	5.6	27.2	6.6	4.2	10.8	2.9	3.4	4.7	4.0	4.7	4.8	4.3	5.0	3.6	-1
Other	0.9	1.8	1.9	–	2.1	0.3	–	0.7	0.3	0.5	0.1	0.6	0.4	0.3	0.7	0.2	0
None	29.6	17.8	29.4	–	31.3	29.4	–	28.5	33.7	34.2	34.3	34.0	33.6	33.8	35.3	35.9	+2
Hesitate to respond	20.3	21.2	13.2	–	11.7	12.0	–	11.2	11.0	11.1	9.3	8.7	12.4	12.2	11.2	11.3	+3

In early 2021, there is a stable dynamics of social mood:

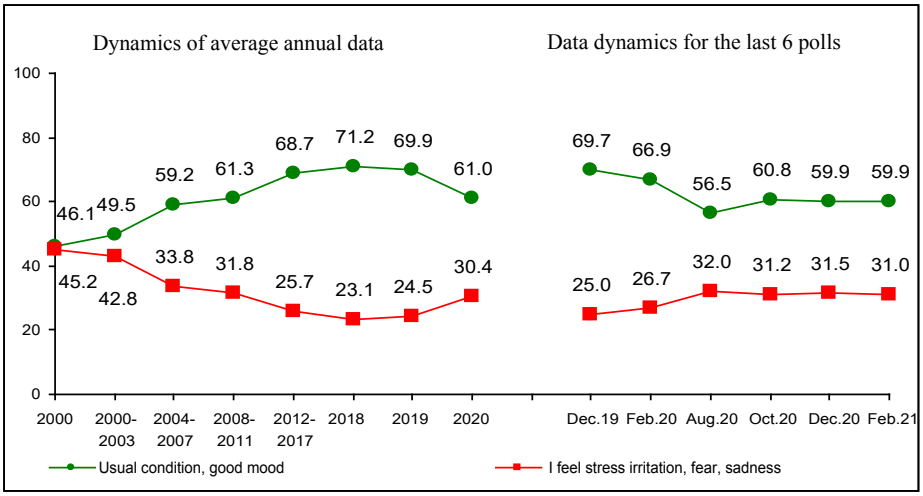
- ✓ share of people who positively assess their emotional state is 60% (opposite characteristics are mentioned by 31–32% of respondents);
- ✓ share of those who think that "everything is not so bad, and it is possible to live; it is difficult to live, but it is possible to stand it" is 70% (20–21% of the Oblast's residents have a low stock of patience);
- ✓ nearly 40% of population subjectively refer to themselves as "middle-class people" (48–49% of respondents refer to themselves as "poor and extremely poor");
- ✓ insignificantly (by 2 p.p.), Consumer Sentiment Index increased (from 83 to 85 p.).

On the background of actual absence of any changes in assessments of social well-being over the last two months, there are general negative trends in comparison with February 2020:

- ✓ share of positive assessments of emotional well-being decreased by 7 p.p. (from 67 to 60%);
- ✓ share of people with a large stock of patience decreased by 5 p. p. (from 75 to 70%);
- ✓ Consumer Sentiment Index decreased by 6 p. p. (from 91 to 85 p.);
- ✓ share of "poor and extremely poor" have barely changed (40%).

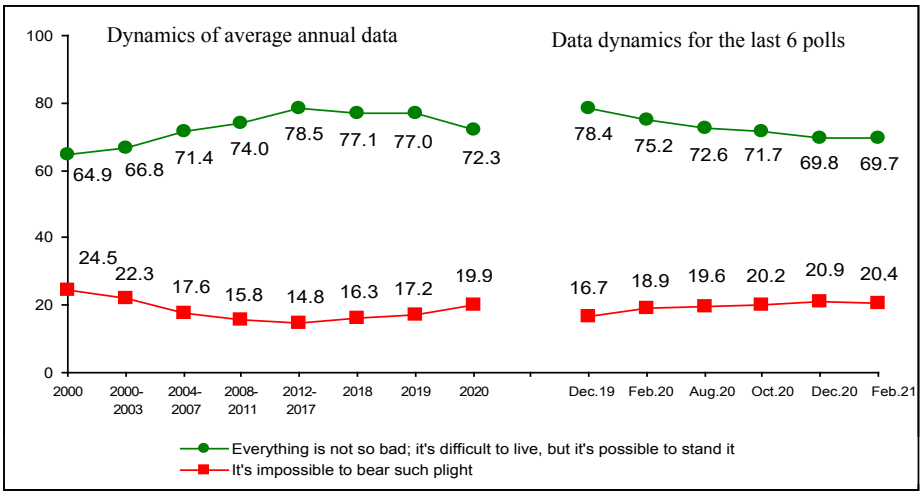
Estimation of social condition *(% of respondents; FSBIS VolRC RAS data)*

Social mood



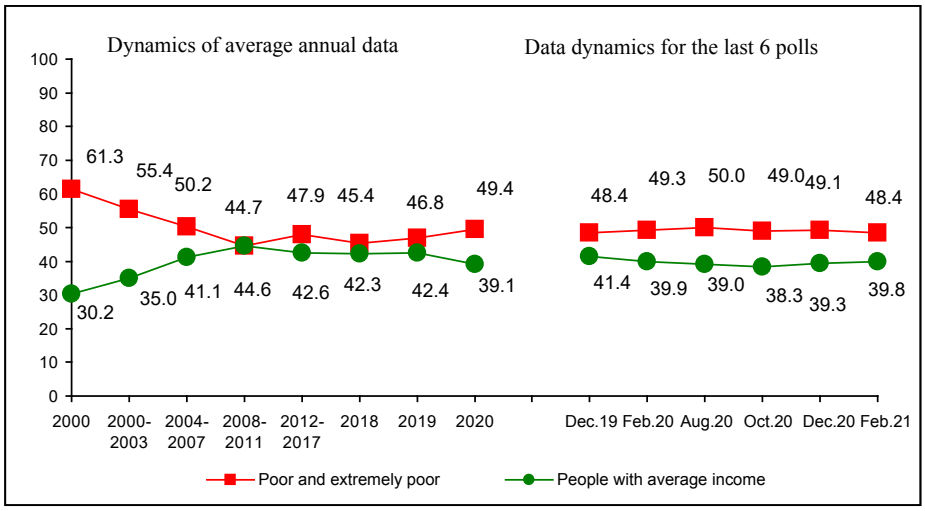
Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Usual condition, good mood	-7
I feel stress, irritation, fear, sadness	+4

Stock of patience



Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Everything is not so bad; its difficult to live, but its possible to stand it	-5
Its impossible to bear such plight	+2

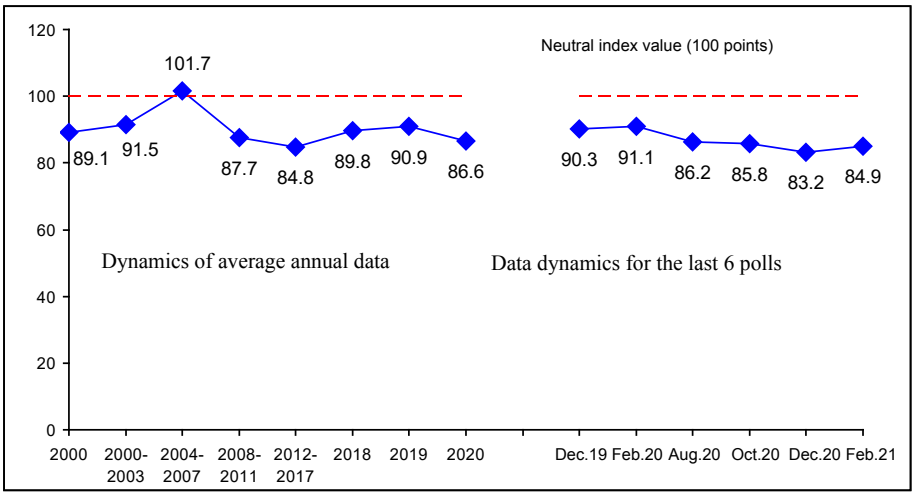
Social self-identification*



Annual dynamics (February 2021 to February 2020)	
Respond option	Dynamics (+ / –)
Share of people who consider their income average	0
Share of people who consider themselves poor and extremely poor	-1

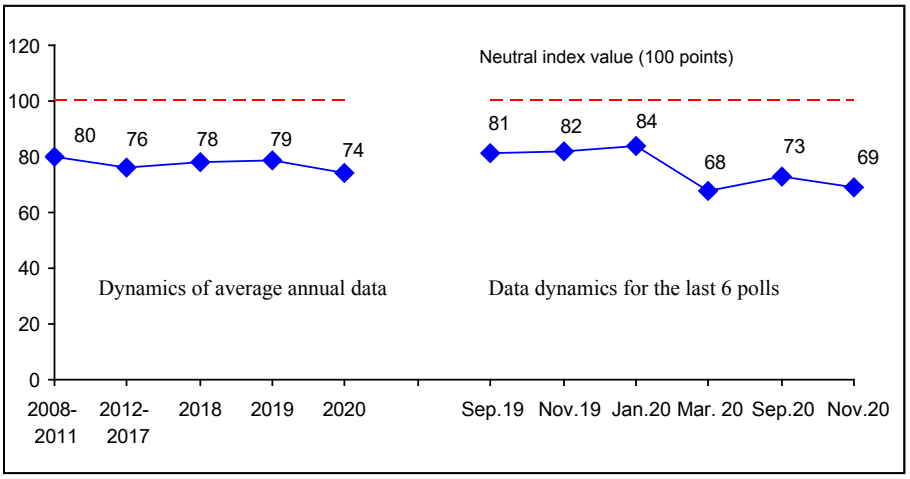
* Question: "Which category do You belong to, in your opinion?"

Consumer Sentiment Index (CSI)



Annual dynamics (February 2021 to February 2020)	
CSI	Dynamics (+ / –)
Index value, points	-6

Consumer Sentiment Index (CSI; Levada-Center data* for Russia)



Annual dynamics (February 2021 to February 2020)	
CSI	Dynamics (+ / –)
Index value, points	-13

* Index is calculated since 2008.
Source: Levada-Center data. Available at: https://www.levada.ru/indikatory/sotsialno-ekonomicheskie-indikatory/

In 4 out of 14 socio-demographic territories, there were insignificant positive changes from December 2020 to February 2021:

- ✓ people aged 30–55 (by 3 p. p., from 61 to 64%);
- ✓ people with secondary and incomplete secondary education (by 3 p. p., from 53 to 56%);
- ✓ people who, according to self-assessments, are included the category of 20% of the least wealthy residents of the Oblast (by 5 p. p., from 39 to 44%);
- ✓ Cherepovets residents (by 3 p. p., from 61 to 64%).

Negative changes of social mood were recorded in 4 socio-demographic groups over the past two months:

- ✓ people under the age of 30 (by 4 p. p., from 65 to 61%);
- ✓ people aged over 55 (by 3 p. p., from 57 to 54%);
- ✓ people who, according to income self-assessments, are included in the category of 60% of the wealthiest residents of the Oblast (by 3 p. p., from 63 to 60%);
- ✓ Vologda residents (by 3 p.p., from 59 to 56%).

Compared to last year (February 2020) all socio-demographic categories of the population have negative changes: the share of positive assessments decreased by 6–11 p. p. in all groups. Similar negative changes are recorded in the annual dynamics (for 2019–2020).

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 (+/-), Feb. 2021 to Feb. 2020
	2000	2007	2011	2012	2018	2019	2020	Dec. 2019	Feb. 2020	Aug. 2020	Oct. 2020	Dec. 2020	Feb. 2021	
Gender														
Male	50.1	65.9	64.5	69.1	72.8	70.1	60.8	69.0	67.0	55.6	60.7	60.0	60.8	-6
Female	43.3	61.7	62.0	65.8	69.8	69.6	61.2	70.3	66.9	57.3	60.8	59.8	59.2	-8
Age														
Under 30	59.1	71.3	70.0	72.3	80.0	81.1	67.6	81.3	71.7	69.0	64.6	65.2	60.9	-11
30–55	44.2	64.8	62.5	67.9	72.6	71.2	61.8	71.9	67.5	56.2	62.5	60.9	64.4	-3
Over 55	37.4	54.8	58.3	62.1	65.2	63.3	57.4	62.6	64.3	51.9	56.9	56.5	54.1	-10
Education														
Secondary and incomplete secondary	41.7	58.4	57.4	57.2	64.8	63.2	56.1	64.0	63.1	51.7	56.9	52.6	56.2	-7
Secondary vocational	46.4	64.6	63.6	66.7	72.2	72.7	63.5	70.4	69.0	59.1	63.5	62.5	60.9	-8
Higher and incomplete higher	53.3	68.6	68.3	77.0	76.8	73.4	63.3	74.7	68.6	58.6	61.4	64.6	62.7	-6
Income groups														
Bottom 20%	28.4	51.6	45.3	51.5	57.3	53.2	43.4	50.2	48.4	40.4	46.0	38.9	44.3	-4
Middle 60%	45.5	62.9	65.3	68.7	71.9	71.4	62.6	72.6	68.4	56.6	61.9	63.3	60.1	-8
Top 20%	64.6	74.9	75.3	81.1	82.9	81.8	75.6	80.5	79.1	76.4	70.6	76.3	76.0	-3
Territories														
Vologda	49.2	63.1	67.1	73.6	71.0	68.6	60.9	68.6	66.9	57.0	61.0	58.7	55.8	-11
Cherepovets	50.8	68.1	71.2	76.2	75.8	71.2	60.4	69.9	67.3	54.4	59.3	60.7	64.4	-3
Districts	42.2	61.6	57.1	59.8	68.7	69.8	61.4	70.3	66.8	57.5	61.4	60.0	59.7	-7
Oblast	46.2	63.6	63.1	67.3	71.2	69.9	61.0	69.7	66.9	56.5	60.7	59.9	59.9	-7

CONCLUSIONS

The results of another public opinion monitoring "wave" of VolRC RAS show that there were no significant changes in the dynamics of all key criteria (assessment of authorities' work, party and political preferences, social mood). At the same time, a decline in the share of positive assessments that characterize the emotional state in some socio-demographic categories is alarming (by 3–4 p. p.: among people under the age of 30, population aged over 55, residents who self-assess themselves as middle-class Vologda population), as well as negative changes in assessments of social mood in yearly dynamics.

In our opinion, the formation of public opinion over the last two months was affected by multidirectional and even opposite processes.

On the one hand, mass vaccination of Russians against coronavirus which began in mid-December 2020, unconditional international success of the Russian vaccine (it was recognized not only by the World Health Organization, but also by the chief epidemiologist of the United States – A. Fauci[5]), and a gradual return of the healthcare system and social institutions to work in a "regular" mode[6].

On the other hand, there was an increase in social tension associated with mass protests in support of A. Navalny in January – February 2021.

According to experts, "the key question, which occurs while analyzing the rallies on January 23 and all events related to work of non-system opposition, is as follows: can these events lead to a Russian

[5] See, for example:

1. H. Kluge (Director of the WHO European Regional Bureau): "WHO highly appreciates the efforts made by the Russian Federation to develop a vaccine against COVID-19, namely Sputnik V". "Once again, I want to thank Russia for its excellent efforts to create a safe and effective vaccine" (Source: *RBK*. September 21, 2020. Available at: https://www.rbc.ru/society/21/09/2020/5f6891cf9a7947464e34089b).

2. M. Vujnović (WHO representative in Russia): "We very much welcome the publication that speaks about the effectiveness of the vaccine" (Source: *Rossiyskaya Gazeta*. February 3, 2021. Available at: https://rg.ru/2021/02/03/v-voz-privetstvuiut-publikaciiu-dannyh-o-vakcine-sputnik-v-v-the-lancet.html).

3. "The chief epidemiologist of the United States, Anthony Fauci, positively spoke about Sputnik V, calling **it a contribution to the universal protection of humanity**" (Source: Baranov A. The West has finally admitted that the Russian vaccine is the best one. *Komsomolskaya Pravda,* February 9, 2021. Available at: https://www.kp.ru/daily/27236/4364524/).

4. Bloomberg (February 6, 2021): "**Countries are lining up for supplies of Sputnik V** after peer-reviewed results published in The Lancet medical journal this week showed the Russian vaccine protects against the deadly virus about as well as U.S. and European shots, and far more effectively than Chinese rivals.

In the global battle to defeat a pandemic that s claimed 2.3 million lives in little more than a year, the race to obtain vaccines has assumed geopolitical significance as governments seek to emerge from the huge social and economic damage caused by lockdowns imposed to limit the spread of the virus. That's giving Russia an edge as one of a handful of countries where scientists have produced an effective defense (source: Meyer H. Putin s oncei scorned vaccine now favorite in pandemic fight. *Bloomberg*. February 6, 2021. Available at: https://www.bloomberg.com/news/articles/2021i 02i 06/putini si oncei scornedi vaccinei isi nowi ai favoritei ini pandemici fight?srnd=premiumi europe).

[6] Since February 1, a regular work of day hospitals, periodic and preventive medical examinations, as well as prophylactic medical examination, have been resumed. People can visit sports events in the region (at the same time, the load of the stands should not exceed 50%). A maximum number of spectators at plays, concerts and film screenings is extended from 25 to 50% of the capacity of a hall; working hours of public catering facilities are prolonged (from 6.00 to midnight). The same schedule is for concerts, performances, plays, movie screenings, and similar events. The rule on the transfer of 30% of employees to the "remote" work becomes recommended, not mandatory (source: Vologda Oblast news. January 28, 2021. *Official website of O.A. Kuvshinnikov – the Governor of the Vologda Oblast*. Available at: https://okuvshinnikov.ru/press/news/na_vologodchine_v_polnom_obyome_vozobnovleny_profosmotry_dispanserizaciya_i_rabota_dnevnyh_stacionarov/).

"Maidan"? Actually, this is the main "horror story" – an uncontrolled political crisis with a subsequent leapfrog of regimes, a potential collapse of the country, and a loss of economic sovereignty"[7].

Although the results of the protest actions showed that "in Russia, any form of "orange revolution" is impossible; there is no deep social division in the country"[8], it must be admitted that these events caused a wide public response. Thus, according to Levada-Center, "the most memorable events of the first month of 2021 for Russians were the protests on January 23 and 31 (they were mentioned by 45% of respondents). Next, there were news about the coronavirus (12%) and return of A. Navalny (11%). Another 7% mentioned events in the United States – Biden's inauguration, the storming of the Capitol. Only 4% of Russians believe that the investigation movie "Palace for Putin" can be called the main event of January and early February" [9].

Opposite, but quite resonant recent events, which took place in the country and in the region, had a corresponding effect on the dynamics of public opinion, causing a situation of expectation: for some – alarming, for some – more hopeful. In our opinion, the direction of the future "balance" swing will largely depend on three factors: effectiveness of the Russian government's measures for the population's further socio-economic support; dynamics of the epidemiological situation (including the spring period, traditionally characterized by an increase in the spread of any viral infections); international political situation (related to the first political decisions of J. Biden as the President of the United States).

Materials were prepared by M.V. Morev, I.M. Bakhvalova, E.E. Leonidova

[7] A simple logic of a propagandist. *Expert*, no 6, February 1, 2021. Available at: https://expert.ru/expert/2021/06/neslozhnaya-logika-propagandista/

[8] Skorobogaty P. Why Russia has outgrown the Maidan. *Expert*, no. 6, February 1, 2021. Available at: https://expert.ru/expert/2021/06/pochemu-rossiya-pererosla-majdan/

[9] Levada-Center press-release, dated February 12, 2021. Available at: https://www.levada.ru/2021/02/12/sobytiya-mesyatsa-2/

AUTHOR GUIDELINES
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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.

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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.

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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.

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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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