

## The Impact of the New Model of Nuclear Industry Diversification on the Development of the Territories of Presence (Theoretical and Practical Aspects)



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**Abstract.** The state has set a task to expand the production of high-tech civilian products for the enterprises of the military-industrial complex. Many defense enterprises are located in single-industry towns, which makes it relevant to analyze the mutual influence of the diversification of city-forming enterprises and cities' development. The purpose of the study is to assess the impact of the new model of diversification on the development of the territories of presence in the context of the nuclear industry. The research methodology is based on the principles of system analysis and institutional economic theory. The authors use the methods of analysis, synthesis, induction, deduction, and logical modeling. The basis is the theory of the social contract. The research proposes a three-level model of the social contract, detailing the interaction of an individual with three levels of public power – federal, regional, and local. The feature of

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the municipal part of the social contract for single-industry towns is highlighted: its third party is the city-forming enterprise that creates a number of basic benefits. In single-industry towns, where the nuclear industry enterprises are the main city-forming enterprises, the municipal part of the social contract changes: a state corporation becomes one of the contract parties instead of a city-forming enterprise. This is due to the introduction of a new model of diversification of the state corporation's activities. The authors prove that changing the social contract can give the cities of presence new qualified jobs, and state corporations can help to form a personnel reserve, fulfill the goals in the field of defense production diversification and the creation of new high-tech businesses. Testing the modified model of the social contract on the example of closed administrative-territorial entities of the nuclear industry revealed local governments' and the population's interest in it, the possibility of cities' long-term sustainable development, including improving the comfort of living. The results of the study can be used to develop strategic documents for spatial development, programs for single-industry towns' development, city-forming enterprises and holdings in various industries.

**Key words:** social contract, single-industry town, closed administrative-territorial formation, city-forming enterprise, diversification of the military-industrial complex, State Corporation Rosatom.

### Introduction

The policy of increasing the share of civilian production by the military-industrial complex (MIC) enterprises announced by the President of the Russian Federation<sup>1</sup> has significantly intensified scientific interest in this topic in recent years. The fundamental need to diversify the defense industry is in no doubt, which among other things is confirmed by extensive international experience [1; 2]. At the same time, the certain aspects of this process have been studied to a different extent. In particular, the issue of the impact of the diversification of the activities of defense enterprises, which are the city-forming ones in single-industry towns, on the development of the territories of their presence has not yet been sufficiently worked out.

This problem is relevant and has serious practical significance, since by 2030, defense enterprises should increase the output of civilian products to 50% of the total output. There is a need for a “bundle” of the issues of diversification of the defense industry and the development of their territories, which are mainly studied separately.

<sup>1</sup> Presidential Address to the Federal Assembly dated December 01, 2016. Available at: <http://www.kremlin.ru/acts/bank/41550> (accessed December 16, 2020).

The issue reflecting the author's approach to the problem under study and raised in the article can be considered as one of the aspects of a broader topic – the spatial location of high-tech production and science, causing a certain disagreement even in the basic strategic documents. Thus, the Scientific and Technological Development Strategy of the Russian Federation indicates the need to “support *individual territories* with a high concentration of research, development, innovation infrastructure, production”<sup>2</sup>; the Strategy of Spatial Development of the Russian Federation presumes the development of high-tech industries, as well as advanced research and innovation infrastructure (including unique scientific installations of the mega science class) only in *large and largest urban agglomerations*<sup>3</sup>. However, mega science class installations available in Russia (the NICA collider in Dubna, the UFL-2M laser installation in Sarov,

<sup>2</sup> Scientific and Technological Development Strategy of the Russian Federation, approved by Executive Order of the President of the Russian Federation dated December 1, 2016 No. 642.

<sup>3</sup> Spatial Development Strategy of the Russian Federation for the period up to 2025, approved by the order of the Russian Government dated February 13, 2019 No. 207-R.

etc.), and in other countries (for example, large scientific installations in US national laboratories<sup>4</sup>) can and should (due to their size, special operating conditions, etc.) be located outside of large cities and agglomerations. In addition, the focus on the development of fundamental science is one of the priority forms of diversification of defense research institutes, some of which are located in closed cities.

The author's approach determined the purpose of the study, which is to assess the impact of the new model of nuclear industry diversification on the development of the territories of presence in theoretical and practical terms. The theoretical aspects of the work detail the theory of the social contract (justification of the three-level model of the social contract, highlighting its features at the municipal level, in particular in single-industry towns and closed administrative-territorial entities (CATE)). The model connects the study of the issues of defense and other organizations diversification, that is, the development of city-forming enterprises and industries, and the development of the territories of presence. The paper considers the changes in the municipal part of the social contract, which consist in replacing the city-forming enterprise with a state corporation as one of the parties to the contract in single-industry towns (in particular in CATE), where the city-forming enterprises are the enterprises of the state corporation Rosatom.

#### Review of the previous studies

Studies of the social contract, as a development of the social contract idea, have been in the scientists' field of attention for more than one century. Within the framework of this paper, it is of interest to detail the social contract, to highlight the expectations and obligations of the individual in relation to the three levels of public power –

federal, regional and local, which are more often called macro-, meso - and micro-levels of the social contract [3]. In contrast to the “regional contract”, which mainly deals with the relations between regional authorities and business [4], the municipal contract is a “model based on a social contract between the population and the municipal authorities” [3]. Foreign studies pay attention to the “new social contract” developed in the changed conditions of an open economy and society, including the peculiarities of the local contract for different societies<sup>5</sup>, states, cities [5], as well as in the conditions of changing technologies and the widespread introduction of artificial intelligence [6]. In the domestic economic discourse, a detailed approach to the consideration of the social contract is still only beginning to develop. The strategic interest in the study of social phenomena using the social contract model is emphasized by its importance for the development of human capital, since it is “competition for high-quality human capital ... that will determine the country's position in the global economic turnover in the 2020s” [7]. This focus is important for our work, as it considers industries and cities where high-tech areas of activity are concentrated.

The problems of single-industry towns' development are the field for numerous studies of scientists such as economists, sociologists, geographers, historians, etc. The main problems include the dependence of the labor market on the city-forming enterprise, the prevailing influence of external economic processes on all spheres of life of the city; the outflow of the economically active population that does not fit into the activities of the city-forming enterprise, or in connection with its unstable activities; the dependence of the municipal budget on the results of the city-forming enterprise, etc. [8].

<sup>4</sup> Office of Science. Acknowledging User Facilities. URL: <https://science.osti.gov/User-Facilities/User-Resources/Acknowledging-User-Facilities> (accessed June 11, 2020).

<sup>5</sup> Krupansky J. Elements of a Social Contract. 2017. URL: <https://jackkrupansky.medium.com/elements-of-a-social-contract-69572b4bba11> (accessed April 12, 2021).

As for closed cities, the scientific discussions of recent years have focused more on the legal regime of CATE [9], the peculiarities of local self-government there and the budget process. These approaches are necessary to complement the consideration of CATE as centers of innovative development [10].

In scientific research [11, pp. 12–14] and in state strategizing<sup>6</sup>, a popular recipe for avoiding the single-industrialization of the city for a certain time was the diversification of the economy through the development of small businesses that are not associated with the city-forming industry. Today, more and more attention is paid to the need for a differentiated approach to the diversification of the economy of single-industry towns [12; 13], focusing on the strategic priorities of the country's development in this process [14]. The issues of the development of single-industry towns have become more often considered through the prism of the activities of the city-forming enterprise [15, pp. 44–46], including (although still rare) through the possibility of diversifying its activities [16]. Such an approach (the development of single-industry towns using of the opportunities of the city-forming industry or enterprise, and not just diversification or liquidation) is presented in the works of foreign authors [17; 18]. As a result, the research showed interest in the topic of social responsibility of large businesses in the territories of their presence [19] and the transition of this function from individual enterprises to the level of holdings [20]. At the same time, the researchers note that the issues of integrated development of the territories of presence are still in the field of view only of state corporations [21]. The Russian authors pay their attention to the research of scientific and technological [22],

organizational [23], state-regulatory [24] functions of state corporations, leaving the analysis of their city-forming significance in the shadow.

The interest in the city-forming function of state corporations in this paper is due to the fact that the diversification of defense industries is more effective within the framework of a holding company or a state corporation [25; 26]. However, the connection between the diversification of defense enterprises, including those within state corporations, and the diversification of the economy of single-industry towns (territories of presence) has not yet been properly reflected in the scientific literature.

### **Materials and methods of the study**

The research methodology is based on the principles of system analysis and institutional economic theory. The authors use such general scientific methods and techniques as analysis and synthesis, induction and deduction, and apply the method of logical modeling. The theoretical basis of the study was the theory of the social contract. The social contract is a triune one, because the individual expects some benefits from the state as a whole, fulfilling their obligations to each of the levels of government – federal, regional, and local. From a formal point of view, this is a certain simulation of the situation, since local self-government bodies (LSGB) are not included in the system of state power (Article 12 of the Constitution of the Russian Federation). However, both the federal, regional, and local authorities, within the limits of their powers, are engaged in the creation of public goods, which from the citizen's point of view allows us to present them as three levels of public power. The article deals with the municipal part of the social contract, in which the resident expects at least the following benefits from the local government: the opportunity to work and earn; comfortable living conditions, including the organization and provision of social benefits; protection of property rights; personal and property security; opportunities to meet social, cultural and economic needs. In

<sup>6</sup> Priority Program “Integrated Development of Single-Industry Towns” (the program passport was approved by the Presidium of the Presidential Council for Strategic Development and Priority Projects (Protocol No. 11 dated November 30, 2016)). Recognized by the Accounting Chamber as ineffective, and closed prematurely in 2019.

single-industry towns, the social contract includes a third party – the city-forming enterprise, since it creates such an important benefit as jobs (both for residents and for local authorities); it provides increased wages (trade, services, etc. develop as an external effect); develops the cultural, sports, and recreational opportunities in the city by owning the relevant facilities, etc. In political terms, the city-forming enterprise forms strong social groups (management and staff, trade unions, etc.), which are of serious, sometimes key, importance in the city. A special feature of the municipal part of the social contract in CATE is the presence of formal rules<sup>7</sup>, according to which the local government transfers part of its powers to the city-forming enterprise, thereby sharing responsibility for the decisions made and the results achieved in the context of the socio-economic development of the territory.

The study was based on closed administrative-territorial entities with city-forming enterprises of the nuclear industry. The choice of these cities is determined by the concentration of intellectual resources, technologies, experimental and industrial base there. Formally, not all “nuclear” closed cities are included in the list of single-industry municipalities<sup>8</sup>, but their actual dependence on the enterprises of the nuclear industry makes it possible to consider them as single-industry towns. We believe that this approach is necessary, because all the problems of single-industry towns are inherent in all of them, and the development of solutions for the development of their economy cannot be carried out without taking into account the influence of the city-forming industry. Approbation of the

theoretical provisions of the study was carried out by analyzing the socio-economic situation in the region, identifying development trends, comparing them with theoretical conclusions.

The information base of the research was the official data of the Federal State Statistics Service of the Russian Federation, the authorities of the subjects of the Federation, local self-government bodies of the cities under consideration (indicators for assessing the effectiveness of the activities of local self-government bodies for the relevant years, reports of the cities’ heads, strategies for the socio-economic development of the Russian Federation, reports on budget execution). Data on the activities of the State Corporation Rosatom are taken from the annual reports published on its official website.

### Results

Currently, more than 40 localities in the Russian Federation have CATE status. In ten of them, the city-forming organizations are nuclear industry organizations. In addition to CATE, the enterprises of the State Corporation Rosatom are city-forming in 16 more cities. Among the city-forming enterprises, there are both defense and strategically important civilian enterprises.

The modern model of activities diversification of the State Corporation Rosatom, which we call the “new model” (for more information, see [27]), began to form in 2014. The main reasons for this are the following: 1) the need to increase the production of civilian products by defense enterprises, the use of their potential for the development of the domestic high-tech industry; 2) ensuring the stability of defense enterprises’ activities in case of a decrease in the state defense order (SDO); 3) managing the corporation’s product portfolio in the main non-defense sector – nuclear energy, since there are serious risks associated with the policy, activity of foreign competitors, changes in technology, etc.; 4) fulfilling the tasks of the state industrial, scientific, technical, social and regional policy, which implies the status of a state corporation. The model is based

<sup>7</sup> The formal rules are defined in the Law of the Russian Federation dated July 14, 1992 No. 3297-1 “On closed administrative-territorial entity”, in particular, participation in the appointment of the head of the local administration (through the federal executive authority, which is responsible for the enterprise located in the city), participation in activities to ensure access control, etc.

<sup>8</sup> Decree of the Government of the Russian Federation No. 1398-r dated July 29, 2014 “On the list of single-industry municipalities of the Russian Federation (single-industry towns)”.

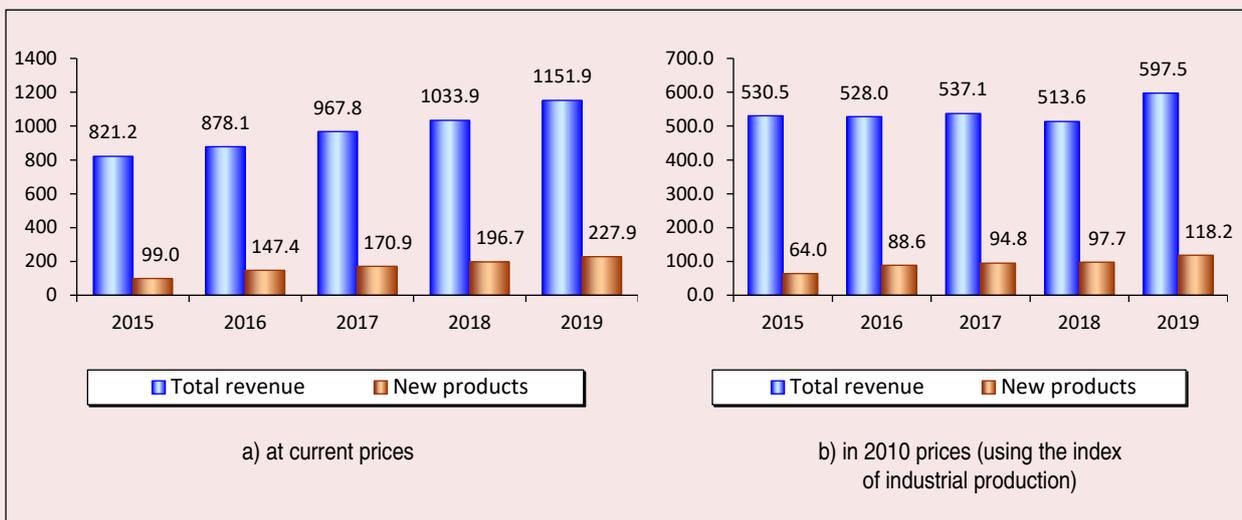
on the following principles: organization of the diversification process at three interrelated levels (corporation, division, enterprise); production of new products that correspond to promising areas of economic development; the use of integrator companies that organize the production of new products; the application of the open innovation principle. It is known that for enterprises with a significant stable state defense order, it becomes difficult to establish the production of civilian products [28]. The three-level diversification model helps to transfer a number of organizational issues to the level of the state corporation and divisions, which simplifies the process for the enterprise and at the same time allows using its resources for the development of new production facilities.

The model has proved its worth, the revenue from new civil activities of the Corporation (wind power, nuclear medicine, new materials, digital products, additive technology, control system and electrical engineering, nuclear icebreaker fleet,

environmental solutions, etc.) is steadily increasing (Fig. 1a), including, in comparable prices (Fig. 1b).

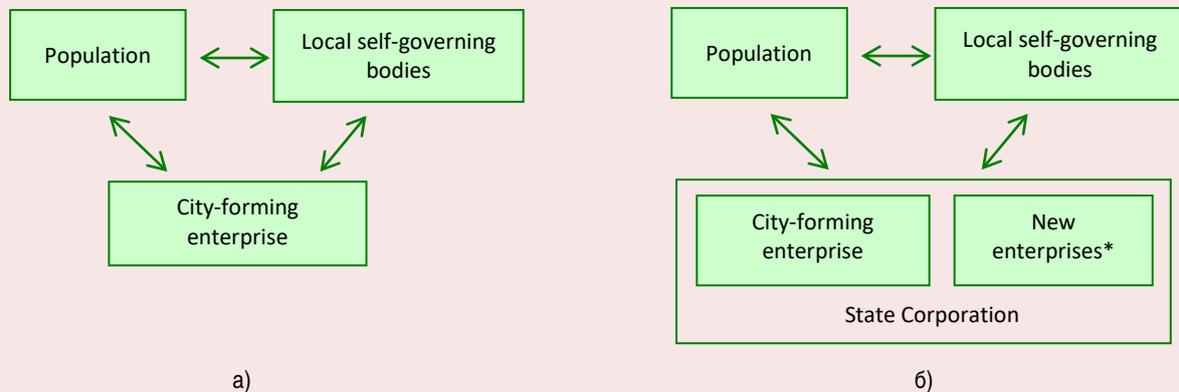
The new diversification model makes changes in the spatial location of production: branches and separate divisions of integrators are organized in the locations of large enterprises in the industry that have the necessary resources (for example, divisions and branches of RASU LLC, JSC FCS&HT “SNPO “Eleron” in Ozersk, Sarov, Zheleznogorsk, etc.), including in the territories of advanced socio-economic development (Research and Production Association “Centrotekh”, LLC “Ekoal’yans” in Novouralsk). The creation of new production facilities complemented a number of measures previously implemented by the state corporation for the development of the territories of presence: additional cities’ financing by allocating part of the tax revenues of enterprises for this purpose (within the framework of agreements between the State Corporation Rosatom and the regions of presence, in particular the Chelyabinsk, Tver,

Figure 1. Total revenue and revenue for new products of the State Corporation Rosatom, billion rubles



Compiled by: public reports of the State Corporation Rosatom for the relevant years. Available at: <https://rosatom.ru/about/publicnaya-otchetnost/>; Industrial production indices / Rosstat. Available at: [gks.ru/bgd/free/b00\\_24/isswww.exe/stg/d000/i000850r.htm](https://gks.ru/bgd/free/b00_24/isswww.exe/stg/d000/i000850r.htm) (accessed April 25, 2021).

Figure 2. The municipal part of the social contract in single-industry towns with the presence of State Corporation Rosatom: a) with the participation of the city-forming enterprise; b) with the participation of the State Corporation



\* New enterprises – enterprises created in the process of diversification of the activities of the State Corporation Rosatom.  
Source: own compilation.

Smolensk oblasts, etc.)<sup>9</sup>; certain activities in the field of culture, education, digital development, etc.; participation in public and political life, etc.

Summarizing the actions of the State Corporation, we can talk about changing the municipal part of the social contract in single-industry towns, where the nuclear industry enterprises are the main ones. The Corporation replaces the city-forming enterprise and assumes an obligation (expectations of the population and local authorities) – the creation of a skilled, highly paid jobs (Fig. 2).

The social contract refers to informal institutions that are used to change slowly. In this case, a number of formal institutional actions (state corporations, federal subjects, local self-government bodies) that correspond to the expectations and motivations of each of the parties led to changes in the informal institution. As a result, each party receives benefits:

- State Corporation – new production facilities, which contributes to the achievement of its three goals: increasing the sustainability of the main enterprises of the industry, the production of civilian products and the development of the territories of presence;

- city (local self-government bodies) – highly paid jobs, which increases the authority of the local government, the possibility of extending its powers;

- employees of enterprises – the opportunity to work in accordance with their qualifications, good salary, career opportunities;

- the rest of the population – expectations for the new jobs, an increase in the money supply in the city, the development of trade, services, etc.

Let us consider the reasons that contribute to the social contract changing and its support by all parties. Observations show that the CATE’s population depends on the state of affairs at the city-forming enterprise. Thus, in the cities where the number of personnel of the city-forming enterprise was reduced as part of the restructuring of production carried out by the State Corporation Rosatom (Seversk, Novouralsk, Zelenogorsk), there

<sup>9</sup> Public report of the State Corporation Rosatom for 2016. URL: <https://rosatom.ru/about/publichnaya-otchetnost/> (accessed December 25 2020)

Table 1. Change in the population of the cities of Seversk, Novouralsk, Zelenogorsk and city-forming enterprises, 2009-2017, thousand people

	Seversk		Novouralsk		Zelenogorsk	
	JSC "Siberian Chemical Plant"	City	JSC "Ural Electrochemical Plant"	City	JSC "Electrochemical Plant"	City
2009	12.7	113.8	12.1	107.5	9.5	68.5
2019	3.3	106.5	2.1	80.4	1.9	61.6

Compiled by: [29]; Regions of Russia. Main socio-economic indicators of cities / Federal State Statistics Service. Available at: <https://rosstat.gov.ru/folder/210/document/13206>; Annual report of JSC "Siberian Chemical Plant". Available at: [http://atomsib.ru/files/2019/annual\\_report\\_SHK\\_2018.pdf](http://atomsib.ru/files/2019/annual_report_SHK_2018.pdf); Annual report of JSC "Ural Electrochemical Plant". Available at: <https://www.e-disclosure.ru/portal/files.aspx?id=17109&type=3&attempt=1>; Annual report of JSC "Electrochemical Plant". Available at: <https://www.e-disclosure.ru/portal/files.aspx?id=17608&type=3> (accessed May 12, 2021).

Table 2. Indicators of socio-economic development of CATE and the cities of the respective regions

Region / city	Population change, 2004–2020, %	Budget security, thousand rubles/person, 2019	Average salary for large and medium-sized enterprises, thousand rubles, 2019
<b>Nizhny Novgorod Oblast</b>			<b>35.2</b>
Sarov CATE	+9.1	36.7	61.6
Nizhny Novgorod	-2.0	23.6	49.7
Dzerzhinsk	-11.2	24.1	
Arzamas	-4.0	28.6	
<b>Penza Oblast</b>			<b>30.7</b>
Zarechnyi CATE	+4.6	35.0	36.4
Penza	+1.0	27.5	36.9
Kuznetsk	-12.6	20.3	
<b>Chelyabinsk Oblast</b>			<b>37.4</b>
Snezhinsk CATE	+2.4	49.5	45.8
Ozersk CATE	-14.4	43.0	47.5
Trekhgornyi CATE	-5.2	44.1	44.3
Chelyabinsk	+11.7	38.0	43.7
Zlatoust	-14.9	30.0	
Troitsk	-12.5	31.0	
<b>Sverdlovsk Oblast</b>			<b>41.1</b>
Novouralsk CATE	-15.5	59.6	44.7
Lesnoy CATE	-7.5	49.5	39.2
Yekaterinburg	+14.4	32.2	54.8
Pervouralsk	-8.1	31.0	
Kamensk-Uralskiy	-9.1	39.6	
<b>Krasnoyarsk Krai</b>			<b>49.9</b>
Zheleznogorsk CATE	-11.9	40.6	53.1
Zelenogorsk CATE	-11.2	41.9	42.4
Krasnoyarsk	+19.8	31.46	54.6
Achinsk	-9.7	30.7	
Kansk	-13.0	29.0	
<b>Tomsk Oblast</b>			<b>45.5</b>
Seversk CATE	-11.0	40.1	47.1
Tomsk	+22.4	30.8	51.8

Compiled by: Regions of Russia. Main socio-economic indicators of cities. FSGS. Available at: <https://rosstat.gov.ru/folder/210/document/13206>; Average monthly nominal accrued wages of employees for the full range of organizations in the economy as a whole for the subjects of the Russian Federation since 2018. FSGS. Available at: [https://rosstat.gov.ru/labor\\_market\\_employment\\_salaries](https://rosstat.gov.ru/labor_market_employment_salaries); Consolidated reports of the regions on the results of monitoring the effectiveness of the activities of the local self-government bodies at the end of 2019 (websites of the governments of the subjects of the Federation); Indicators for assessing the effectiveness of the activities of local self-government bodies of urban districts for 2019, reports of heads of administrations for 2019, reports on the implementation of budgets for 2019 (sites of city administrations: <https://adm-sarov.ru>, <http://www.snzadm.ru>, <http://www.ozerskadm.ru>, <http://admngo.ru>, <http://www.gorodlesnoy.ru>, <http://www.zarechny.zato.ru>, <http://admintrg.ru>, <https://xn----7sbhlb0a1awgee.xn--p1ai>, <http://www.admk26.ru>, <https://www.zeladmin.ru>, <https://penza-gorod.ru>, <https://xn--80aaa0a0avl.xn--p1ai>, <https://vr-vykxa.ru>, <http://dzadm.ru>, <https://admgor.nnov.ru>, <https://cheladmin.ru>, <https://xn--80acgfbs1azdqr.xn--p1ai>, <http://www.admkrsk.ru>, <https://admin.tomsk.ru>) (accessed January 05, 2021).

was a corresponding decrease in the population (*Table 1*). In general, in 2004–2020, the population of these cities decreased by 11–15% (*Table 2*). Enterprises no longer correspond to the status of city-forming enterprises on formal grounds (in Seversk, Rosatom employs 5.7% of the population employed in the city's economy, in Zelenogorsk – 8%, in Novouralsk – 10.4%)<sup>10</sup>.

In the entities locating the enterprises of the nuclear weapons complex, the situation is fundamentally different. The number of employees of these enterprises either did not change, or slightly increased, accounting for 32–50%<sup>11</sup> of the total number of employees in the city's economy. The population of such cities from 2004 to 2020 either increased (Sarov, Zarechnyi, Snezhinsk), or slightly decreased (Trekhgornyi, Lesnoy).

Migration processes are crucial, since almost all countries have experienced a natural population decline over the past 15 years. Single-industry towns are left by specialists of working age and school graduates after receiving higher education at universities in large cities, and are replenished mainly by residents of the nearby rural areas<sup>12</sup>. The decline in the number of jobs at the city-forming enterprises has led to a new trend for

CATE – a noticeable pendulum migration to cities located relatively close to regional centers: up to 7–8 thousand people leave Novouralsk daily for work in Yekaterinburg and Nizhny Tagil<sup>13</sup>; about 18 thousand leave Seversk<sup>14</sup>; 6–8 thousand leave Zarechnyi<sup>15</sup>. At the same time, several thousand people of low-skilled labor enter CATE every day<sup>16</sup>.

The dynamics of changes in CATE population as a whole corresponds to the trends inherent in other cities of the regions where they are located. The exceptions are Sarov and Zarechnyi, where the population growth rate is even higher than in the regional centers (see *Table 2*).

The average salary in most cities is higher than the average for the region of location. In CATE, the city-forming enterprises of which belong to the defense industry (Sarov, Snezhinsk, Ozersk, Trekhgornyi, etc.), the average salaries are higher or comparable to the level of the corresponding regional centers.

The basis of CATE economy, however, is the city-forming enterprises, which (including those that have been restructured) have been operating steadily in recent years. Small businesses in most regions are developing more slowly compared to the region where they are located and are not a development resource for the city (*Table 3*). This situation has persisted steadily since the 1990s. We considered its causes earlier [30].

<sup>10</sup> Strategy of socio-economic development of the Novouralsky City District until 2030. Available at: <http://duma-ngo.ru/strategia-ngo-2030>; Annual report of JSC "Siberian Chemical Plant" for 2018. Available at: [http://atomsib.ru/files/2019/annual\\_report\\_SHK\\_2018.pdf](http://atomsib.ru/files/2019/annual_report_SHK_2018.pdf); Explanatory note to the annual accounting report of JSC "Electrochemical Plant" for 2018. Available at: <http://www.ecp.ru/about/info>; Indicators for evaluating the performance of local self-government bodies in Seversk, Novouralsk, and Zelenogorsk for 2019 (accessed January 11, 2021).

<sup>11</sup> Strategies for socio-economic development until 2035: of Sarov. Available at: <https://adm-sarov.ru/city/economy/strategicheskoe-planirovanie/strategiya-sotsialno-ekonomicheskogo-razvitiya-/>; of Zarechnyi Available at: <http://www.zarechny.zato.ru/otrasli/strategicheskoe-razvitiye-goroda/strategiya-2035/>; of Snezhinsk. Available at: <http://www.snzadm.ru/?art=22505>; of Trekhgornyi. Available at: <http://admintrg.ru/strategia-2035.html>; Lesnoy. Available at: <http://www.gorodlesnoy.ru/city/economica/strategiya-2035/> (accessed January 09, 2021).

<sup>12</sup> Strategies for CATE development until 2035, reports of heads of CATE administration.

<sup>13</sup> By the end of the year, there should already be 11 residents in Novouralsk. MK.ru Yekaterinburg. 21.02.2020. Available at: <https://eburg.mk.ru/economics/2020/02/21/do-konca-goda-na-toser-novouralska-dolzhen-byt-uzhe-11-rezidentov.html> (accessed December 26, 2020).

<sup>14</sup> We talk in CATE. The first online publication of Seversk CATE. 11.11.20. Available at: <https://zato-govorim.ru/37029-2/> (accessed December 26, 2020).

<sup>15</sup> They make rockets in CATE. How the secret city of Zarechnyi lives. Argumenty i fakty. 27.01.2020. Available at: [https://aif.ru/society/people/zato\\_tam\\_delayut\\_rakety\\_kak\\_zhivyot\\_zasekrechenny\\_gorod\\_zarechny](https://aif.ru/society/people/zato_tam_delayut_rakety_kak_zhivyot_zasekrechenny_gorod_zarechny) (accessed December 26, 2020).

<sup>16</sup> The main thing in Sarov is nuclear weapons and national security, the rest is secondary. Kommersant-Privolzhye-Online. 02.10.2020. Available at: <https://www.kommersant.ru/doc/4512943> (accessed December 26, 2020).

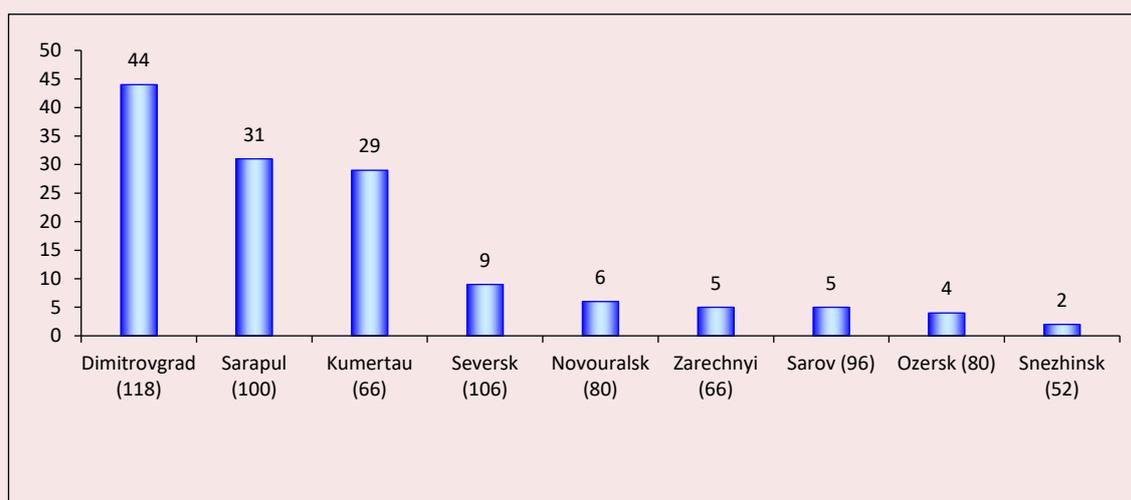
Table 3. The share of employees in small and medium-sized enterprises, 2015–2019, % of the average number of employees of all enterprises and organizations

Region / city	2015	2016	2017	2018	2019
<b>Nizhny Novgorod Oblast</b>	<b>no data</b>	<b>no data</b>	<b>no data</b>	<b>no data</b>	<b>33.3</b>
Sarov CATE	22.8	22.3	19.1	13.9	17.6
Dzerzhinsk*	45.3	44.7	45.2	38.6	38.6
Arzamas*	19.1	17.9	18.4	18.0	16.7
<b>Penza Oblast</b>	<b>44.1</b>	<b>no data</b>	<b>no data</b>	<b>21.17</b>	<b>27.14</b>
Zarechnyi CATE	13.6	15.2	20.5	20.9	21.5
<b>Chelyabinsk Oblast</b>	<b>no data</b>	<b>no data</b>	<b>25.5</b>	<b>25</b>	<b>24.5</b>
Ozersk CATE	14.7	14.8	21.5	21.5	21.3
Trekhgornyi CATE	no data	24.1	26.0	30.4	16.5
<b>Sverdlovsk Oblast</b>	<b>31.3</b>	<b>no data</b>	<b>no data</b>	<b>31.2</b>	<b>31.5</b>
Novouralsk CATE	25.6	25.6	25.5	25.4	25.3
Lesnoy CATE	21.4	21.4	21.5	21.8	21.6
<b>Krasnoyarsk Krai</b>	<b>31.3</b>	<b>30.6</b>	<b>22.0</b>	<b>32.5</b>	<b>31.1</b>
Zheleznogorsk CATE	33.2	33.8	21.6	20.6	20.1
Zelenogorsk CATE	27.1	28.3	25.7	25.6	25.4
<b>Tomsk Oblast</b>	<b>37.5</b>	<b>26.0</b>	<b>28.9</b>	<b>27.1</b>	<b>no data</b>
Seversk CATE	41.2	42.1	42.3	42.4	43.3

\* Data for comparable cities are provided due to the lack of data for the region as a whole.

Compiled by: Summary reports of the regions on the results of monitoring the effectiveness of the activities of the local self-government bodies for the corresponding years (websites of the governments of the subjects of the Federation); Indicators for evaluating the effectiveness of the local government bodies of urban districts for the relevant years (sites of city administrations: <https://adm-sarov.ru>, <http://www.ozerskadm.ru>, <http://adm-ngo.ru>, <http://www.gorodlesnoy.ru>, <http://www.zarechny.zato.ru>, <http://admintrg.ru>, <https://xn---7sbh0a1awgee.xn--p1ai>, <http://www.admk26.ru>, <https://www.zeladmin.ru>, <https://xn--80aaa0a0avl.xn--p1ai>, <https://vr-vykasa.ru>, <http://dzadm.ru>, <https://xn--80acgfb1azdqr.xn--p1ai>) (accessed May 10, 2021).

Figure 3. The number of residents in TASED CATE and similar cities in terms of population and specialization, November 2020, units



The population of cities, thousand people, is shown in parentheses.

Compiled by: Register of residents of Territories of advanced Socio-economic Development in the territories of Single-industry Municipalities of the Russian Federation (single-industry towns). Available at: [https://www.economy.gov.ru/material/directions/regionalnoe\\_razvitiye/instrumenty\\_razvitiya\\_territory/tor/](https://www.economy.gov.ru/material/directions/regionalnoe_razvitiye/instrumenty_razvitiya_territory/tor/); Register of TASED residents in CATE of the nuclear industry. Available at: <https://atomtor.ru/reestr/> (accessed December 21, 2020).

The creation of territories of advanced socio-economic development (TASED) in the Russian Federation has not yet led to a significant development of small and medium-sized businesses. The number of residents there as of November 2020 was insignificant and roughly corresponded to the average values in other TASED regions of the location (from 2 to 9 residents), which is significantly different from the indicators of some TASED in similar cities in terms of population and specialization (nuclear industry, defense industry): Dimitrovgrad, Sarapul, Kumertau, etc. (Figure 3).

Budget security in CATE is higher than in other cities in the regions of location (see Table 2). Additional budget transfers are due to the CATE status. In general, the increased budget security has been maintained for the last 15 years [31, p. 153, 214]. Additional budget revenues help local authorities to fulfill their current obligations, but they cannot provide solutions to complex tasks of infrastructure modernization, breakthrough development, etc. [25].

### Discussion

The considered processes allow us to make a number of generalizations. The socio-economic situation in the city depends fundamentally on the city-forming enterprise. The reduction in the number of its staff leads to a decrease in the city's population and average city salaries (respectively, the purchasing power of the population as a whole, which does not contribute to business development), an increase in pendulum migration. Thus, the attractiveness of the city for work and life is reduced. Small businesses in CATE are developing slowly. Low-skilled jobs are not attractive for CATE residents.

We may assume that in the future, in the event of job cuts or other negative changes, the skilled labor force will look for jobs in other cities. At the same time, the city-forming enterprises that are of

strategic importance and, based on forecasts, are still in demand in the long term<sup>17</sup>, need both the current replenishment of the labor force and the possible expansion of production volumes (taking into account the dependence of the activities of these enterprises on politics). In such conditions, they must have a reserve of qualified labor and well-established ways to attract it (at least, university graduates having necessary specialties and qualifications).

One of the opportunities for the formation of such a reserve may be the creation of enterprises in CATE that are close to the technological level of the city-forming ones. Practice has shown that private business does not create such enterprises in Russia. A possible way is to initiate this process by the state corporation Rosatom, which, on the one hand, is actively working to diversify its activities, on the other hand, has significant experience in CATE and obligations to support the territories. New companies can be created by both integrators and city-forming enterprises by allocating separate civil areas. In this case, we are not talking about restructuring, that is, the withdrawal of service activities (transport, catering, repairs, etc.) into separate legal entities, but rather about the allocation of high-tech civilian production facilities.

From a theoretical point of view, such a process leads to changes in the municipal part of the social contract, forming an appropriate balance of benefits and costs for its parties.

Employment in high-tech enterprises located in the general management of Rosatom is more attractive than in private business for the population

<sup>17</sup> Despite the different points of view, experts in the next few decades do not see a replacement for nuclear energy: the global economic situation and prospects for 2020. United Nations, New York, 2020. Address: <https://www.un.org/development/desa/publications/wesp-2020.html> (accessed 12.20), and nuclear weapons: Russian Federation National Security Strategy, approved by Presidential Decree No. 683 dated December 31, 2015.

(employees of enterprises and job applicants). In exchange for this benefit, the population offers skilled labor, loyalty to the state corporation (and to the state in its person), including political stability and predictability.

For city-forming enterprises, especially defense enterprises, the process of creating civil production facilities by the state corporation allows not to be distracted by the formation of a parallel management system. It is no secret that the management system within the framework of the State Defense System and the market differs markedly, while the heads of defense enterprises are not always interested in replacing the state defense order with civilian products [23].

For local governments, however, the formation of new enterprises is important, since it is extremely difficult to attract business to the territory. In this aspect, it is easier to create a new business in CATE for the state corporation Rosatom than in the city and even in the region: local governments most often do not have the funds for this, interested and experienced production organizers, ways to motivate investors; the region is likely to prioritize less developed municipalities than CATE. The state corporation can attract not only investments, but also the necessary specialists and technologies. Interaction with large customers and suppliers is easier for it.

The expansion of production increases the problem of attracting and retaining personnel. High-tech industries require highly qualified specialists and graduates of leading universities, for which CATE are competing with the largest megacities. In order for the work in CATE to be interesting for specialists, it is necessary not only to have an appropriate level of salary, but also to have comfortable living conditions. A small city is significantly inferior to large agglomerations in terms of the quality and quantity of social services, leisure attractiveness, etc. CATEs have a number of formal restrictions in addition to this. In order to offset such differences to some extent, it is necessary

to purposefully develop strengths, in particular, to build comfortable housing that is affordable for a specialist (the city-forming enterprise and the city can help here); to ensure safety (which is easier to do in case of CATE); to improve the city territory, focusing on natural recreation; to ensure a high level of education for children; to develop medicine, etc. Foreign studies confirm the conclusions about the need for a favorable quality of life to attract scientists and specialists in high-tech industries [32; 33].

Creating comfortable living conditions within the framework of the social contract is the responsibility of the MHI. However, it is almost impossible for them to create conditions that could compete with megacities independently. The state corporation can also help with this. First, it provides lobbying support at the level of the country's top leadership and federal executive bodies. It is clear that the key condition on the part of the MHI will be the full loyalty of the state corporation. The issue of creating comfortable living conditions is included not only in the municipal, but also in the regional part of the social contract, which implies the inclusion of a state corporation in it.

### **Conclusion**

The justification of the three-level model of the social contract, the allocation of its features at the municipal level for single-industry towns determined the scientific novelty of the research and its contribution to the general theory of the social contract.

A joint study of the issues of diversification in the nuclear industry and the development of the territories of presence allowed us to conclude that the proposed model of the social contract is adaptable to changing conditions. In particular, replacing the city-forming enterprise in the municipal part of the contract with the state corporation, which it is a part of, does not distort the essence of the social contract, but expands opportunities for the development of the territory of presence by creating new jobs, increasing revenues to the local budget, developing urban

infrastructure, etc., generally increasing the comfort of life. Such changes, considered in the context of the nuclear industry, are due to the introduction of a new diversification model where the creation of new civilian products is organized in the territories of presence. The new version of the social contract seems to be promising taking into account the planned dynamics of the production of new products by Rosatom<sup>18</sup>. The presented model confirms its viability and relevance in practice, and may be of interest to single-industry towns, city-forming enterprises and holdings of other industries<sup>19</sup>. The basic principles of the study have been tested in the nuclear industry and can be used to develop strategic documents for spatial development, programs for the development of single-industry towns, city-forming enterprises and holdings.

## References

1. Lynn III W. The end of the military-industrial complex. How the Pentagon is adapting to globalization. *Foreign Affairs*, 2014, no. 93, pp. 104–110.
2. Matelly S., Lima M. The influence of the state on the strategic choices of defense companies: The cases of Germany, France and the UK after the Cold War. *Journal of Innovation Economics & Management*, 2016, vol. 2, no. 20, pp. 61–88.
3. Scherbakova L.I. Institute of local self-government in transforming Russian society. *Sotsial'no-gumanitarnye znaniya=Socio-Humanitarian Knowledge*, 2012, no. 7, pp. 374–380 (in Russian).
4. Surtseva A.A. Regional social contract practice between business and authorities (case study of the Kemerovo Oblast). *Zhurnal institutsional'nykh issledovaniy=Journal of Institutional Studies*, 2011, vol. 3, no. 3, pp. 94–102 (in Russian).
5. Shafik N. A new social contract. *Finance & Development*, 2018, vol. 0055, iss. 004. DOI: <https://doi.org/10.5089/9781484386194.022>
6. Snyder M., Gupta A. The social contract for AI. *Computers and Society*, 2020. Available at: <https://arxiv.org/abs/2006.08140> (accessed: May 11, 2021).
7. Auzan A.A. On the possibility of transition to an economic strategy based on the specifics of human capital in Russia. *Zhurnal Novoi ekonomicheskoi assotsiatsii=The Journal of the New Economic Association*, 2015, no. 2, pp. 243–248 (in Russian).
8. Ivanova M.V. Tendencies and features of development of Russian monotowns and their competitive recovery. *Vestnik Kemerovskogo gosudarstvennogo universiteta. Seriya: Politicheskie, sotsiologicheskie i ekonomicheskie nauki=Bulletin of Kemerovo State University. Series: Political, Sociological and Economic Sciences*, 2018, no. 1, pp. 86–91. DOI: 10.21603/2500-3372-2018-1-86-91 (in Russian).
9. Proskurnin S.D. Basic premises and trends CATF GK «Rosatom». *Regional'naya ekonomika i upravlenie: elektronnyi nauchnyi zhurnal=Regional Economics and Management: Electronic Scientific Journal*, 2019, no. 1 (57), pp. 1–27 (in Russian).
10. Animitsa E.G., Kuznetsov V.N., Ergunova O.T. Creation of the territories of the advancing social and economic development in borders of the closed administrative territorial formations of Sverdlovsk region. *Uspekhi sovremennoi nauki i obrazovaniya=Advances in Modern Science and Education*, 2016, no. 12, vol. 4, pp. 92–95 (in Russian).

<sup>18</sup> The strategic goal is to generate 1.6 trillion rubles in revenue from new products in 2030. Report of the State Corporation Rosatom. 2019. Available at: <https://rosatom.ru/about/publichnaya-otchetnost/> (accessed January 25, 2021).

<sup>19</sup> A similar approach can be noted, for example, in the comprehensive application of the Kemerovo Research Center to the KNP, which includes the creation of modern production facilities for deep processing of coal and coal chemistry (as a diversification of coal mining). This is a typical example, since most cities in the Kemerovo Region are monospecialized. Available at: <https://ako.ru/news/detail/zayavku-na-razrabotku-kompleksnoy-nauchno-tekhnicheskoy-programmy-polnogo-innovatsionno-tsikla-nots> (accessed January 18, 2021).

11. Peshina E.V., Animitsa E.G., Bochko V.S., Animitsa P.E. *Kontseptual'nye podkhody k razrabotke strategii razvitiya monoprofil'nogo goroda* [Conceptual Approaches to Developing a Strategy for the Development of a Single-Industry City]. Ed. by A.I. Tatarkin, M.V. Fedorov. Yekaterinburg: Izd-vo UrGEU, 2010. 81 p.
12. Shastitko A.E., Fatikhova A.F. Company towns in Russia: Some thoughts on development alternatives. *Gosudarstvennoe upravlenie. Elektronnyi vestnik=E-journal. Public Administration*, 2019, no. 76, pp. 109–135. DOI: 10.24411/2070-1381-2019-10006 (in Russian).
13. Bukhvald E.M. Mono-company towns within the strategic planning system in Russia. *Teoriya i praktika obshchestvennogo razvitiya=Theory and Practice of Social Development*, 2017, no. 12, pp. 75–78. DOI: <https://doi.org/10.24158/tipor.2017.12.16> (in Russian).
14. Vakhtina M.A., Ignatova T.V. Institutional limitations on the way of complex development of Russian single-industry towns. *Vestnik Akademii znanii=Bulletin of the Academy of Knowledge*, 2020, no. 36 (1), pp. 43–47. DOI: 10.24411/2304-6139-2020-00008 (in Russian).
15. *Razvitie monogorodov Rossii: monografiya* [Russian Monotowns Development: Monograph]. Team of authors. Ed. by Doctor of Sciences (Economics), Professor I.N. Il'ina. Moscow: Financial University, 2013. 168 p.
16. Kolesnik E.A. Threats and risks of diversification of economy of mono-industrial towns. *Vestnik Chelyabinskogo gosudarstvennogo universiteta=Bulletin of Chelyabinsk State University*, 2018, no. 3 (413), economic sciences, iss. 60, pp. 47–52 (in Russian).
17. O'Hagan S., Cecil B. A macro-level approach to examining Canada's primary industry towns in a knowledge economy. *Journal of Rural and Community Development*, 2007, no. 2, pp. 18–43. Available at: <https://journals.brandonu.ca/jrcd/article/view/84/31>
18. Bole D., Kozina J., Tiran J. The variety of industrial towns in Slovenia: A typology of their economic performance. *Bulletin of Geography. Socio-Economic Series*, 2019, vol. 46, iss. 46, pp. 71–83. DOI:10.2478/bog-2019-0035
19. Trapeznikova I.S. The modern model of Russian business social responsibility in the context of skilled labor force formation at the territory of presence. *Ekonomika truda=Russian Journal of Labour Economics*, 2019, vol. 6, no. 2, pp. 689–698. DOI: 10.18334/et.6.2.39794 (in Russian).
20. Lazarenko V.A. Corporate social responsibility of large business in Russia. *Vestnik Moskovskogo Universiteta. Seria 5, Geografija=Moscow University Bulletin. Series 5, Geography*, 2018, no. 1, pp. 66–72 (in Russian).
21. Korzhevskaya A.A. Interaction between authorities and corporate structures is one of the models of innovative regional development. In: *Ural – XXI vek: region innovatsionnogo razvitiya: materialy II Mezhdunar. nauchno-praktich. konf.* [Ural – XXI century: A region of innovative development: Proceedings of the 2<sup>nd</sup> international research-to-practice conference]. Yekaterinburg: Izd-vo UrGEU, 2017. Pp. 119–122 (in Russian).
22. Zemtsov S.P., Chernov A.V. What high-tech companies in Russia grow faster and why? *Zhurnal Novoi ekonomicheskoi assotsiatsii=The Journal of the New Economic Association*, 2019, no. 1 (41), pp. 68–99. DOI: 10.31737/2221-2264-2019-41-1-3 (in Russian).
23. Kuznetsov N.V., Kotova N.E. Using the institute of public corporations for ensure economic growth. *Fundamental'nye issledovaniya=Fundamental Research*, 2020, no. 8, pp. 40–44 (in Russian).
24. Mailyan S.S. On some aspects of the economic nature of state-owned corporations. *Vestnik ekonomicheskoi bezopasnosti=Vestnik of Economic Security*, 2019, no. 4, pp. 314–317. DOI: 10.24411/2414-3995-2019-10264 (in Russian).
25. Çağlar K., Bitzinger R. Defense industries in the 21st century: A comparative analysis – The second e-workshop. *Comparative Strategy*, 2018, vol. 37, iss., 4, pp. 255–259. DOI: 10.1080/01495933.2018.1497318
26. Ivanter V.V., Semikashv V.V. Nuclear industry role in national economy and challenges it faces. *Energeticheskaya politika=The Energy Policy*, 2017, no. 3, pp. 3–11 (in Russian).
27. Faikov D.Yu., Baydarov D.Yu. Diversification of production in the nuclear industry. *Ekonomicheskoe vozrozhdenie Rossii=The Economic Revival of Russia*, 2020, no. 3, pp. 96–109. DOI: 10.37930/1990-9780-2020-3-65-96-109 (in Russian).

28. Rozmirovich S.D., Manchenko E.V., Mekhanik A.G., Liss A.V. *Diversifikatsiya OPK: kak pobezhdat' na grazhdanskikh ryinkakh: doklad Ekspertnogo soveta Predsedatelya kollegii VoЕННО-promyshlennoi komissii RF dlya V Mezhdunar. Foruma tekhnol. razvitiya «Tekhnoprom»* [Diversification of the defense industry: How to win in civilian markets: Report of the Chairman of the Expert Council of the Collegium of the Military-Industrial Commission of the Russian Federation]. Novosibirsk, 2017. Available at: <http://www.instrategy.ru/pdf/367.pdf> (accessed: December 21, 2020).
29. Chernyatina D.M., Belyakova G.Ya. Peculiarities of restructuring of non-core departments of enterprises of the ZATO of the state-corporation “Rosatom”. *Sovremennaya nauka: aktual'nye problemy teorii i praktiki. Seriya: Ekonomika i pravo=Modern Science: Actual Problems of Theory and Practice. Series Economics and Law*, 2019, no. 1, pp. 46–53 (in Russian).
30. Faikov D.Yu., Baydarov D.Yu. New trends in the development of closed administrative-territorial entities (for example, the nuclear industry CATF). *Kontury global'nykh transformatsiy: politika, ekonomika, pravo=Outlines of global transformations: politics, economics, law*, 2014, no. 6, pp. 120–131 (in Russian).
31. Faikov D.Yu. *Zakrytye administrativno-territorial'nye obrazovaniya. Sistemnye transformatsii* [Closed Administrative-Territorial Entities. System Transformations]. Sarov: FGUP «RFYaTs-VNIIEF», 2012. 394 p. Available at: <http://book.sarov.ru/product/zato/> (accessed: November 20, 2020).
32. Salvesen D., Renski H. *The Importance of Quality of Life in the Location Decisions of New Economy Firms*. Report 99–07–13815. Chapel Hill: Center for Urban and Regional Studies, 2003. Available at: [https://www.researchgate.net/profile/David-Salvesen/publication/228494438\\_The\\_importance\\_of\\_quality\\_of\\_life\\_in\\_the\\_location\\_decisions\\_of\\_new\\_economy\\_firms/links/55ad37d408aed9b7dcdad66d/The-importance-of-quality-of-life-in-the-location-decisions-of-new-economy-firms.pdf](https://www.researchgate.net/profile/David-Salvesen/publication/228494438_The_importance_of_quality_of_life_in_the_location_decisions_of_new_economy_firms/links/55ad37d408aed9b7dcdad66d/The-importance-of-quality-of-life-in-the-location-decisions-of-new-economy-firms.pdf)
33. Bajpai N., Prasad A., Pandey P. Work life balance retention (WLBR) model – a weapon to retain hi-tech employees. *International Journal of Management Sciences and Business Research*, 2013, vol. 2, iss. 12, pp. 92–102. Available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2715356](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2715356)

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