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SPATIAL DIFFERENTIATION OF RURAL TERRITORIES IN THE KALININGRAD REGION: IMPLICATIONS FOR SOCIO-ECONOMIC POLICIES

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The article analyses the challenges associated with the development of rural areas in the Kaliningrad region. The author analyses trends in the development of agriculture, population dynamics, and settlement patterns, while also exploring their interconnectivity and external impacts. The research draws upon comparative-geographical, economic-statistical, and cartographic analyses utilizing official statistical data. The study reveals that since the early 2000s, agricultural production in the Kaliningrad region has been outpacing the national average growth rate. This is primarily attributed to the advancement of larger organisations, while the growth rates of household and small-scale farms remain comparatively low. This development trend is underpinned by a surge in labour productivity accompanied by a substantial reduction in the workforce. Consequently, rural residents are increasingly seeking alternative employment opportunities, either moving to urban areas or engaging in a different type of economic activities. Contrary to the situation in most regions of the Russian Federation, the rural population of the Kaliningrad region is growing. This growth is facilitated by an influx of individuals from other parts of Russia and other countries. Following the polarisation theory, population growth is driven by municipalities in the western part of the oblast, while eastern rural territories are losing population due to both natural decline (common to the oblast as a whole) and migration. Eastern municipalities have the demographic potential to increase the working-age population, while the western part of the oblast does not. The region has been implementing a policy of support for rural territories, especially for the peripheral eastern municipalities. However, there is a need for the policy to be further reinforced, alongside the development of a comprehensive spatial development strategy for the region. The article outlines proposals in this regard.

Keywords:

Kaliningrad region, rural areas, agriculture, population dynamics, rural settlement, regional disparities, polarisation

Introduction

Numerous works published in Russia and internationally have looked at the problems of spatial differentiation, with a special focus on rural peripherisation. This article draws on a range of ideas put forward in those works.

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Globally, the development of the rural economy and rural settlement patterns is significantly influenced by core-periphery dynamics and territorial polarisation, a relationship first brought to scholarly attention by François Perroux [26].

The influential concept of polarised biosphere was formulated by the Soviet, and later Russian, geographer Boris Rodoman [29]. Met with criticism in the Soviet Union, it is widely used today. The polarisation of the 1970s prompted the emergence of concepts such as the unified settlement system, where the works of Kazys Šešelgis [30] and Boris Khorev [16] had an essential role. It was at this juncture that Georgy Lappo [9] proposed his concept of the support framework for settlement.

A comprehensive approach to rural settlement, considered in conjunction with population replacement and advances in agriculture, first appeared in the works of Sergey Kovalev [7]. A multidimensional exploration of rural areas in line with this approach is carried out by Moscow scholars [3; 5; 11; 24; 25, etc.]. The core-periphery dynamics in rural areas have been studied extensively by international scholars [19; 21; 22; 27, etc.].

Researchers of rural areas in the Kaliningrad region may find of interest the works of Lithuanian authors [20; 23; 28, etc.]. The settlement system in Lithuania bears similarities to that of Kaliningrad, with comparable processes governing the organisation of agricultural production. The influence of the unified settlement system concept is visible in the articles of Lithuanian researchers, particularly in the descriptions of polycentric systems. Polarisation in Lithuania is even more pronounced than in the Russian region in question, with many family-owned farms having gone out of operation [18]. Polarisation becomes especially evident when considering changes in settlement patterns. Against the background of a 23 % population decline in the country (and a 25 % in rural areas) between 1990 and 2023, the decrease was particularly sharp in the periphery¹ despite the efforts the authorities made to retain youth in rural areas [31] or improve territorial planning documents [17].

The agri-food complex in the Kaliningrad region is highly dependent on international interactions. Therefore, in the face of the illegitimate sanctions policies, Russian regions meet challenges that are much more radical than those described by Tatyana Nefedova [10]. Additional support measures are needed to promote the development of the agricultural sector in the exclave of Kaliningrad. This includes stimulating import substitution, which is vital for achieving food security. It is also essential to take into account not only imports being rendered more difficult but also the need for securing exports of vegetable oils, soybean meal, rapeseed and grain from the region.

The study of the rural areas of the Kaliningrad region has a rich historical background. Economic and demographic rural studies at Kaliningrad State University

¹ In 2022, the population of Vilnius County was 93 % of the 1996 level; Klaipėda County, 82 %; the Kaunas County, 78 %; each of the other seven counties, in the range of 64–71 %. See: Population on 1 January by age group, sex and NUTS 3 region, 2023, Eurostat, URL: https://ec.europa.eu/eurostat/databrowser/view/DEMO_R_PJANGRP3/default/table?lang=en (accessed 05.06.2023).

date back to the 1970s. More comprehensive research has been conducted in the post-Soviet period by scholars from the Immanuel Kant Baltic Federal University (IKBFU), other Kaliningrad organisations, as well as experts from Moscow and St. Petersburg. In 2022, a collective monograph by IKBFU researchers titled *The Kaliningrad Village in the Early 21st Century: Production, Settlement Patterns and Social Innovations* appeared, which examined rural population, settlement, and the development and placement of agricultural production, considering their interrelations [6].

Studies focusing on the economy, population, and settlement patterns of the Kaliningrad region have demonstrated that its rural areas undergo processes similar to those observed in most other regions of Central Russia. However, the intensity of these processes and some other aspects are region-specific due to the interaction of various factors, including natural, historical, economic, social, demographic, and even (due to the enclave status of the region) foreign policy factors.

This study aims to identify territorial differences in agriculture, settlement patterns, and population in the rural areas of the Kaliningrad region, analyse the mutual effects of these dissimilarities, assess the emerging development challenges and associated disparities, and prepare recommendations for regional and municipal development and spatial organisation strategies.

Methods

Methodologically, this study employs a systemic and comprehensive approach to rural areas, at the core of which is the examination of elements within a system seen as a single whole interconnected by internal relationships. The territorial systems in question include the territorial-industrial system of production, the settlement system and the socio-demographic situation, which was defined by Nikolai Agofonov [2] as the relationships between a region's demographic and other socioeconomic components. This approach is comprehensive in that the elements are examined concerning their mutual connections and interactions with natural, ecological, historical, political, geopolitical, and other factors operating in the territory.

The hypothesis put forward in this study makes use of the confirmed assumptions about the applicability to the study territory of polarisation concepts, which has been revised and adjusted in the works of Aleksandr Kostyaev [8], Tatyana Nefedova, and other scholars [11; 12]. This research incorporates methodologies and findings related to the typology of rural territories [4; 13; 14], changes in the occupations of rural inhabitants, the functional categorisation of rural settlements [1] and the evolution of rural-urban partnership [14]. Patterns of rural area development in the exclave of Kaliningrad have been identified using the latest statistical data.

Comparative-geographical, graph-analytical, economic-cartographic and economic-statistical methods were utilised in the study, along with the empirical typologisation method. Data derived from sociological studies conducted when investigating social innovations in the region were also taken into account [15].

Rural population change and its territorial features

The Kaliningrad region is one of the few in Russia that witnessed an increase in the rural population, with the growth rate reaching 0.89 % in 2022. This rise is attributed to migrants from other, mostly eastern and northern, regions of the country, as well as from the CIS.

Despite this growth, the number of people employed in agriculture rapidly declined in the region from the mid-2000s to 2020. Only in 2021–2022 did a small increase occur (Fig. 1). Between 1990 and 2022, the region's rural population increased by 49,000 people (26 %), whilst the number of people employed in agriculture, forestry, hunting, fishing and fish farming decreased by 22,100, which amounts to a 50 % reduction. In 2022, there were 22,100 people employed in the industry, accounting for 4.4 % of the employed population. This includes 17,700 people involved in crop and livestock farming, hunting and related services, making up 3.5 % of the employed population and 7.5 % of the total rural population. Additionally, 1,700 were employed in forestry and timber harvesting, and 2,700 worked in fishing and fish farming.¹

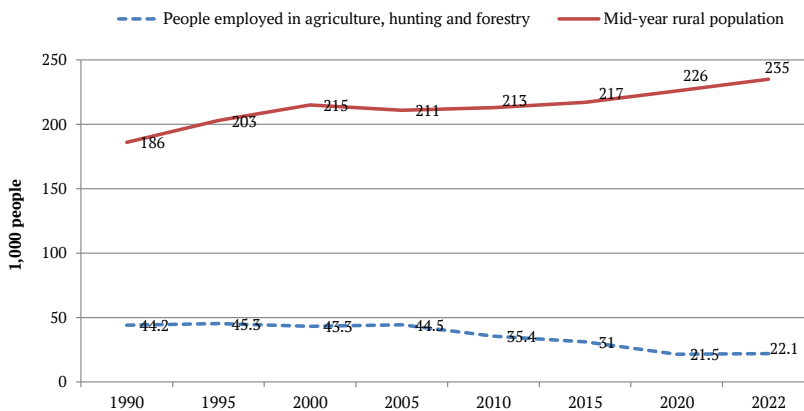


Fig. 1. Rural population change and the number of people employed in agriculture, 1,000 people, 1990–2022

Compiled based on: Population of the Kaliningrad region, *Kaliningradstat*, URL: https://39.rosstat.gov.ru/statistical_news/document/203423 (accessed 18.08.2023) ; Average annual number of employed in the economy since 2017, URL: <https://fedstat.ru/indicator/58994> (accessed 18.08.2023) ; Labour and Employment in the Kaliningrad region. Kaliningrad : Kaliningradstat, 2008.

The territorial variations in rural population change, observed over a sufficiently long period, align with the concept of polarization. The intra-regional socioeconomic zones identified with its help (the immediate and remote suburban zones of Kaliningrad, the periphery, see Figure 2) differ in terms of the demographic situation.

¹ The average annual employment in the economy since 2017, URL: <https://fedstat.ru/indicator/58994> (accessed 18.08.2023).

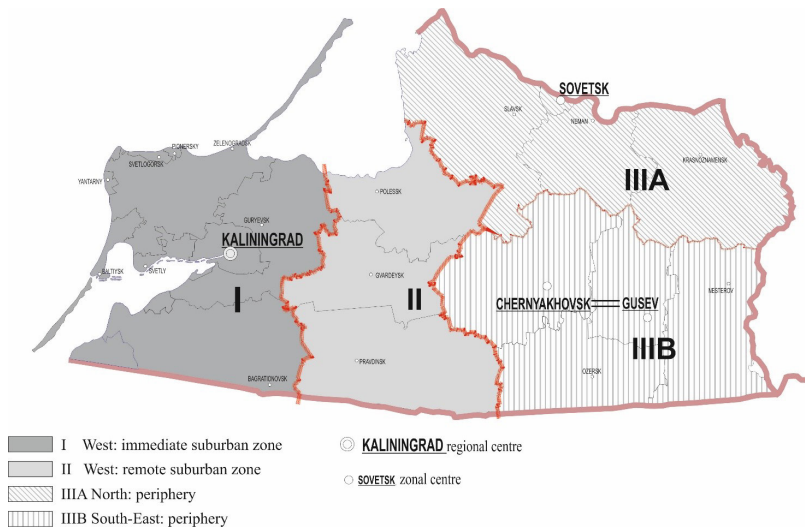


Fig. 2. Socio-economic zoning of the Kaliningrad region

As the change between 2010 and early 2023 figures suggests, despite the overall rural population growth observed across the Kaliningrad region, its eastern and northern municipalities continue to lose population. The most considerable growth was recorded in the municipalities of Kaliningrad’s immediate suburban zone (Fig. 3).

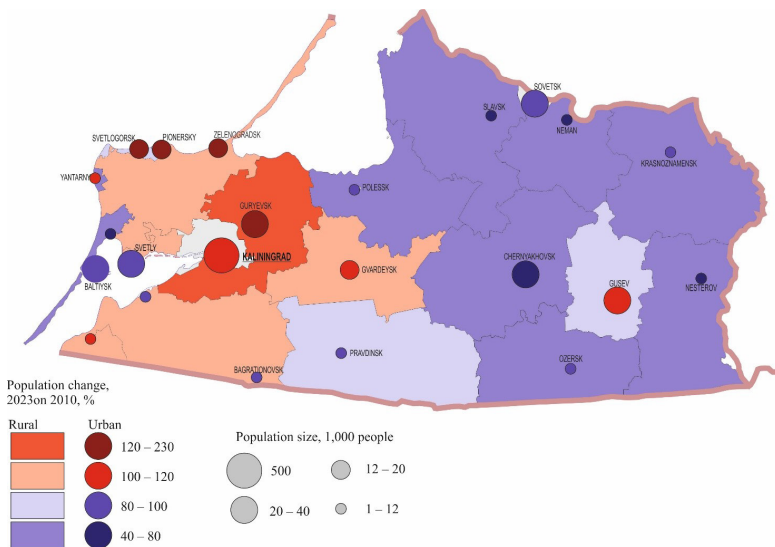


Fig. 3. Urban and rural population change, 2023 on 2010, % (as at the beginning of the year)

Compiled based on data: Key indicators of economic and social development of cities and districts of the Kaliningrad region. Kaliningrad: *Kaliningradstat*, 2011 ; Estimated population of the Kaliningrad region as of 1 January 2023, based on the recalculation of the 2020 All-Russian Population Census results, 2023, *Kaliningradstat*, URL: https://39.rosstat.gov.ru/statistical_news/document/203423 (accessed 09.06.2023).

Comparing the population change in rural and urban areas reveals that the differences between the territories are minimal when it comes to core-periphery relations. In all the peripheral municipalities, both urban and rural populations experienced a decline in population from 2010 to 2023 (except the Gusev district, where the number of residents increased despite the rural population decline).

In the remote suburban zone within each of the three municipalities, changes in the urban and rural population followed a similar pattern: population decreased in the Pravdinsk and Polesk urban districts and grew in the Gvardeysk municipal district.

Different trends developed in the immediate suburban zone. In the Guryevsk, Zelenogradsk and Mamonovo municipalities, urban and rural populations increased, whilst both declined in the Baltiysk urban district. In the Svetly district, the urban population decreased against a growth in the rural population; in the Svetlogorsk and Yantarny districts, the situation was the opposite.

Figure 4 illustrates the role of natural and migratory movements in the overall urban and rural population change at a municipal level from 2010 to 2022. It highlights demographic disparities in the periphery, which witnessed a substantial decline in the overall population. The districts of Gusev and Sovetsk, the latter having no rural population, experienced a less dramatic reduction in the population size. Municipalities in the remote suburban zone showed similar population decrease trends. In contrast, all municipalities in the immediate suburban zone, including Kaliningrad, saw an increase in population.

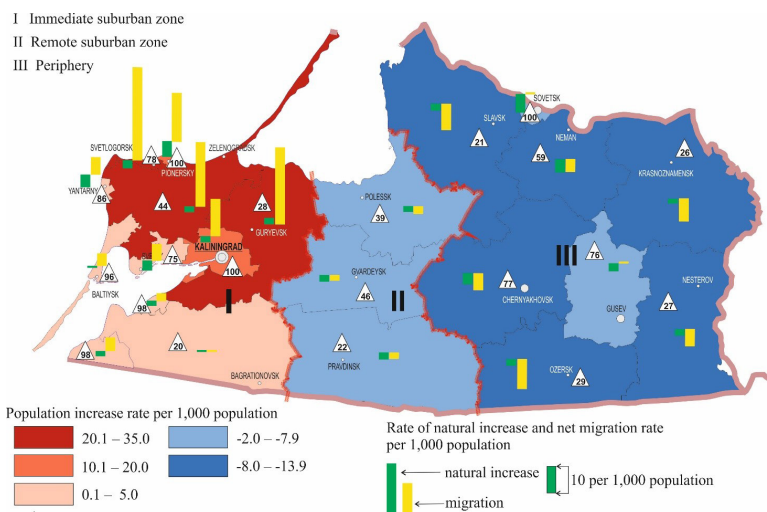


Fig. 4. The average contribution of urban population to the population growth in Kaliningrad municipalities, 2011 – 2022

Compiled based on data: Operational demographic indicators of the Kaliningrad region for January–December 2022, 2023, *Kaliningradstat*, <https://39.rosstat.gov.ru/storage/mediabank/Оперативные%20демографические%20показатели%20за%20январь-декабрь%202022%20года.pdf> (accessed 09.06.2023) ; Migration movement of the population of the Kaliningrad region in 2021 – 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023).

In all the municipalities, except the suburban Guryevsk and Bagrationovsk districts, natural population decline occurred. There was also a migration outflow from all peripheral municipalities except Gusev. However, the net migration rate was notably lower in the district than the natural population decline, contributing to an overall decrease in the region's population.

In 2022, the pandemic and the increasingly challenging international political situation caused the intensity of migration to decrease. Peripheral municipalities, such as Krasnoznamensk and Neman, had a positive net migration rate and a relatively small population decline, whereas overall from 2010 to 2023, both urban and rural populations decreased significantly in these areas (see Fig. 1). In the Ozersk municipality, migration gains exceeded natural population losses, resulting in an increase in the number of residents. However, the situation worsened in the Gusev municipality, which, largely due to the success of the General Satellite technopolis, had shown population growth in the town itself and only a slight decrease in rural areas (Fig. 5).

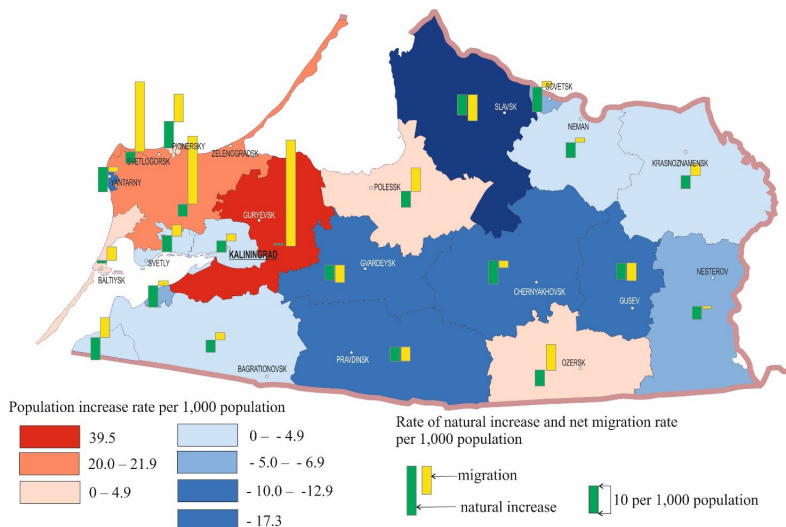


Fig. 5. Natural increase and net migration rate in the municipalities of the Kaliningrad region in 2022, per 1000 population

Compiled based on: Operational Demographic Indicators of the Kaliningrad region in January—December 2022, 2023, *Kaliningradstat*, <https://39.rosstat.gov.ru/storage/mediabank/Оперативные%20демографические%20показатели%20за%20январь-декабрь%202022%20года.pdf> (accessed 09.06.2023) ; Migration of the Population in the Kaliningrad region in 2021—2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023).

In Kaliningrad's immediate suburban zone, the most considerable contribution to population change is made by the municipalities of Guryevsk, which abuts the regional centre, and Zelenogradsk, situated between Kaliningrad and

the coastal area. The difference from the period of 2010–2021 lies in a slight decrease in population in the Bagrationovsk municipality, Svetly, Ladushkin and Mamonovo districts. In the immediate suburban zone, the Polesk municipality, unlike the Gvardeysk and Pravdinsk municipalities, has seen an increase in the number of residents. Overall, the tendency of population concentration within the immediate suburban zone of Kaliningrad remains despite the noted differences in population change in 2023 compared to 2010–2023.

The municipalities have different age and gender structures in terms of both natural and migration movements (Table 1). The disparities observed in the rural areas closely mirror the variations in the characteristics of natural and migratory population movements. There are dissimilarities between districts classified as belonging to the immediate and remote suburban zones and the periphery. Even greater differences exist between municipal and urban districts. The latter often have only a small rural population, which may reside in close proximity to towns. Additionally, childbirths may be registered not at the parents' place of residence but at the municipality's urban centre. This may explain the extremely low proportion of children aged from 0 to 15 years in some urban districts within the immediate suburban zone.

Table 1

**Distribution of men and women in the rural areas of the Kaliningrad region
by aggregated age groups, % of the total, as of 1 January 2022**

Municipal and urban districts*	Men			Women		
	C	W	R	C	W	R
<i>Immediate suburban zone</i>						
Bagrationovsk urban district	20.5	66	13.5	19.9	51.1	29.1
Guryevsk urban district	18.4	68.7	12.9	16.5	55.6	27.9
Zelenogradsk urban district	17.7	69.3	13.1	16	56.1	28
Baltiysk urban district	11.9	80.6	7.5	13.8	59.9	26.3
Ladushkin urban district	4.9	56.1	39	8	56	36
Mamonovo urban district	29.4	52	18.6	23.7	47.3	29
Svetly urban district	16.6	65	18.5	13.6	50.2	36.2
Svetlogorsk urban district	14.2	73.3	12.5	15.7	53.1	31.2
Yantarny urban district	11.7	66.9	21.4	10.7	53.1	36.2
<i>Remote suburban zone</i>						
Gvardeysk urban district	18.8	66.6	14.6	18.2	47.7	34.1
Polesk urban district	19.8	65.5	14.8	17.8	51.7	30.4
Pravdinsk urban district	23.3	62.6	14.1	19.9	49.6	30.6
<i>Northern periphery</i>						
Krasnoznamensk urban district	23.3	63.9	12.8	21.1	52.4	26.6
Neman urban district	25.7	61.2	13	23.2	48	28.8
Slavsk urban district	19.3	67	13.6	19	52.8	28.2
<i>Southeastern periphery</i>						
Nesterov urban district	22.3	66.1	11.6	18.8	54.6	26.6
Ozersk urban district	23.3	64.9	11.8	22.3	51	26.7
Chernyakhovsk urban district	23.9	62.5	13.6	19	51.4	29.5
Gusev urban district	20.7	66.5	12.7	18	56.2	25.8

The end of the Table 1

Municipal and urban districts*	Men			Women		
	C	W	R	C	W	R
<i>Kaliningrad region</i>						
Rural	20	66.8	13.2	18.3	52.8	28.9
Urban	19.3	66.4	14.3	15.7	54.5	29.8

Legend: C stands for the population younger than the working age; W, for the working age population; R, for retired population.

* There is no rural population in the Sovetsk and Pionersk urban districts.

Compiled based on: Population size by gender and age in the municipalities of the Kaliningrad region as of 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023) ; Population of the Kaliningrad region by gender and age as of 1 January 2015 – 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/> (accessed 09.06.23).

The differences between the suburban and peripheral districts can be summarised as follows. The suburban municipalities often have a higher proportion of both working-age men and women and a lower proportion of retirees.

In all the peripheral districts, except for Slavsk, the percentage of males younger than the working age is above the regional average; as for females, this proportion is below the average only in the Gusev urban district. This implies that the next 15 years will see the emergence of positive demographic trends for labour force replacement, with the number of retirees being another significant factor. In the suburban zone, there are limited opportunities for labour force replacement, as only the Bagrationovsk and Mamonovo districts have a population aged 0–15 that exceeds the regional average for both males and females.

Significant deviations from the regional average are influenced by various factors affecting the age structure. Although migration is usually the main factor, birth and age-specific mortality rates also matter. Demographic indicators, in turn, depend on different sets of factors and their quantitative differences in various municipalities.

There are certain differences in the gender structure of the region's rural and urban populations. In rural areas, there is a higher proportion of children (due to a slightly higher birth rate) and a lower proportion of the elderly population. Amongst the working-age population, the proportion of men is nearly identical in both urban and rural areas. However, for women, it is significantly higher in urban areas, which can be attributed to the migration of working-age females to towns.

Indeed, the contribution of men to the total population is considerably higher in rural areas than in urban ones. Therefore, the proportion of men in the overall population is higher in rural areas as well. In the other two aggregated groups, the percentage of men in rural and urban areas is roughly the same (Table 2).

Table 2

**The percentage of men in the aggregated age group in the rural areas
of municipalities as of January 1, 2022**

Municipal and urban districts*	T	C	W	R
<i>Immediate suburban zone</i>				
Bagrationovsk urban district	49.8	50.6	56.2	31.6
Guryevsk urban district	51	53.5	56.2	32.5
Zelenogradsk urban district	51.1	53.6	56.4	32.8
Baltiysk urban district	57.8	54.2	64.8	28
Ladushkin urban district	45.1	33.3	45.1	47.1
Mamonovo urban district	52.3	57.7	54.6	41.3
Svetly urban district	48	52.9	54.4	31.9
Svetlogorsk urban district	55.3	52.9	63.1	33.2
Yantarny urban district	51.9	54.3	57.6	39
<i>Remote suburban zone</i>				
Gvardeysk urban district	48.8	49.6	57.1	29
Polesk urban district	48.7	51.2	54.5	31.5
Pravdinsk urban district	46.6	50.6	52.5	28.8
<i>Northern periphery</i>				
Krasnoznamensk urban district	48.8	51.4	53.8	31.5
Neman urban district	46.7	49.3	52.8	28.4
Slavsk urban district	48.3	48.7	54.2	31.1
<i>Southeastern periphery</i>				
Nesterov urban district	48.7	53	53.4	29.3
Ozersk urban district	47.6	48.7	53.6	28.8
Chernyakhovsk urban district	43.7	49.4	48.5	26.3
Gusev urban district	46.4	50	50.7	29.9
<i>Kaliningrad region</i>				
Rural	49.2	51.4	55.1	30.7
Urban	46.4	51.5	51.3	29.4

Legend: T stands for total; C, for the population younger than the working age; W, for the working age population; R, for retired population.

Compiled based on: Population size by gender and age in the municipalities of the Kaliningrad region as of 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023); Population of the Kaliningrad region by gender and age as of 1 January 2015–1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/> (accessed 09.06.2023).

The municipalities differ significantly in the gender structure of the rural population. The low proportion of men in the Ladushkin urban district and the high proportion in the Mamonovo urban district are not indicative, as these random deviations from the average can be a result of their small population sizes. The same factor seems to be responsible for the relatively high proportion of elderly men in these municipalities and the Yantarny urban district. In the other municipal districts, the proportion of males fluctuates between 49 and 54% amongst those below working age, ranging from 28 to 33% amongst retirees.

The gender structure of rural populations depends crucially on the economic specialisation of their places of residence and the economic situation in the district centres. In the immediate suburban zone, it is also greatly affected by the workforce needs of Kaliningrad. For example, the Baltic urban district has the highest percentage of men (65 %) among working-age individuals because of its coastal location, an economic specialisation of the district centre that relies on male labour and the nearby villages functioning as ‘dormitory’ areas.

The age-gender structure of municipalities determines the possibilities for intergenerational workforce transition. Workforce transition coefficients are presented in Table 3, indicating the number of individuals entering the working age bracket each year per 1,000 new retirees, with age-specific mortality neglected. The coefficient value is more favourable for the rural area than the urban area: 950 against 850. In eight municipal districts, it significantly exceeds 1,000, ensuring a youthful labour surplus, even when accounting for age-specific mortality. Amongst these are five out of the seven peripheral municipal districts that have rural populations. Consequently, the peripheral municipalities, except Slavsk and Chernyakhovsk, have added potential for out-migration to urban areas or the more challenging creation of jobs in rural areas. Amongst the municipalities with a substantial share of rural population, the Guryevsk urban district, which skirts Kaliningrad, is least likely to reap dividends from intergenerational workforce transition.

Table 3

**Workforce transition coefficients* for 2024,
based on the age-gender structure as of January 1, 2022,
with age-specific mortality neglected**

Municipal and urban districts	Urban population			Rural population		
	Total	Men	Women	Total	Men	Women
<i>Immediate suburban zone</i>						
Bagrationovsk urban district	1010	630	1470	990	1020	960
Guryevsk urban district	1050	1200	920	770	720	840
Zelenogradsk urban district	780	890	670	840	850	820
Baltiysk urban district	810	880	760	1170	1630	800
Ladushkin urban district	860	1560	480	670	500	780
Mamonovo urban district	810	690	960	930	800	1080
Svetly urban district	1060	1130	980	730	960	540
Svetlogorsk urban district	670	830	520	830	740	930
Yantarny urban district	920	740	1140	500	330	1000
<i>Remote suburban zone</i>						
Gvardeysk urban district	510	940	330	1210	1120	1300
Polessk urban district	1030	1050	1020	910	1000	800
Pravdinsk urban district	1200	1000	1630	1120	1230	1030
<i>Northern periphery</i>						
Krasnoznamensk urban district	1230	1930	800	1180	980	1370
Neman urban district	950	1070	840	1190	1100	1270
Slavsk urban district	710	1080	500	940	810	1080

The end of the Table 3

<i>Southeastern periphery</i>						
Nesterov urban district	900	730	1070	1210	1170	1270
Ozersk urban district	750	860	650	1050	810	1340
Chernyakhovsk urban district	820	770	860	840	820	870
Gusev urban district	1050	1290	860	1450	1590	1320
Kaliningrad region	850	920	790	950	920	980

Comment: *the number of individuals entering working age per 1,000 new retirees. In 2024, individuals who turn 16 will enter working age, whilst men who turn 63 and women who turn 58 will retire. See: Retirement age in 2023: when men and women retire. URL: <https://ria.ru/20210409/pensiya-1727617636.html> (accessed 09.06.2023).

Values of 1,000 and above are highlighted in bold.

Compiled based on: Population size by gender and age in the municipalities of the Kaliningrad region as of 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023); Population of the Kaliningrad region by gender and age as of 1 January 2015–1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/> (accessed 09.06.2023).

Agricultural production dynamics and industry consolidation

A monograph by Gintarė Pociūtė-Sereikienė provides a detailed analysis of the situation in agriculture [28]. Below, more recent data are presented comparing the dynamics of agricultural production and population in the Kaliningrad region.

Figure 6 shows that after a fall in the regional agricultural output to 0.46 % of the national total by 2001 (at the time, the region's rural population accounted for 0.55 % of that living across the country), the trend reversed as early as 2002: agricultural production in the region began to grow at a faster rate than the national average. The region's contribution to the total national output was increasing rapidly despite occasional weather-related challenges. In 2005, the region's contribution to national agricultural production (0.55 %) surpassed its proportion of the national rural population (0.54 %), yet it remained lower than its share of the total population (0.66 %). By 2021, this figure had risen to 0.73 %, surpassing the region's share of the rural population (0.62 %, compared to 0.55 % in 2005) and the national total population (0.70 %).

By 2022, grain and livestock production in the Kaliningrad region had increased dramatically compared to 2005. Yet, there was a slight decline in the production of potatoes and vegetables (Table 4). The growth was driven by large organisations entering the agricultural sector, with the production of all types of products listed in Table 4, as well as rapeseed, witnessing a significant increase.

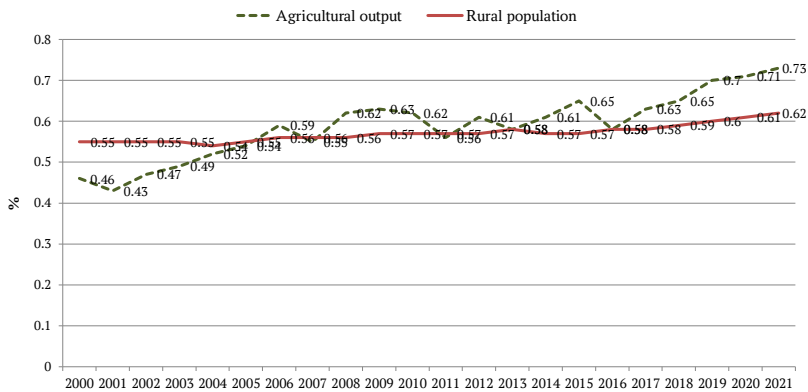


Fig. 6. Changes in the Kaliningrad region's contribution to the national rural population and agricultural output, 2000—2021, %

Compiled based on: Regions of Russia. Socioeconomic indicators, 2023, *Rosstat*, URL: <https://rosstat.gov.ru/folder/210/document/13204> (accessed 15.06.2023).

Table 4

Agricultural production dynamics in the Kaliningrad region by producer type, 2022 on 2005, %

Type of produce	Organisations	Smallholdings	Farms and individual entrepreneurs	Total
Grain (after cleaning and drying), 1,000 tonnes	299	468	194	280
Potato, 1,000 tonnes	374	52	245	96
Vegetables, 1,000 tonnes	430	37	573	83
Meat (dressed weight), 1,000 tonnes	510	50	139	370
Milk, 1,000 tonnes	342	64	138	174
Eggs, million	130	89	13	123

Compiled based on: the Kaliningrad region in digits. Statistical book. 2008. Kaliningrad: Kaliningradstat; the Kaliningrad region in digits. Statistical digest. 2023. Kaliningrad : Kaliningradstat.

The production of all types of products by smallholdings declined with the exception of grain, whose volume was not substantial to begin with. The decrease in the production of potatoes and vegetables by smallholdings was not compensated for by other types of producers.

The contribution of farms to the production of all almost types of produce grew, except for the plummeting egg production. Yet, it increased at a slower rate than that of organisations, with the notable exception of vegetables.

The degree of industry consolidation in the Kaliningrad region is above the national average, with organisations taking centre stage. In 2000—2021, concentration was growing in the region, as is evident from Table 5 showing the growing contribution of organisations to the total output of grain, potatoes, vegetables,

meat, milk and eggs. In this respect, the Kaliningrad region far outstripped the national average. As the table suggests, organisations take the lead in the production of all products considered except for potatoes and vegetables, where their contribution increased nevertheless between 2000 and 2021.

Table 5

Changes in the contribution of different types of producers to agricultural output, 2000–2021

Type of produce	Contribution to the total output of the product, %					
	Organisations		Smallholdings		Farms and individual entrepreneurs	
	2000	2021	2000	2021	2000	2021
Agricultural produce						
Russia	43.4	59.2	53.6	25.4	3.0	15.4
Kaliningrad region	40.9	70.8	53.0	21.8	6.1	7.5
Grain (after cleaning and drying)						
Russia	90.7	68.6	0.9	1.1	8.4	30.3
Kaliningrad region	80.9	89.3	0.4	0.3	18.7	10.4
Potato						
Russia	6.5	22.2	92.4	63.9	1.1	13.9
Kaliningrad region	10.6	28.7	83.6	46.8	5.8	24.5
Vegetables						
Russia	19.9	28.4	77.9	51.3	2.2	20.3
Kaliningrad region	8.2	14.2	85.4	46.1	6.4	39.7
Livestock and poultry (dressed weight)						
Russia	40.3	81.2	57.9	15.6	1.8	3.2
Kaliningrad region	50	94.4	45.3	4.2	4.7	1.4
Milk						
Russia	47.3	56.2	50.9	34.7	1.9	9.1
Kaliningrad region	37.6	61.8	56.3	29.6	6	5.1
Eggs						
Russia	70.9	81.2	28.7	17.6	0.4	1.2
Kaliningrad region	71.9	87	27.0	12.9	1.1	0.1

Compiled based on: Regions of Russia. Socioeconomic indicators, 2023, *Rosstat*, URL: <https://rosstat.gov.ru/folder/210/document/13204> (accessed 15.06.2023) ; Rossiyskiy statisticheskiy ezhegodnik, 2023, *Rosstat*, URL: <https://rosstat.gov.ru/folder/210/document/12994> (accessed 15.06.2023) ; The Kaliningrad region in digits, 2023, *Kaliningradstat*, URL: https://39.rosstat.gov.ru/statistical_compilations (accessed 15.06.2023).

Smallholdings make the most substantial contribution to the production of potatoes, vegetables and milk. In 2022, they accounted for 19.4 % of the total agricultural output, outperforming farms and individual entrepreneurs (8.4 %). The latter developed at a slower rate in the Kaliningrad region than across the country. They are most visible in the production of labour-intensive crop produce: vegetables and potatoes, accounting for 42 % and 25 % of regional total output respectively. Farms and individual entrepreneurs produce 13 % of the grain in the region.¹

¹ The Kaliningrad region in digits. Statistical digest 2023, 2023, Kaliningrad : Kaliningradstat, 138.

Territory-specific features of rural settlement

On 1 January 2022, there were 1,075 villages in the Kaliningrad region: 20 of them were unpopulated,¹ and four were former urban-type settlements. There were 23 urban locations, including 22 towns (21 of which were centres of eight urban districts and twelve municipal districts) and one urban-type settlement, a centre of an urban district. Six out of nine urban districts had a rural population.

The immediate suburban zone has highly populated rural settlements (Fig. 7). In most of the municipalities, the number of residents per village is above the national average, with the exception of the Ladushkin, Mamonovo and Baltiysk urban districts with small rural populations. Thirty villages have a population of over 1,000 people; two, about 5,000—6,000; nine, about 2,000—4,000.

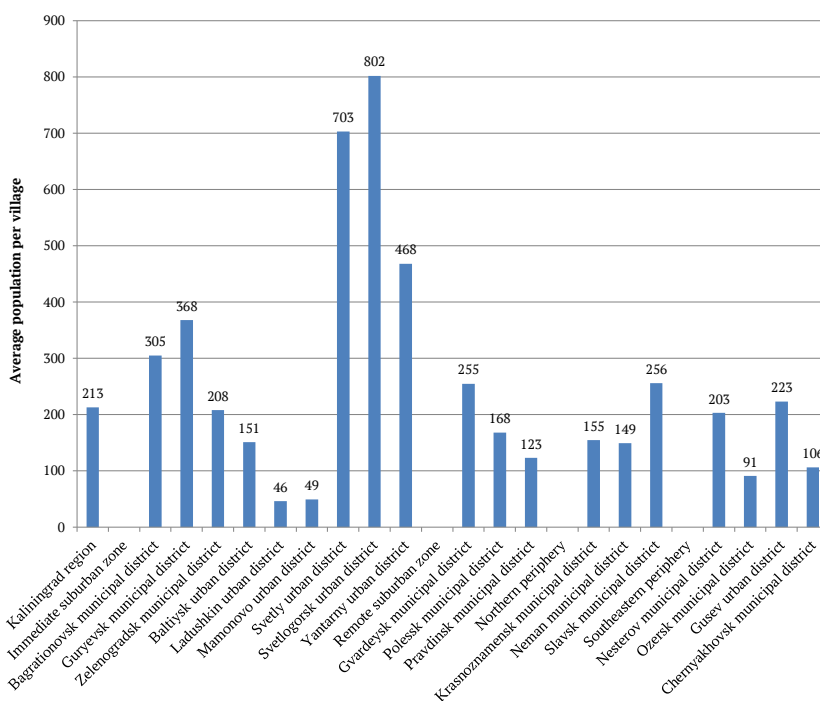


Fig. 7. Average number of residents per village in Kaliningrad municipalities on 1 January 2022, people

Source: Population of urban and rural settlements in the Kaliningrad region. 2022, Kaliningrad : Kaliningradstat.

The immediate suburban zone and the periphery have a smaller number of residents per village. In three municipal districts of the immediate suburban zone, there are five villages with a population of over 1,000 people (three of them have more than 2,000 residents, including two former urban-type settlements which have lost their status after the closure of the dominant enterprise).

¹ Population of urban and rural settlements in the Kaliningrad region, 2022, Kaliningrad : Kaliningradstat.

In the peripheral municipalities, six villages have a population of over 1,000 people; one over 2,000. The most densely populated peripheral district is Slavsk, located on polder lands drained by canals, with dam-bound settlements along the canal banks. The least densely populated is the Ozersk urban district in the southern part of the region. It is situated in a hilly terrain with irregular-shaped land parcels and small settlements.

In addition to a larger number of residents per settlement, villages in the immediate suburban zone have a higher density of rural population and usually shorter average distances between neighbouring locations, i.e., a smaller area per settlement (Fig. 8). The Ladushkin and Mamonovo urban districts are once again exceptions. The peripheral districts have lower population density and typically a larger area per settlement. The remote suburban zone falls within the middle range in terms of these measures.

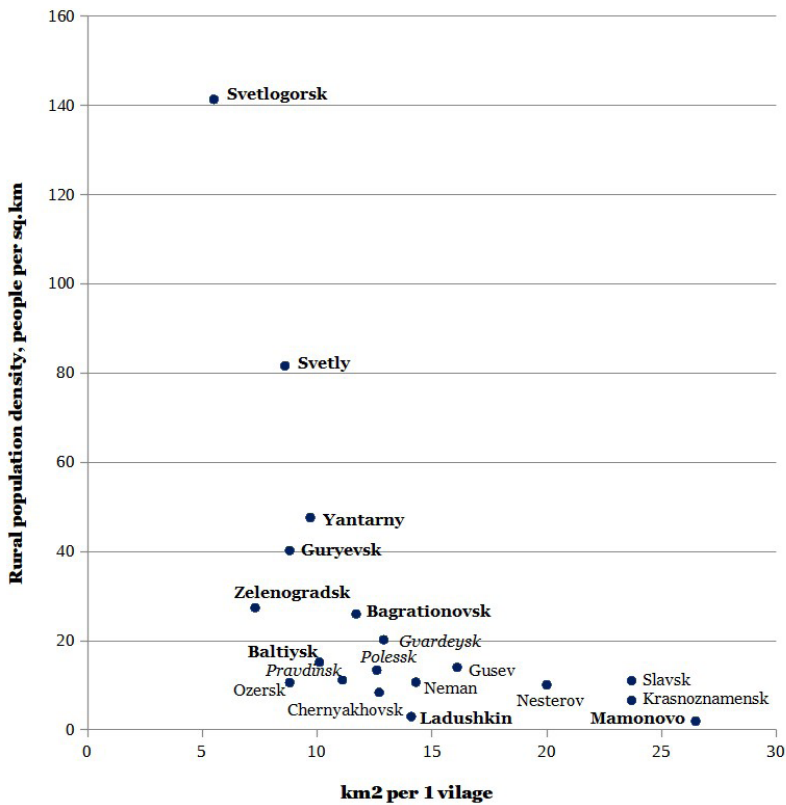


Fig. 8. Density of rural settlements

Legend: the districts of the immediate suburban zone are highlighted in bold, those of the remote suburban zone are in italics, and the peripheral districts are in regular font.

Comment: the area of the Zelenogradsk urban district used in the calculation does not include the area of the lagoons.

Compiled based on: Official statistics, 2023, *Kaliningradstat*, URL: <https://kaliningrad.gks.ru/ofstatistics> (accessed 01.05.2023).

Conclusion

The following conclusions can be drawn from the present study.

1. The Kaliningrad region has not been immune to the characteristic trend of current global development: its economy and settlement system are polarising, with the population concentrating in agglomerations and the periphery experiencing economic decline.

2. At the national level, polarisation is a result of large holding companies accounting for an increasing proportion of agricultural production, declining employment in the industry in the periphery, population outflow from peripheral municipalities and economic diversification in the rural areas.

3. In the case of Kaliningrad, the factors at play are as follows:

— the growing rural population of the urbanised western part of the region, attributed to a positive net migration rate and the rural population decline in the eastern periphery, which is occurring against the background of declining employment in agriculture;

— intensive rural-urban labour exchange, particularly in Kaliningrad's immediate suburban zone;

— the age-gender structure of the population in the periphery ensuring an intergenerational workforce transition without losses or even a youthful labour surplus, which is not the case in most municipalities of the suburban zone;

— the periphery underperforming the suburban zone in terms of social infrastructure development and eastern peripheral municipalities having, as a rule, more modest opportunities than western suburban districts for forging rural-urban ties and villages benefiting from the urban infrastructure;

— the absence of mutual horizontal ties between economic entities.

At the municipal level, the districts exhibit profound socioeconomic differences, partly accounted for by their geographical position. A beneficial factor is that each municipality has at its core a town that provides services, albeit not always in sufficient amounts, to surrounding villages. Here, it is advisable not to limit oneself to conventional socioeconomic regulation but to embrace social innovations, which cannot be introduced by villages alone (it is worth noting that opinion polls show that rural residents appreciate such innovations). In some areas, social innovations have already gained currency. These are household-driven rural tourism, production of new crops (asparagus, bog bilberry, mushrooms, etc.), breeding of new animals (quails, ostriches, rabbits, etc.), cow and goat cheese manufacturing, etc. Moreover, rural schools and libraries have recently become visible cultural actors.

The Kaliningrad region has been paying particular attention to the economic and social development of rural areas, particularly in the eastern municipalities. Villages have received both federal and regional financial aid.¹

¹ Report by Governor Anton Alikhanov on the regional budget for 2023 and the 2024–2025 planning period. *Government of the Kaliningrad region*. URL: <https://gov39.ru/poslanie/doklad2023/> (accessed 15.06.2023).

The Kaliningrad region is running 22 governmental programmes, two of them focusing on rural development: Development of Agriculture and Comprehensive Development of Rural Areas.¹ A branch of the Moy Biznes entrepreneur support centre operates in the region, overseeing amongst other things the Kaliningrad Regional Microfinance Fund.²

Eastern municipalities receive special treatment: within the Vostok programme seeking to attract investment and create jobs in the area long-term (up to 10 years) loans ranging from 2 to 50 million roubles are provided on a competitive basis with a preferential interest rate of 1%.³

There is a need for a regional spatial development strategy aligned with a new socio-economic development strategy, which is also yet to be developed. The documents should include the recommendations outlined in this article concerning the development of the region's rural areas, considering their territorial distinctions. When devising the strategies, it is advisable to cover both the conventional strategic objectives of regional development and relevant research findings. Appendix 1 lists measures pertaining to the rural areas of the region as a whole, whilst Appendix 2 outlines proposals for the immediate suburban zone and the periphery.

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Appendix 1

Rural development support measures to be included in the Kaliningrad region's strategic and spatial planning documents, based on the findings of the study

Regulation object	Suburban zone	Periphery
Economy and social impact industries	Mobile communication and Internet infrastructure development, modernisation of existing networks; spreading digital literacy	
	Implementation of social innovations adjusted to local specifics, incentivising 'pioneers of spatial exploration'	

¹ Consolidated annual report on the progress and effectiveness assessment of state programmes in the Kaliningrad region for the year 2021, *Government of the Kaliningrad region*. URL: <https://gov39.ru/upload/iblock/d48/cfebeejuostc4bw3n7xstrkzzan4jc3s/Svodnyy-godovoy-doklad-za-2021-god.pdf> (accessed 15.06.2023).

² Moy Biznes centre for entrepreneurship support in the Kaliningrad region, URL: <https://mbkaliningrad.ru/> (accessed 15.06.2023).

³ The Vostok programme, *Moy Biznes*, URL: <https://mbkaliningrad.ru/vostok/> (accessed 15.06.2023).

The end of the Appendix 1

Regulation object	Suburban zone	Periphery
Social impact industries	Establishment of library-based cultural and community centres, community centres, clubs, etc. to implement educational and cultural community programmes (digital literacy, entrepreneurship, self-employment initiatives), including in remote formats. Arranging exhibitions and organising patriotic and educational events at the centres	
	Enhancement of measures to support families with young children	
	Strengthening measures of social support for elderly rural residents	
	Full gasification of rural areas; wider coverage with centralised water supply	
	Online preparation of rural youth for enrolment to universities and vocational schools	
	Hands-on training and education in school to meet the needs of the labour market	
Economics	Providing incentives for agricultural consumer cooperatives engaged in crop production and livestock breeding, as well as cooperative centres for machinery repair and maintenance	
	Assistance to the development of rural tourism; tourism courses for rural residents	
	Putting idle land to economic use by allocating land plots to farms and individual entrepreneurs	

Appendix 2

**Rural development support measures for suburban zones
and the periphery to be included in the Kaliningrad region's strategic
and spatial planning documents, based on the findings of the study**

Regulation object	Suburban zone	Periphery
Settlement	Improving rural infrastructure, turning villages into cottage communities	Development of rural-urban partnerships
	Development of dormitory suburbs around Kaliningrad and resort towns	Creation of ecological tourism zones, including rural areas with villages and cultivated land
	Incorporation of a Kaliningrad agglomeration area and a resort zone into the territorial planning scheme	Enhanced role of districts (Sovetsk, Chernyakhovsk) and municipal centres in household and social services provided for rural residents

The end of the Appendix 2

Regulation object	Suburban zone	Periphery
Economy and social impact industries	Ensuring sustainable passenger transportation within the suburban zone	Expanding the network of inter-municipality and inter-settlement bus services and creating the necessary infrastructure in villages (bus stops, pedestrian crossings, etc.)
		Accelerated digitisation of the periphery; development of banking infrastructure (ATM networks, payment terminals)
Social impact industry	Housing and social infrastructure for accommodating part of the rural population of the periphery	Career counselling at rural schools in view of potential migration to the suburban zone towns
		Creating a positive image of rural life in the eastern part of the region in the media and online
Economy	Remote work opportunities for some rural residents employed in urban areas.	Creating remote employment opportunities for residents in peripheral areas and providing training to rural residents and entrepreneurs in remote work methods.
	Relocating part of production facilities from Kaliningrad to the surrounding rural areas	Diversification of the economic structure: stimulating non-agricultural activities and the manufacturing of new types of products
	Support for agri-food clusters and value-added chains in the agro-industrial complex	Support for production cooperatives engaged in equipment maintenance and repairs, fertilizer supply, and plant protection product manufacturing
	Import substitution: creating facilities for equipment maintenance facilities, seed production and animal breeding; creation of a breeding and genetic centre for poultry breeding	Additional funding for programmes supporting small-scale farming in rural areas. Expansion of the 'East' programme to create jobs in the periphery, including the utilisation of social innovations
		Merit-based beneficial loans for small production companies may be supplemented with allocating land plots

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