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Challenges and Opportunities for the Development of Single-Industry Towns in the Russian Arctic

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Abstract. Broad context of the dynamics and prospects of Russian Arctic development within the framework of achieving its strategic objectives indicates the magnitude of the tasks, the solution of which consists in the actualization of, firstly, the risks and opportunities for environmental and social responsibility of vertically integrated companies, whose production branches conduct their activities in the Arctic, and, secondly, the supportive role of the state as the regulator of conditions for the development of business initiatives. The aims of the study are to identify significant factors that influence the dynamics of socio-economic development and to determine the prospects for the development of single-industry towns in the Russian Arctic. Research methods include bibliographical, comparative, economic and statistical analysis. The study substantiates the critical factors limiting the development opportunities of single-industry towns in the Russian Arctic. The first group is represented by the state of mineral resource base, which determines natural limits and cyclicity of production activities of city-forming enterprises. The second group is the global crisis phenomena, producing the dependence of production of city-forming enterprises on the external conjuncture of prices for raw materials and main export items. The third group includes risks of fulfilment of budgetary obligations. Taken together, these factors limit the opportunities for economic diversification of single-industry towns in the Russian Arctic and the development of entrepreneurial activity there. It has been revealed that the promising opportunities for the development of single-industry towns in the Russian Arctic are limited by the priority areas of investment activities of vertically integrated companies and imperfect state instruments of development support. The practical significance of the study is determined by the current trajectory of territorial development within the framework of the global strategy for sustainable development of extractive industries of a city-forming nature that takes into account not only risks, but also opportunities.

Keywords: *single-industry town, Russian Arctic, investment, budget, city-forming enterprise, unemployment, territory of advanced development, crisis*

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Introduction

The specificity of industry in the Russian Arctic has a city-forming significance: most towns were built near the sites of mineral resource development, and resource-producing enterprises have become town-forming. A single-industry town is understood as the territory of a particular

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municipality (urban district), where most of the production processes are aimed at aimed at resource extraction. The objects of our study are the towns of Novyy Urengoy, Noyabrsk, Muravlenko, Gubkinskiy (Yamalo-Nenets Autonomous Okrug); Kirovsk, Olenegorsk, Monchegorsk, Kovdorskiy urban district (Murmansk Oblast); (Vorkuta) Republic of Komi; Norilsk (Krasnoyarsk Krai).

Currently, the oil and gas production of the Yamalo-Nenets Autonomous Okrug forms about 95% of the gross regional product, including intersectoral links [1, Vizhina I.A., Zolotovskaya Yu.B., p. 65] (NOVATEK accounts for 17% of gas production, 15% of oil production, 47% of gas condensate production; GAZPROM subsidiaries — 74%, 61%, 40% respectively; ROSNEFT accounts for 16% of oil production). Subsidiaries of PJSC MMC Norilsk Nickel (JSC Norilskgazprom, JSC Norilsk-Taimyr Energy Company, Polar Branch of PJSC MMC Norilsk Nickel) produce and transport gas and gas condensate. The nickel refining center of PJSC MMC Norilsk Nickel is JSC Kola Mining and Metallurgical Company (the largest production complex in the Murmansk Oblast, created on the basis of the Severonikel plant in Monchegorsk and Pechenganickel in Zapolyarnyy). JSC EuroChem MCC is the world's leading producer of mineral fertilizers: JSC Kovdorskiy MPP, which is part of it, in the city of Kovdor, is a resident of the Arctic zone of Russia. PJSC PhosAgro is Europe's largest producer of phosphorus-containing fertilizers, including the Kirovsk branch of JSC Apatit. PJSC Severstal includes JSC Olenegorsk MPP in Olenegorsk and JSC Vorkutaugol in Vorkuta. The stability of city-forming enterprises affects the sustainability of the socio-economic development of single-industry towns in the Russian Arctic. In this aspect, it is particularly relevant to consider the problems and opportunities for the diversification of the economy of single-industry towns and the development of entrepreneurial activity, as well as the identification of structural transformations in the industrial production of the regions of the Russian Arctic based on economic and statistical analysis, correlated with the identified opportunities for the development of single-industry towns in the Arctic.

Degree of development of the issue

The main aspects of research on single-industry towns in the Russian Arctic are the following: the management system for the development of the towns — tools of strategic and program-targeted management of territorial development applied at the state and municipal levels [2, Plisetskiy E.E., Malitskaya E.A., p. 85], state support [3, Knyazeva G.A., p. 103] and problems of strategic management [4, Shumilova E.B., Avdeeva E.O., Mkhitaryan S.A., p. 101]; structural policy and the specifics of the formation of territorial infrastructure [5, Gladysheva I.V., p. 86]; social problems of single-industry towns [6, Ryabova L.A. et al., pp. 34–50; 7, Zajcev D.V., pp. 31]; social responsibility of city-forming enterprises in the territories of presence and involvement of business in the work on the socio-economic development of single-industry towns [8, Dyadik V.V., Kalugina A.S., Borzykh V.N., p. 29; 9, Skufina T.R. et al., p. 1027; 10, Samarina V.P., Skufina T.P., Savon D.Yu., p. 22]; specificity of arctic single-industry towns [11, Pilyasov A.N., Putilova E.S.,

p. 10]; management of effective development of mineral resources [12, Zharov V.S., p. 60]; the impact of Arctic single-industry specificity on the environment and local communities [13, Josephson P., p. 125]; local identity of the population [14, Nedoseka E.V., Zhigunova G.V., p. 119] and migration attitudes of young people [15, Simakova A.V., p. 136]. Assessing the degree of development of the above problem, we should note the need for a critical analysis of the inconsistency of the position of the city-forming enterprises that are part of large-scale vertically integrated companies, and the territories of their presence (local communities), which, in fact, determined the relevance of the problem, the purpose and objectives of this study. The purpose of our study is to analyze the dynamics of socio-economic development (with an emphasis on periods of crisis) of single-industry towns in the Russian Arctic with further designation of the prospects for their development. The objectives of the study include an analysis of the budgetary and financial aspects of the development of single-industry towns in the Russian Arctic, indicators of infrastructure provision and the environmental situation on the basis of an economic and statistical analysis of Rosstat data and official data from local governments. The scientific novelty of the study is provided by the identified trends in the development of single-industry towns in the Russian Arctic, the conditions for the development of large business in terms of ecologization and for the socio-economic development of the territory of presence. The practical significance of the study is determined by the modern trajectory of the development of single-industry towns in the Russian Arctic within the framework of the sustainable development strategy of the extractive industries of a city-forming nature, and is confirmed by the significance of the emerging mechanism for increasing investment activity in the Arctic zone of the Russian Federation, whose essence consists not so much in the possibility of increasing capital investment, as in the role of a catalyst to solve systemic problems of the Russian Arctic single-industry towns' economy — building up new high-tech production capacities, developing infrastructure and ensuring the socio-economic growth of the territories of presence.

Economy of single-industry towns in the Russian Arctic

Single-industry towns, which appeared in the course of large-scale development of mineral and raw material resources in the 1930–1980s, occupy a special place in the settlement system of the Arctic zone of Russia. The main objects of their economy are the production branches of the oil and gas extraction and mining profile of vertically integrated companies (hereinafter referred to as VIC).

The specificity of single-industry towns of the Yamalo-Nenets Autonomous Okrug is associated with the hydrocarbon base located in Gubkinskiy, Muravlenko, Novyy Urengoy and Noyabrsk towns. They are typical arctic single-industry towns whose economy is based on industrial activity on a vast oil and gas area with dispersed hydrocarbon deposits. Thus, the production branches of Novyy Urengoy account for more than 50% of the total volume of Russian gas [16, Larchenko L.V., Kolesnikov R.A., p. 356], the share of the fuel sector of the town's

economy in total tax revenues is more than 60% [17, Kabanova I.V., p. 25]. The largest (more than 35%) share of the turnover of enterprises in Gubkinskiy falls on mining. In the Yamalo-Nenets Autonomous District as a whole, Novyy Urengoy takes the first place in the ranking of towns by turnover of organizations (143 464 million rubles in 2020), Noyabrsk — the second place (77 406 million rubles); the sphere of mining operations accounts for the largest (more than 65%) share of investment in fixed capital of organizations ¹.

In Norilsk, about 70% of the town's gross product and about 87% of industrial production are accounted for by the Polar Branch of PJSC MMC Norilsk Nickel. Industrial production is the basis for the development of a single-industry town: the share of the sector in the total volume of shipped products is about 90% (the city-forming enterprise makes the largest contribution to the total volume of shipped products). The dependence of the socio-economic development of Norilsk on the city-forming enterprise is also manifested in the investment sphere ².

The mining industry of Vorkuta is represented by the city-forming enterprise JSC Vorkutaugol, the largest coal mining company in the Russian Federation, which is part of PJSC Severstal. The coal industry of the economy of a single-industry town creates 80% of the volume of industrial production and almost 60% of its gross product.

The city-forming enterprises of Kirovsk are the branch of JSC Apatit, which develops deposits of apatite-nepheline ores, and JSC North-Western Phosphorus Company (Akron), which exploits its own phosphate deposit. The economic specialization of Monchegorsk is formed by the structural subdivision of JSC Kola MMC — the Severonickel plant (VIC production units form almost a third of the budget of the Murmansk Oblast and 40% of regional exports). The city-forming enterprise of Olenegorsk is a structural subdivision of PJSC Severstal JSC Olenegorskiy MPP, which develops deposits of ferruginous quartzites. A structural subdivision of EuroChem MCC JSC Kovdor MPP operates in the Kovdorskiy district. It is the largest producer of apatite, iron ore and baddeleyite concentrates (the annual production of baddeleyite concentrate is 100% of world production; the share in the apatite concentrate production is 18%). The share of the city-forming enterprise in the total volume of shipped goods of its own production is 94% ³.

The sustainability of the socio-economic development of single-industry towns in the Russian Arctic depends on the stability of the city-forming enterprises, which, in turn, is determined by such factors as natural and climatic conditions (reflecting, for example, on the cost of production), the cyclical nature of production activities (determined by the possibilities of the mineral resource base), the dependence of production on the external conjuncture of prices for raw materials and main export items, global crisis phenomena. Thus, the global financial crisis of

¹ The results of the socio-economic development of the city of Gubkinskiy of Yamalo-Nenets Autonomous Okrug for 2021. URL: <https://www.gubadm.ru/documents/reports/166088/> (accessed 21 May 2022).

² The results of the socio-economic development of the municipality of the city of Norilsk for 2021. URL: <http://norilsk-city.ru/docs/22661/33155/index.shtml> (accessed 04 June 2022).

³ Annual reports on the achieved values of indicators for evaluating the effectiveness of local self-governments. URL: https://kovadm.ru/social_and_economic_development/годовые-доклады-о-достигнутых-значен/ (accessed 14 September 2022).

2008 provoked a decrease in demand and prices for coal products: a decrease in the prices of coal sold by JSC Vorkutaugol and CJSC Vorgashorskaya Mine 2 (which became part of JSC Vorkutaugol in 2012) by 29.5% led to a reduction in the revenue of enterprises by 3385 million rubles (the reduction in sales of coal products amounted to 9%)⁴; the volume of tax revenues to the budget system decreased by 1.5 billion rubles. As a result of mass dismissals, the number of people registered as unemployed increased in 2008–2009 by 29% (the average number of employees at JSC Vorkutaugol decreased by 19% in 2009). In 2009–2010, the level of industrial production in Novyy Urengoy and Noyabrsk decreased by 40%; the volumes of own revenues of municipal budgets decreased by 16–18% [18, Kolesnikov R.A., Sukhova E.A., p. 121]. In 2008–2009, decrease of revenue of PJSC MMC Norilsk Nickel (by 49%) [19, Kuznetsov S.V., Zamyatina M.F., Fesenko R.S., p. 92] led to a decrease (by 2 times⁵) in the volume of capital investments. The result of the decline in metal prices was a reduction in tax revenues, a decrease in budget revenues for single-industry towns. Significant local budget deficit in 2008–2009 was formed in Norilsk, Novyy Urengoy, Monchegorsk, Kovdorskiy district (Table 1).

Table 1

*Budget surplus/deficit of single-industry towns in the Russian Arctic, million rubles*⁶

Single-industry town	2007	2008	2009	2013	2014	2015	2019	2020
Gubkinskiy	52.9	-69.1	44.3	55.6	-105.3	-49.4	1.2	299.3
Novyy Urengoy	928.2	-278.5	-593.7	-799.3	-648.7	-171.4	681.8	1026.5
Noyabrsk	103.2	131.4	286.2	-250.1	-90.7	23.0	68.2	86.5
Muravlenko	3.6	28.2	25.6	-105.8	-28.4	93.4	7.0	199.2
Vorkuta	94.1	236.1	216.2	104.5	-343.4	-132.1	-104.3	-50.9
Norilsk	1552.6	-977.6	-2011.0	-798.7	1241.3	561.7	1377.2	1113.2
Kirovsk	61.2	-40.6	27.5	-75.3	-47.2	-12.9	-104.4	-93.6
Monchegorsk	389.9	-279.3	-277.8	-88.8	-186.9	-246.9	-2.8	-14.3
Olenegorsk	-8.4	-60.6	-74.9	-8.9	-137.7	-151.1	-4.9	22.8
Kovdorskiy district	-13.8	-7.0	-215.7	-66.5	-35.7	-0.2	5.8	5.7

The lowest share of tax and non-tax revenues of local budgets in the total volume of own revenues (Table 2) was formed in the single-industry towns of Muravlenko, Gubkinskiy, Noyabrsk; a significant growth in this indicator was in 2009-2020 in the towns of Kirovsk and Monchegorsk.

⁴ Comprehensive investment plan for the single-industry city of Vorkuta for 2010 and for the period up to 2020. URL: http://xn--80adykng.xn--p1ai/city_council/third_convocation/368/ (accessed 18 May 2021).

⁵ Norilsk monotown modernization plan. URL: http://econ.krskstate.ru/dat/bin/art_attach/1730_kompleksnij_investicionnij_plan_modernizacii_monogoroda_norilkska.pdf. (accessed 14 April 2021).

⁶ Database of indicators of municipalities. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

Table 2

The share of tax and non-tax revenues of the local budget in the total volume of own revenues of the budgets of single-industry towns in the Russian Arctic, million rubles⁷

Single-industry town	2009	2013	2014	2015	2019	2020
Gubkinskiy	n/d	33.4	35.3	31.7	20.5	17.8
Novyy Urengoy	n/d	73.9	71.0	75.0	47.4	47.0
Noyabrsk	n/d	36.3	49.6	42.8	28.0	24.0
Muravlenko	n/d	20.8	21.9	24.0	13.6	11.9
Vorkuta	37.0	48.0	57.0	53.0	42.1	37.8
Norilsk	79.0	75.0	72.0	55.0	68.0	85.7
Kirovsk	43.9	86.0	92.2	88.7	69.0	74.0
Monchegorsk	38.7	60.3	86.7	85.4	67.3	62.0
Olenegorsk	48.0	65.4	54.4	84.6	48.0	39.9
Kovdorskiy district	39.8	60.9	68.8	71.8	63.9	38.0

Today, single-industry towns in the Yamalo-Nenets Autonomous Okrug continue to reduce the volume of personal income tax revenues from city-forming enterprises. In particular, in Muravlenko, this trend is caused by the restructuring of JSC Gazpromneft-NNG (in 2020, personal income tax payments of the enterprise to the local budget decreased by 14% compared to 2019⁸).

Global financial crises have a negative impact on the investment activity of city-forming enterprises, which depends on the prices of raw materials and the state of hydrocarbon markets. For example, in terms of the volume of investments in fixed capital at the expense of local budgets (Table 3), in the pre-crisis 2007, the leaders were Norilsk, Novyy Urengoy and Noyabrsk; in 2007–2009, the volume of investments in fixed assets in Novyy Urengoy decreased by 33 times, in Norilsk — by 6.8 times, in Noyabrsk — by 3 times.

Table 3

Fixed capital investments at the expense of municipal budgets of single-industry towns in the Russian Arctic, million rubles⁹

Single-industry town	2007	2008	2009	2013	2014	2015	2019	2020
Gubkinskiy	221.8	41.5	128.6	116.6	113.7	62.5	792.0	1492.4
Novyy Urengoy	745.4	583.8	22.5	333.6	267.4	150.8	230.4	406.8
Noyabrsk	709.2	398.5	239.5	605.4	119.4	804.3	363.3	550.7
Muravlenko	215.8	717.8	n/d	748.9	584.7	18.4	41.6	99.5
Vorkuta	8.6	40.7	68.1	122.3	251.3	43.4	26.8	18.7
Norilsk	1517.5	702.7	221.8	138.7	384.2	1015.7	643.2	957.4
Kirovsk	30.1	70.0	66.7	57.8	55.8	47.3	67.6	99.5
Monchegorsk	76.5	123.1	254.3	52.6	35.1	106.9	24.0	56.4
Olenegorsk	59.3	64.8	84.0	68.6	13.5	13.9	44.4	23.8
Kovdorskiy district	26.6	44.4	15.3	66.6	94.0	4195.1	5.4	7.9

⁷ No data for 2007–2008. Source: Municipality Indicators Database. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

⁸ About the report of the Head of the city of Muravlenko on the results of his activities and the activities of the Administration of the city of Muravlenko in 2020. URL: <https://muravlenko.yanao.ru/documents/reports/> (accessed 11 August 2022).

⁹ Database of indicators of municipalities. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

Price environment on global markets in 2015 was unfavorable for Russian exporters: average annual world prices for nickel decreased by 29.8% against 2014, for copper — by 19.8%; the growth rate of average annual dollar exchange rate in 2014-2015 amounted to 158.9%. Nevertheless, ruble depreciation provoked revenue growth at the Polar Division of PJSC MMC Norilsk Nickel (in rubles) and improved the financial and economic indicators of the company (in 2015, metallurgical production and finished products output amounted to 16.2%)¹⁰.

In general, the dynamics of investment in fixed capital in the single-industry towns of the Russian Arctic is undulating, since VIC forms a significant share in the structure of this indicator: the leading positions by the volume of investment in fixed capital in the Russian Arctic are occupied by Norilsk, Novyy Urengoy, Noyabrsk, Kirovsk, Kovdorskiy district (Table 4). Such situation is determined by the varying degree of intensity of implementation of major investment projects of city-forming enterprises of the Russian Arctic single-industry towns.

Table 4

Investments in fixed assets made by organizations (excluding small businesses), located in single-industry towns of the Russian Arctic, million rubles¹¹

Single-industry town	2009	2013	2014	2015	2019	2020
Gubkinskiy	1991.5	2232.0	3297.4	2579.4	5097.2	5752.1
Novyy Urengoy	17477.3	61313.5	62780.4	100047.3	42292.8	37589.4
Noyabrsk	8838.4	11000.6	6280.1	7944.7	21416.6	30608.0
Muravlenko	1067.4	4017.9	1438.0	2563.4	1656.0	1276.7
Vorkuta	2641.8	42749.5	22275.8	21703.6	7105.9	9060.8
Norilsk	16911.5	43053.9	44757.5	74394.3	57877.3	89079.2
Kirovsk	4868.8	17343.6	12674.6	13906.9	17682.6	20605.4
Monchegorsk	1092.5	1699.2	2929.9	6804.5	9511.3	8124.3
Olenegorsk	520.7	1911.2	2117.4	1357.1	3562.2	2062.9
Kovdorskiy district	854.7	4897.7	4200.1	4195.1	9363.0	14426.9

The majority of investments in Norilsk are in the development and modernization of industrial production and environmental safety. In Novyy Urengoy, the share of the fuel and energy complex in investments in fixed assets is 79%. In Kirovsk, the value and dynamics of investment in fixed capital is determined by the branch of JSC Apatit and JSC NWPC: in 2020, the total investment of city-forming enterprises amounted to 79.4% of the total investment in fixed capital¹². In the Kovdorskiy district, 98% of investments are the funds of OJSC EuroChem MCC and JSC Kovdorsky MPP. JSC Alkon accounts for 90% of investments in Olenegorsk.

The global crisis phenomena and the dependence of production activities of city-forming enterprises on the external conjuncture of prices for raw materials and the main export items

¹⁰ The results of the socio-economic development of the municipality of the city of Norilsk for 2015. URL: http://norilsk-city.ru/files/22661/33155/itogi_ser_zh_2015_god.docx (accessed 07 August 2022).

¹¹ No data for 2007–2008. Source: Municipality Indicators Database. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

¹² Forecast of the socio-economic development of the municipality of the city of Kirovsk with its subordinate territory for 2021 and the planning period of 2022-2023. URL: https://kirovsk.ru/administraciya/structure/oer/prognoz_ser/ (accessed 21 May 2021).

have a negative impact (Table 5) on the labor markets of single-industry towns in the Russian Arctic [20, Kotov A.V., p. 49].

Table 5
*Rate of registered unemployment in single-industry towns of the Russian Arctic, %, 2010–2020*¹³

Single-industry town	2007	2008	2009	2013	2014	2015	2019	2020	2021
Gubkinskiy	1.2	0.7	1.2	0.5	0.4	0.6	0.4	1.0	0.4
Novyy Urengoy	1.9	n/d	1.9	0.4	0.4	0.6	0.3	1.9	0.3
Noyabrsk	1.8	2.4	1.9	0.3	0.5	1.1	0.7	3.3	1.3
Muravlenko	n/d	3.7	2.6	0.9	0.9	1.1	0.7	1.9	0.9
Vorkuta	2.9	2.6	3.4	1.0	1.0	1.3	1.5	1.8	1.2
Norilsk	2.4	1.4	1.8	0.9	0.9	0.8	0.6	1.7	1.4
Kirovsk	5.1	3.7	4.8	2.4	3.1	4.4	2.4	2.6	1.7
Monchegorsk	5.4	3.5	5.1	2.1	2.2	2.7	2.2	2.5	1.7
Olenegorsk	2.7	2.8	4.3	1.4	1.6	1.9	1.7	2.3	1.9
Kovdorskiy district	5.3	4.1	5.7	3.5	3.3	3.9	2.3	2.8	1.8

In particular, in 2008–2009, the rate of registered unemployment in the town of Gubkinskiy increased by 71%, in Olenegorsk — by 53%, in Monchegorsk — by 46%; in 2014–2015, the level of registered unemployment in Noyabrsk increased by 120%, in Kirovsk — by 42%. In order to prevent a critical unemployment situation during crisis periods, regional executive authorities implemented additional measures aimed at reducing social tension in the territorial labor markets, including advanced vocational training for employees of city-forming enterprises at risk of dismissal, organization of public works and temporary employment, development of entrepreneurial initiatives. These timely measures made it possible to slow down the growth of unemployment and ultimately bring this indicator to pre-crisis levels.

The spread of the COVID-19 negatively affected the situation with unemployment in the single-industry towns of the Russian Arctic: due to the introduction of restrictive measures aimed at ensuring the sanitary and epidemiological welfare of the population, the dynamics of unemployment worsened. In all the single-industry towns under consideration, there was a significant increase in the registered unemployment rate (growth peaks in May and June 2020). However, in the pandemic context, the situation on the labor markets in the single-industry towns of the Russian Arctic in 2020 remained under control¹⁴ due to the implementation of measures to create temporary jobs; in 2021, the single-industry towns reached the pre-pandemic level of registered unemployment (Table 5).

¹³ Sources: Interactive portal of the employment service of the Murmansk Oblast. URL: <https://murman-zan.ru>; Interactive portal of the employment service of the Yamalo-Nenets Autonomous Okrug. URL: <https://rabota.yanao.ru>; Interactive portal of the employment service of the Republic of Komi. URL: <https://komitrud.rkomi.ru>; Interactive portal of the agency of labor and employment of the population of the Krasnoyarsk Krai. URL: <https://trud.krskstate.ru> (accessed 12 June 2022); Municipal formations of the Murmansk Oblast / Federal State Statistics Service, Territorial body of the Federal State Statistics Service for the Murmansk Oblast. Murmansk, 2011. 194 p.; Statistical and socio-economic indicators. URL: <https://www.norilsk-city.ru/docs/22661/33169/index.shtml> (accessed 05 June 2022).

¹⁴ Brief analysis of the situation on the labor market for 2020. URL: <https://murman-zan.ru/News/Detail/7203e3c8-aff0-47bf-8091-27873302e5ff> (accessed 17 March 2021).

Infrastructure provision of single-industry towns in the Russian Arctic

The current state of most of the infrastructure facilities of single-industry towns in the Russian Arctic does not allow creating conditions for sustainable territorial socio-economic development, including comfortable life. The most important factor in ensuring the stability of city-forming enterprises and, accordingly, the sustainable socio-economic development of single-industry towns in the Russian Arctic is infrastructure provision [21, Novokshonova E.N., p. 144], including transport accessibility and housing and communal services. Thus, typical for the Russian Arctic lack of transport routes narrows the choice of profitable ways of transporting goods: the limited and low quality of transport infrastructure facilities actually stop the increase in production volumes due to colossal transport costs [5, Gladysheva I.V., p. 81]. The length of roads in the Arctic regions of Russia is 0.6% of the total length of the road network of the Arctic zone of the Russian Federation (only 79.5% are paved); more than half of public roads do not meet the standards of the technical and operational condition [22, Serova N.A., Serova V.A., p. 51]. According to Rosstat¹⁵, in Kirovsk, the share of the length of public roads of local importance that do not meet the relevant standards is 43% of the total length of such roads, in Olenegorsk — 54.3%, in Monchegorsk — 78.6%; in Vorkuta — 63.1%; in Norilsk — 30.1%; in Novyy Urengoy — 0.6%, in Muravlenko — 11%, in Gubkinskiy — 22.6%, in Noyabrsk — 44.4%.

The most acute problem of single-industry towns in the Russian Arctic is the problem of providing modern housing and communal infrastructure facilities. The uncomfortable urban space is evidenced by dilapidated and emergency housing, a low level of social and engineering facilities, high wear and tear of municipal water supply systems, a high proportion of inefficient heating with low loads and remote fuel delivery. Thus, due to the closure of mines in Vorkuta, the share of vacant housing was 40% of the total municipal housing stock; at the same time, the annual costs of paying for heating and maintaining the empty housing stock amount to 580 million rubles. Depreciation of the engineering infrastructure (Usinskiy water pipeline of Vorkuta) is 95%¹⁶. In Norilsk, physical depreciation of housing is 50%, 33% of residential buildings are under special control (for the condition of load-bearing structures and soil)¹⁷. In Gubkinskiy, 43% of the housing stock is in disrepair.

The threat to epidemiological safety is the current state of heat, water and sewerage systems in permafrost conditions [23, Kutsenko S.Yu. et al., p. 10]. In Gubkinskiy, only 10% of the road network is provided with storm water drain; more than 30% of the total length of the main

¹⁵ Database of indicators of municipalities. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

¹⁶ Plan for the further development of single-industry municipalities — urban districts of Vorkuta and Inta. URL: https://econom.rkomi.ru/uploads/documents/proekt_plana_razvitiya_vorkuti_i_inti_pdf_2020-02-07_02-24-03.pdf (accessed 17 August 2022).

¹⁷ Vlasti Krasnoyarskogo kraja: iznos zhil'ya v Noril'ske priblizhaetsya k 50% [Authorities of the Krasnoyarsk Krai: depreciation of housing in Norilsk is approaching 50%]. URL: <https://www.kommersant.ru/doc/4530638> (accessed 14 May 2021).

drain in Norilsk is in dilapidated or emergency condition¹⁸. In 2009–2020, the length of heating networks in need of replacement increased by 8.2 times in Kirovsk (Table 6), in Gubkinskiy — by 6 times, in Novyy Urengoy — by 3 times, in Olenegorsk — by 1.7 times. The length of the street water supply network in need of replacement in Vorkuta increased 4 times, in Norilsk — 2.3 times; the length of the street sewage network in need of replacement: in Norilsk — 6.4 times, in Novyy Urengoy — 4.7 times.

Table 6
Main indicators of infrastructure provision of single-industry towns in the Russian Arctic, 2009, 2020¹⁹

Single-industry town		Length of two-pipe heat and steam networks in need of replacement, km	Street water network in need of replacement, km	Length of street sewerage network in need of replacement, km	Number of families registered as being in need of housing at the end of the year
Gubkinskiy	2009	2.3	0.5	0.5	418
	2020	14.3	3.4	0.6	604
Novyy Urengoy	2009	29.0	2.6	1.0	1153
	2020	97.0	1.1	4.7	1350
Noyabrsk	2009	148.0	36.3	n/d	1627
	2020	153.9	7.0	11.1	2478
Muravlenko	2009	58.4	27.5	10.5	561
	2020	46.2	42.8	7.5	361
Vorkuta	2009	142.5	6.0	20.0	909
	2020	35.2	24.3	14.8	173
Norilsk	2009	40.2	11.2	6.5	n/d
	2020	46.7	26.3	41.7	245
Kirovsk	2009	2.0	0.3	0.07	61
	2020	16.4	0.01	0.6	80
Monchegorsk	2009	54.0	9.4	0.2	512
	2020	46.2	21.1	6.8	204
Olenegorsk	2009	9.7	5.4	n/d	54
	2020	17.0	3.7	0.8	39
Kovdorskiy district	2009	20.9	4.8	0.9	74
	2020	22.0	0.8	1.5	42

In Monchegorsk, 72% of water supply networks are up to 100% depreciated (the percentage of depreciation of water inlets to residential buildings, educational and healthcare facilities is high); the problem of uninterrupted supply of heat to consumers is acute (the heat supply system is characterized by a high degree of depreciation of fixed assets, large losses of energy and water). The power supply scheme of the single-industry town was originally built without taking into account long-term development and has a low degree of reliability (capacity of

¹⁸ Noril'sku nuzhna novaya programma sotsial'no-ekonomicheskogo razvitiya, ubezhdeniy v Sovete Federatsii [Norilsk needs a new program of socio-economic development, the Federation Council is convinced]. URL: <http://council.gov.ru/events/news/120774/> (accessed 14 May 2021).

¹⁹ No data for 2007–2008. Source: Municipality Indicators Database. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

transformer substations and throughput of networks built in 1938–1965 are designed only for housing stock not equipped with electric stoves)²⁰.

Ecological situation in single-industry towns in the Russian Arctic

Another problem of socio-economic development of single-industry towns in the Russian Arctic is associated with an environmental threat to public health, the need to eliminate the accumulated environmental damage, and environmental restrictions in the development of production activities. The mining industry has a significant impact on ecosystems due to mechanical disturbances of vegetation, soils, permafrost, emissions of toxic compounds into the atmosphere. Pollution of surface waters occurs: the main reservoirs of pollutants are small lakes (in areas near mines, reservoirs are characterized by high values of total mineralization and organic substances content)²¹. Thus, the analysis of the peculiarities of the accumulation of heavy metals in fish from small lakes in the Murmansk Oblast [24, Terentiev P.M. et al., p. 52] shows the negative consequences of aerotechnogenic pollution of water bodies of the JSC Kola MMC (natural fish populations are subject to the toxic effects of heavy metals), associated with the danger of reducing the biological diversity of the ichthyofauna. Significant seasonal fluctuations in the nickel content in water are caused by the fact that polymetallic dust, concentrated in the snow cover during the long winter period, enters the water bodies of Monchegorsk in increased amounts with the beginning of snowmelt; as a result of dust and gas emissions and discharges with wastewater from the Severonickel plant, pollutants enter Lake Monche (a facility of the I category of household and drinking water use) and Lake Imandra (a facility of the II category of cultural and domestic water use) [25, Devyatkin P.N., p. 396].

A problematic issue in the field of environmental protection is waste management: almost all types of industrial activities in the tundra and forest tundra produce vast areas that are not capable of self-recovery²².

Environmental factors account for up to 25% of the health forming factors, while their contribution to the formation of public health disorders becomes more significant when it comes to the population of single-industry towns in the Russian Arctic living in extreme natural conditions [26, Klyukina E.S., p. 91]. The Murmansk Oblast is one of the main centers of environmental tension in the Russian Arctic: the environmental crisis not only in single-industry towns, but also in

²⁰ О внесении изменений в Комплексный инвестиционный план модернизации моногорода Мончегорск Мурманской области, утвержденный постановлением администрации города Мончегорска от 14.12.2010 № 1221 [On amendments to the comprehensive investment plan for the modernization of Monchegorsk monotown, Murmansk Oblast, approved by the Decree of the Monchegorsk City Administration dated December 14, 2010 No. 1221]. URL: https://monchegorsk.gov-murman.ru/gorod/munitsipalnye-uchrezhdeniya-goroda/mku-uer-goroda-monchegorska/sotsialno-ekonomicheskoe-planirovanie-i-statistika/post_1599-_29.12.2018.pdf (accessed 14 September 2021).

²¹ Стратегия социально-экономического развития муниципального образования городского округа «Воркута» на период до 2020 года [Strategy for socio-economic development of the municipality of the urban district "Vorkuta" for the period up to 2020]. URL: <http://воркута.рф/upload/iblock/a0b/strategia-2020.pdf> (accessed 17 August 2022).

²² Plan for the further development of single-industry municipalities - urban districts of Vorkuta and Inta. URL: https://econom.rkomi.ru/uploads/documents/proekt_plana_razvitiya_vorkuti_i_inti_pdf_2020-02-07_02-24-03.pdf (accessed 17 August 2022).

the adjacent territories (agglomerations) produces high rates of 95 classes of environmentally dependent diseases (diseases of the respiratory system, skin and subcutaneous tissue, congenital anomalies, malignant neoplasms, diseases of the blood and hematopoietic organs) [26, Klyukina E.S., pp. 94–95]. Atmospheric pollutants include nitric oxide, formaldehyde, phenol, lead, nickel, sulfur dioxide, benzene, benzopyrene, fluorides, inorganic dust, etc. [27, Kovshov A.A. etc., pp. 218–219]. The largest volume of pollutant emissions into the atmosphere is in the Pechenga district (JSC Kola MMC) [28, Martynova A.A., Pryanichnikov S.V., p. 300]. Industrial specialization of the Apatity-Kirovsk agglomeration (JSC Apatit MMC) produces the prevalence of circulatory system diseases (the morbidity rate for this class of causes is 1.6 times higher than in Central Russia), diseases of the musculoskeletal system and the genitourinary system (2.6 times higher), diseases of eyes and adnexa (2.7 times) [29, Petrov V.N., Tereshchenko P.S., Megorsky V.V., p. 90]. In Monchegorsk (JSC Kola MMC), the mortality rate of the male population from diseases of the circulatory system is 35% higher than the average for the region and 1.5 times higher than the average Russian level [30, Tikhonova G.I., Bryleva M.S., Gorchakova T.Yu., p. 773].

Prospects of socio-economic development of single-industry towns in the Russian Arctic

City-forming enterprises and, accordingly, single-industry towns in the Russian Arctic undergo certain stages of the life cycle. Therefore, continuous updating of growth factors is necessary to initiate new stages of development: the socio-economic sustainability of territorial development depends on its ability to respond to external changes and adapt to them in a timely manner [31, Kryukova O.G., Aksenova E.V., p. 85].

A critical factor in the sustainable activity of city-forming enterprises is the depletion of the resource base: the sustainable socio-economic development of single-industry towns in the Russian Arctic depends on the stability of such enterprises, determined by the capacity to extract minerals at the level of economic efficiency, achieved through the implementation of appropriate investment projects. In particular, until 2018, the development of JSC Olenegorskiy MPP was unpromising, therefore, a gradual shutdown of production was planned from 2021 and the closure of the enterprise in 2026. Today, Olkon's long-term development strategy up to 2045 is being implemented, which provides for the development and commissioning of the Pechegubskoe deposit, construction of a new underground mine and creation of necessary infrastructure (priority areas: maintaining the natural resource base with the prospect of developing reserves until 2038, updating equipment for the mining and transportation and factory complexes). Another example is JSC Kovdorskiy MPP, a resident of the Arctic zone of the Russian Federation with an investment project to expand its own capacities (the estimated investment is 24.5 billion rubles; the project will increase the enterprise's capacity from 14.5 million tons to 19.5 million tons of ore per year and create almost 500 jobs). The investment projects of JSC Apatit also include the expansion of production capacities — the construction of an underground mine at the Rassumchorr Plateau deposit and the development of the Koashvinskiy and Nyurkpkhkiy open

pits. Mining assets of the investment projects of PJSC Norilsk Nickel MMC in Norilsk include the Skalistyy, Komsomolskiy, Mayak, Taymyrskiy, Oktyabrskiy mines; processing projects include the modernization of the Talnakh concentrator²³.

City-forming enterprises are the key objects of the economies of single-industry towns in the Russian Arctic: the single-industry nature of the economies of such towns has formed a weak development of local markets and a narrow list of economic entities. This situation produces the need to search for suppliers, contractors, service industries ready to work at the sites of the city-forming enterprises. One of the tools to get out of this situation is the establishment of a special legal regime for the implementation of entrepreneurial and other activities in order to create favorable conditions for attracting investments and thereby ensuring the sustainable socio-economic development of city-forming enterprises and single-industry towns (PSEDA, PDA). In 2017, in order to attract new enterprises of alternative industrial and service industries, a Priority Social and Economic Development Area (PSEDA) was created [32, Skufina T.P., pp. 59–60]. Today, Kirovsk PSEDA includes 6 residents: a repair center for machinery and equipment used by JSC Apatit, JSC NWPC and JSC Olkon; repair and service centers for the maintenance of vehicles and equipment for processing plants in the Murmansk Oblast; a production facility for emulsion explosives components; workshop for repair of crushing and sorting equipment of city-forming enterprises. The total investment is 114.5 million rubles; the number of new jobs is 187²⁴. Among the preferences and benefits of PSEDA are reduced rates of insurance premiums (7.6%), income tax (5% for the first 5 years, 12% for the next 5 years), property tax (0% for the first 5 years, 1.1% during the subsequent 5 years), land tax (0%)²⁵. According to preliminary data²⁶, the volume of investments in fixed assets of PSEDA residents in 2021 amounted to 15 million rubles, the number of jobs created — 24. In 2020, the “Capital of the Arctic” Priority Development Area (PDA) was created on the territory of the Murmansk Region. Its administrative preferences included the possibility of applying the free customs zone procedure on residents’ land plots, the provision of land plots at preferential rental rates and the possible attraction foreign labor without quotas. Among the tax preferences are reduced rates of social insurance contributions (7.6% for 10 years), property tax (0% for the first 5 years), income tax (5% for the first 5 years, 12% for the following 5 years), tax on land (0% for 3 years) and mining tax reduction coefficients (0 — 0–2 years, 0.4 — 4–

²³ Mining assets. URL: <https://ar2020.normickel.ru/strategic-report/key-investment-projects/mining> (accessed 17 August 2022).

²⁴ Residents of PSEDA "Kirovsk". URL: https://kirovsk.ru/business/investoru/rezidenty_tosehr_kirovsk_i_azrf/rezidenty_tosehr_kirovsk/ (accessed 07 September 2022).

²⁵ PSEDA "Kirovsk". URL: <https://invest.nashsever51.ru/pages/toser-kirovsk> (accessed 07 September 2022).

²⁶ Prognoz sotsial'no-ekonomicheskogo razvitiya munitsipal'nogo obrazovaniya munitsipal'nyy okrug gorod Kirovsk s podvedomstvennoy territoriey Murmanskoy oblasti na 2022 god i planovyy period 2023-2024 godov [Forecast of the socio-economic development of the municipality of the municipal district of the city of Kirovsk with the subordinate territory of the Murmansk Oblast for 2022 and the planning period of 2023-2024]. URL: https://kirovsk.ru/files/npa/adm/2021/1107/pril_post.pdf (accessed 07 September 2022).

6 years, 0.6 — 6–8 years, 0.8 — 8–10 years)²⁷. On the territory of the Kovdorskiy district, there are 2 residents of the “Capital of the Arctic” PDA — JSC Kovdorskiy MPP and LLC Flogopit (a project to revive the processing of mica); Olenegorsk — JSC Olenegorskiy MPP, a project for an integrated car wash and tire fitting and a project for the construction of a data processing center; Monchegorsk — 3 projects in the service sector, 1 project each in the areas of transport and logistics, mining and tourism; Kirovsk — 9 projects in tourism, 2 projects in the service sector, 1 project in the mining industry, 1 projects in the field of real estate and development.

Nevertheless, the implementation of such an instrument as a special legal regime for business and other activities is fraught with risks. Firstly, it is the enclave nature of single-industry towns that causes problems with logistics, expansion of sales markets and difficulties with exports²⁸. Secondly, it is the shortfall of tax revenues from the granting of preferences and tax privileges. Thus²⁹, in the Murmansk Oblast, according to the data for 2017, for 1 resident of the PSEDA who declared benefits, the amount of shortfall in tax revenues amounted to 1.7 million rubles, in 2018 — 13.2 million rubles.

Critical risks for single-industry towns in the Russian Arctic are the fulfillment of budget obligations (due to a possible reduction in the level of labor income, in the number of employees of city-forming enterprises and, accordingly, in income from personal income tax to local budgets). Therefore, the prospects for the socio-economic development of single-industry towns in the Russian Arctic are associated with increased emphasis on the interaction of single-industry towns with city-forming enterprises on the social orientation of subsoil use. Today, there are successful examples of such interaction. One of them³⁰ is the social and economic partnership between PJSC PhosAgro and the Government of the Murmansk Oblast, the financial volume of which amounted to 4 billion rubles in 2020–2022 (including 2.65 billion rubles by PJSC PhosAgro). Projects of such a partnership included the construction of an artificial snowmaking system on one of the slopes of the Bolshoy Vudyavr ski resort and the construction of a panoramic restaurant complex Plateau. The socio-economic partnership between the Murmansk Oblast and PhosAgro will amount to 15

²⁷ PDA “Capital of the Arctic”. URL: <https://invest.nashsever51.ru/pages/reestr-rezidentov-arkticheskoy-zony-rf> (accessed 07 September 2022).

²⁸ Itogi kompleksnogo issledovaniya malogo i srednego biznesa v Noril'ske predstavili na kruglom stole v MFTs [The results of a comprehensive study of small and medium-sized businesses in Norilsk were presented at a round table in the MPSC]. URL: <https://arnorilsk.ru/news/itogi-kompleksnogo-issledovaniya-malogo-i-srednego-biznesa-v-norilске-predstavili-na-kruglom-stole-v-mfts/> (accessed 14 July 2022).

²⁹ Otchet o rezul'tatakh ekspertno-analiticheskogo meropriyatiya «Analiz praktiki primeneniya preferentsial'nykh rezhimov, deystvuyushchikh na territorii Rossiyskoy Federatsii, s tochki zreniya ikh vliyaniya na ekonomicheskoy rost i sootvetstviya zavavlennym tselyam» [Report on the results of the expert-analytical event “Analysis of the practice of applying preferential regimes in force on the territory of the Russian Federation in terms of their impact on economic growth and compliance with the stated goals”]. URL: <https://ach.gov.ru/upload/iblock/d22/d22daa028b1854b51b99c9d2927c2e06.pdf> (accessed 06 July 2022).

³⁰ FosAgro i Pravitel'stvo Murmanskoy oblasti v khode PMEF-2022 zaklyuchili Soglashenie o sotsial'no-ekonomicheskom partnerstve do 2024 goda [PhosAgro and the Government of the Murmansk Oblast signed an Agreement on social and economic partnership until 2024 during SPIEF-2022]. URL: <http://www.phosagro.ru/press/company/fosagro-i-pravitelstvo-murmanskoy-oblasti-v-khode-pmef-2022-zaklyuchili-o-sotsialno-ekon/council.gov.ru/events/news/120774/> (accessed 16 June 2022).

billion rubles in 2022–2024. The partnership provides for the improvement of the infrastructure of the Apatity-Kirovsk Central Municipal Hospital (purchase and installation of special equipment, an oxygen station and other medical equipment); financing the rehabilitation treatment of Kirovsk and Apatity residents at the corporate health resort; financing major repairs of the hospital's medical building, and major repairs and equipment for vocational training rooms at the sponsored branches of Murmansk Arctic State University and schools in Kirovsk and Apatity included in the PhosAgro-School project; development of a sports and tourism cluster in Kirovsk and Apatity; reconstruction of the Apatity-Kirovsk highway and improvement of the infrastructure of the Khibiny airport; external renovation of Kirovsk. During the 16 years of this partnership, an ice arena has been built in Kirovsk, a new building for a ski-resort Olympic sports school, and a sports complex and hockey court for one of the local sports schools in Apatity were built in Apatity. Between 2022 and 2025, the agreement between the Government of the Murmansk Oblast and JSC Kovdorskiy MPP (JSC MCC EuroChem) stipulates medical development (construction of an infectious diseases department of the hospital and renovation of apartments for guest doctors), education (creation of an educational and production center on the basis of the Kovdor Polytechnic College and a center for additional education on the basis of a secondary school), culture (renovation of buildings), physical culture and sports, tourism, and landscaping. The volume of investments in the development of Kovdor until 2027 will be about 1 billion rubles. The agreement on interaction and cooperation in order to implement comprehensive measures for the socio-economic development of Norilsk for the period up to 2024 and for the future up to 2035 provides for renovation of the housing stock of the single-industry town, modernization of housing and communal services, its engineering and communal infrastructure, elimination of emergency and dilapidated housing and reconstruction of multi-storey residential buildings, construction of a waterworks facility on the Norilskaya River, modernization of cultural, healthcare, education and sports facilities. The total amount of financing of the agreement is 120.1 billion rubles, 68% of which are funds from PJSC MMC Norilsk Nickel, 20% — from the federal budget³¹. On the territory of the Yamalo-Nenets Autonomous Okrug, 8 general cooperation agreements are being implemented between the Government of the okrug and PJSC Gazprom, PJSC NOVATEK, PJSC LUKOIL, PJSC Gazprom Neft, PJSC Rosneft Oil Company, under which VICs participate in construction and repair of social and cultural facilities, sports facilities, residential buildings³².

In our opinion, the main problem of the socio-economic development of single-industry towns in the Russian Arctic is the implementation of a competent socio-economic policy, developed not so much at the corporate and regional levels, but with the participation of local governments and the local population. An example of this is the comprehensive investment plans for the modernization of single-industry towns (CIP), the analysis of the experience of their

³¹ Activities of the comprehensive plan for the socio-economic development of the City of Norilsk. URL: <https://www.norilsk-city.ru/100694/index.shtml> (accessed 16 May 2022).

³² Social partnership: practices of Yamal. URL: <http://regcomment.ru/analytics/sotsialnoe-partnerstvo-praktiki-yamala-2/> (accessed 17 September 2022).

application has shown a low degree of effectiveness [33, Oborin M.S., p. 115]: most of the indicators established in the CIPs were formal and non-informative and did not reflect the real situation in addressing the problems of unemployment and economic diversification. In particular, when calculating the created jobs, temporary jobs were included; when calculating the attracted investments, investments made before the adoption of the CIP were included on a cumulative basis³³. Moreover, promotion of the modernization of single-industry towns with production units operating in the Arctic has not become the task of VIC³⁴. An analysis of the implementation of the state priority program “Integrated development of single-industry towns”, including the experience of implementing special legal regimes (PDA), also indicates a low degree of their effectiveness. Thus, according to the Accounts Chamber of the Russian Federation, there is virtually no relationship between sources of funding and the activities included in such a program, the synchronization of the implementation of investment projects and the construction of infrastructure facilities is not fully ensured, there is a shortage of specialists for newly created industries, as well as managers involved in modernization projects. As a result, there is a shortage of projects that meet banking investment standards, lengthy procedures for the formation of technical and permitting documentation, etc.³⁵

Conclusion

As a result of the analysis of the dynamics of the socio-economic development of single-industry towns in the Russian Arctic, we substantiated the critical factors (problems) that limit the possibilities of their territorial development due to the negative impact on budgetary security and investment activity.

The first group of such factors is represented by the capabilities of mineral resource base, which determine the natural limits and cyclical nature of the production activities of city-forming enterprises.

The second group of critical factors is formed by global crisis phenomena that produce dependence of the production of city-forming enterprises on the external conjuncture of prices for raw materials and main export items.

The third group of critical factors consists of the risks of budgetary obligations fulfillment of single-industry towns in the Russian Arctic. Firstly, the withdrawal of mineral resources by

³³ «O rezul'tatakh sovместnogo kontrol'nogo meropriyatiya «Proverka rezul'tativnosti podderzhki monogorodov na territorii Kirovskoy oblasti v ramkakh realizatsii prioritetnoy programmy «Kompleksnoe razvitie monogorodov» v 2016 - 2017 godakh» (s kontrol'no - schetnym organom sub"ekta Rossiyskoy Federatsii) [“On the results of the joint control event “Checking the effectiveness of support for single-industry towns in the Kirov Oblast as part of the implementation of the priority program “Integrated development of single-industry towns” in 2016-2017” (with the control and accounting body of the constituent entity of the Russian Federation)]. URL: <https://ach.gov.ru/upload/iblock/700/700ca4572b11e125ebce9867eba67971.pdf> (accessed 17 September 2022).

³⁴ Analytical report on the management of the development of single-industry towns. URL: https://urbaneconomics.ru/sites/default/files/a_monogoroda_iue_2011.pdf (accessed 17 September 2022).

³⁵ Report on the results of the expert-analytical event “Monitoring and evaluation of the implementation of the priority program “Integrated development of single-industry towns”. URL: <https://ach.gov.ru/upload/iblock/1a5/1a5fb021746e6c823bc8457f6e200a0c.pdf> (accessed 17 September 2022).

vertically-integrated companies' production assets occurs without the actual return of a percentage of the extracted profit to municipal budgets. Secondly, the level of sustainability of city-forming enterprises affects the level of social tension in the labor markets, producing critical risks in terms of fulfilling budget obligations due to a possible reduction in the number of employees, a subsequent decrease in the level of labor income, and, accordingly, a decrease in income from personal income tax in local budgets. Thirdly, the development opportunities for single-industry towns in the Russian Arctic depend on the policy of vertically integrated groups, their interests in the implementation of socio-economic partnership in their territories.

Taken together, these factors limit the possibility of diversifying the economy of single-industry towns in the Russian Arctic and developing entrepreneurial activity there, which, in particular, is evidenced by the current state of most infrastructure facilities (lack of transport routes; dilapidated and emergency housing; low level of social and engineering infrastructure). Undoubtedly, promising opportunities for the development of single-industry towns in the Russian Arctic are associated with the successful implementation of investment projects of city-forming enterprises, as well as the creation of favorable conditions for attracting investment through the establishment of special legal regimes for entrepreneurial and other activities. However, the analysis of investment projects of city-forming enterprises shows that the priority areas of investment activity today are related to maintaining the natural resource base with the prospect of developing reserves and expanding own capacities of the production assets of vertically integrated companies; conclusions about the effectiveness of special legal economic regimes are premature.

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