



Methodological Basis of Forming Spatial Poles of the Economic Growth in the Rural Areas

Alexander Sergeevich Denisov, Valerij Nikolaevich Papelo, Bogdan Anatol'evich Kovtun, Maksim Sultanovich Vyshegurov, Anna Nikolaevna Goloshevskaya

Abstract: *The current socio-economic development of the Siberian village and its arrears from the standards of the population's life quality require rural territories to change over to the sustainable development. This change assumes the depth and consistency of the innovative structural, organizational and economic, and legal transformations that are forthcoming in the economy and social area of rural territories. It is impossible to carry out such modernization simultaneously and everywhere. The authors of the study substantiate the methodology of a phased approach based on the theory of "poles" or growth "areas".*

The methodology has been offered to form rural growth poles. It has been developed by using the cartographic method based on the principles of identifying growth centers and developing adjacent areas as economic satellites whose socio-economic development is related to the "poles" development.

During the study, the authors have offered to single out seven rural poles of the social and economic growth in the Novosibirsk Region as promising centers of development, concentration of economically active population where it is possible to form territories of advanced development.

Keywords: *rural area, state policy, economic potential, employment and income of the population, life quality, social infrastructure, growth poles, centers of economic attraction, sustainable development.*

I. INTRODUCTION

Rural areas face the problems associated with the aging population, high migration, and underdeveloped infrastructure. In its turn this worsens the ability to efficiently manage the development of territories and businesses. Due to this, it is necessary to improve state and municipal management, improve the investment attractiveness of rural regions in the innovative economy, and use project management to solve socio-economic problems.

Manuscript published on November 30, 2019.

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This study aims at developing methodological fundamentals for forming mechanisms for rural territories to change over to the sustainable socio-economic development.

II. PROPOSED METHODOLOGY

A. Objects and Methods

The object of the study is the rural territorial socio-economic systems of the sub-federal level of government.

During the study, a set of basic study methods was used: abstract-logical (when setting the goal and objectives of the study, analyzing and summarizing theoretical principles and practical results on the issues under consideration), economic and statistical (when identifying trends in the agricultural sector, assessing the state and efficiency of the rural economy, defining problems of the socio-economic development of rural areas), monographic (when studying the existing problems on the study topic), economic and mathematical, and program-oriented and computational-constructive (when substantiating the areas for the socio-economic development of rural territories).

III. RESULT ANALYSIS

A. Analysis of the demographic situation in rural areas

Among the regions of the Siberian Federal District, the Novosibirsk Region is one of the most populated territories occupying the area of 177.8 thous. km² (3.5 % of the total area of the Siberian Federal District). The population density of the region is 15.4 people/km², while the average population density in the Siberian Federal District is 3.8 people/km².

By its population, the Novosibirsk Region is one of the twenty largest regions of Russia with the fifteenth place in the Russian Federation and the second in the Siberian Federal District (after the Krasnoyarsk Territory). As on January 1, 2017, the total population in the Novosibirsk Region amounted to 2,779.6 thous. people, including the urban population – 2,193.8 thous. people, or 78.9 %, and the rural population – 585.8 thousand people, or 21.1 % (Table 1).

Table 1: Population of the Novosibirsk Region, thous. people [1-9]

Item	Years								2017	
	1990	1995	2000	2005	2010	2015	2016	2017	As compared to 1990 (+;-)	in % compared to 1990
Population	2,742.1	2,732.4	2,725.5	2,666.0	2,661.6	2,746.8	2,762.2	2,779.6	+37.5	101.4
Urban population	2,040.0	2,020.6	2,034.1	2,012.5	2,048.0	2,156.8	2,174.9	2,193.8	+153.8	107.5
Rural population	702.1	711.7	691.4	653.5	613.6	590.0	587.4	585.8	-116.3	83.4
Share of urban population, %	74.4	74.0	74.6	75.5	76.9	78.5	78.7	78.9	-	-
Share of rural population, %	25.6	26.0	25.4	24.5	23.1	21.5	21.3	21.1	-	-

As compared to 2016, the population of the Novosibirsk Region increased by 17.4 thous. people (0.6 %). The number of inhabitants of the region increased due to the increase in the number of urban residents by 18.9 thous. (0.9 %) and the decrease in the number of rural residents by 1.6 thous. (0.3 %).

From 1990 to 2017 the rural population of the region had decreased by 116.3 thous. people (this is comparable to the population of three municipal districts of the Novosibirsk Region that have the average population). The rural population in the region is declining mainly for two reasons – natural decline (34.3 %) and migration (65.7 %).

The region includes 490 municipal entities, including five urban districts, 30 municipal districts, and 455 settlements (26 urban and 429 rural ones). As on January 1, 2018, in the Novosibirsk Region 57 % out of 429 rural settlements had the population of less than 1,000 people, including 36 % of the municipal entities with the population of less than 500 people.

In most rural settlements there are several settlements the distance between which reaches 40 kilometers. There are rural settlements where there are up to 11 settlements.

The density of the rural population decreases depending on the remoteness from the regional center and major highways. The natural factor also has a considerable impact on this process, which remains one of the main factors in the spatial organization of the area.

The average number of people from rural municipal entities is 1,375. On average they live in 3.5 settlements. However, although there is a fairly high index of the average size of the population, rural settlements of the region vary considerably by the number of people living in them – from 102 people in the Potyukanovsky village council of the Northern Region to ten thousand people from the Verkh-Tulinsky, Baryshevsky, and Krivodanovsky village councils of the Novosibirsk Region.

During 2012 – 2017 the number of settlements had been stable. However, the number of people living in villages and small localities changed rapidly. Therefore, in the group of settlements with the population from one to ten people, the number of settlements increased from 71 to 93, mainly due to the decrease in the population in the group of settlements with the population from 11 to 50 people. The same phenomenon was recorded in the group of settlements with the number of inhabitants from 101 to 200 people whose number decreased by 18 settlements, while in the group of settlements from 51 to 100 people the number increased from

203 to 220 settlements.

These circumstances indicate that the population is intensively migrating from small localities and villages to larger settlements where there is work.

During the analysis, a group consisting of six settlements with more than 20 % of the population reduction was singled out. On average, in the rural municipal entities of the Novosibirsk Region the population annually reduces by 2.2 %.

The share of the able-bodied population in the structure of the population by municipal entities for 2005 – 2017 had increased by 2 %, from 54 % in 2005 up to 56 % in 2017. In the structure of the population the share of retired people remained virtually unchanged. Therefore, for 2005 – 2017 their share had increased by only 1 %, and in 2015 amounted to 26 %. Over ten years, the share of children had decreased by 3 %.

The location of rural settlements in the region has a pronounced specificity. As a result, there is a peculiar polarization of regions, mainly with small settlements and large settlements. The basis for the settlement of the eastern and southern zones of the Novosibirsk Region is a relatively dense network of urban settlements, western and northern – mainly rural settlements.

The deserted and sparsely populated area covers almost the entire northern part of the region; rural settlements without any population and with the population of up to ten people are concentrated here. The largest share of such settlements is found in the Northern (29.4 %) and Kolyvansky (27.6 %) districts as compared with the average indicator in the region – 9.6 %.

B. Provision of rural areas with objects of social engineering infrastructure

The low population of some settlements often does not make it possible to form a sufficient basis for the independent socio-economic development, and is the reason of the uneven allocation of local budget expenditures between the costs of maintaining municipal authorities and solving local issues. This problem is especially relevant for rural settlements.

The decline in agricultural production, jobs reduction, low income of people employed in agriculture caused the outflow of population from rural settlements, and the decrease in the economic base for the development of the territory.

The number of objects of social engineering infrastructure in rural areas continues declining

Table 2: Dynamics of Developing Social Infrastructure in Rural Areas of the Novosibirsk Region [10]

Item	Years								2017 in % as to 2010
	2010	2011	2012	2013	2014	2015	2016	2017	
Number of cultural and leisure institutions, units	1,061	1,050	1,053	1,034	1,035	1,023	1,029	1,017	95.9
Number of nurseries and kindergartens, units	309	291	284	275	268	236	226	221	71.5
Number of medical and obstetric centers, units	946	940	936	923	922	915	911	911	96.3
Length of roads, thous. km	12.79	12.74	12.74	12.76	12.78	12.77	12.74	12.73	99.9
Length of water pipelines, km	5,993	6,028	6,071	6,211	6,326	6,353	6,435	6,445	107.5

Thus, for the period from 2010 to 2017, the number of medical and obstetric centers had decreased by 35 units (from 946 down to 911); cultural and leisure institutions – by 44 units (from 1,061 down to 1,017), schools – by 87 units (from 774 down to 687, despite the fact that the number of pupils increased by 1,961 people). The number of nurseries and kindergartens decreased by 83 units (from 304 down to 221), but the number of children in them increased by one third.

From 2015 to 2017 in 17 districts of the Novosibirsk

Region, 28 medical and obstetric centers were built instead of the ones that were no longer usable, two schools in two regions and ten nurseries and kindergartens in four regions of the region were constructed, 80.2 km of roads, 237 km of water pipelines were built, one cultural center was put into operation, 29.3 thous. m² of housing were built for 343 families – agricultural and social workers, including 20.2 thous. m² for 238 young families and young professionals (Table 3).

Table 3: Dynamics of Introducing Main Objects of Social Infrastructure in Rural Areas of the Novosibirsk Region [10]

Item	Years								2017 in % as to 2010
	2010	2011	2012	2013	2014	2015	2016	2017	
Number of introduced cultural and leisure institutions, units	0	2	5	6	7	6	22	1	49
Number of introduced nurseries and kindergartens, units	0	0	1	3	7	8	1	1	21
Number of introduced nursery places, units	0	2,021	2,165	1,838	833	1,463	115	320	8,755
Number of introduced medical and obstetric centers, units	0	0	5	1	0	0	3	16	25
Number of introduced roads, km	10.4	28.9	47.6	48	38	24.4	16.8	39	253.1
Roads to be constructed, km	2,861	2,825	2,734	2,678	2,592	2,528	2,504	2,466	-
Residence houses put into use, thous. m ²	327.9	330.9	340.8	415.6	688.9	679.6	551.4	578.7	3,913.9

The analysis of the measures taken by the Ministry of Agriculture of the Novosibirsk Region to improve housing conditions since 2013 showed that only 55 % of the housing was built in rural settlements that were not district centers. There are several reasons for this state of affairs – this is the lack of facilities in rural areas for a comfortable life and work and the low level of incomes of the rural population.

Over the recent years, funding for housing construction under the Sustainable Rural Development Program has been reduced several times in rural areas of the region. The new construction virtually stopped according to Decree of the Governor of the Novosibirsk Region No. 102 dated 01.04.2010 “On State Support of Real Estate Developers

Constructing Individual Residential Buildings in Municipal Areas of the Novosibirsk Region”. As a result, 45 % of the housing is built in district centers, contributing to the population migration from remote villages to district centers of municipal regions.

C. Employment and income of the rural population

Since the middle of the 1990s, in rural areas there has been the imbalance in rural labor markets: the redundancy of unused labor force combined with the deficit of personnel in necessary professions. Nowadays, agricultural organizations lack specialists who have secondary and higher education (Table 4).

Table 4: Dynamics of the Number of Workers Employed in Agriculture, Forestry and Fishery Complexes of the Novosibirsk Region [10, 11]

Item	Years						2017 in % as to 2012
	2012	2013	2014	2015	2016	2017	
Average number of people working in agriculture, persons	41,965	37,030	34,336	32,035	30,842	30,900	73.6
Average number of people working in the forestry complex, persons	2,344	2,630	2,956	3,022	3,450	2,898	123.6
Average number of people working in the fishery complex, persons	2,724	2,882	2,880	3,107	3,213	3,261	119.7

According to the Territorial Authority of the Federal State Statistics Service in the Novosibirsk Region, the income of rural households was 20 % lower than that of urban ones, and amounted to RUB 457.8 thous. a year in 2017, as compared to RUB 569.1 thous. in urban settlements.

Over the period under study, the number of people

engaged in the economy of the Novosibirsk Region had remained relatively stable on the background of the permanent growth of income per capita that increased by 39.6 % in 2016 as compared to 2011 from RUB 18,244 up to RUB 25,473 per person per month (Table 5).

Table 5: Ratio of the Average Monthly Nominal Accrued Wages of Workers in the Novosibirsk Region by Type of Economic Activity as to the Average Regional Level, % [12]

Types of economic activity	Years					
	2011	2012	2013	2014	2015	2016
Agriculture, hunting, and forestry	50.1	49.4	50.5	53.5	55.8	56.4
Fishery	43.1	45.1	60.9	60.2	66.8	63.5

D. Analysis of the economic potential of rural areas

The Novosibirsk Region is relatively poor in hydrocarbon resources. At present, 464 deposits of common mineral resources were registered in the state, including 221 deposits

of building materials with total reserves of 933.6 mln. m³.

From 2012 to 2017 the extraction of sand and gravel mix had increased by 49.2 %, and building limestone by 22.9 %. The extraction of brick raw materials (-34.0 %) and building stones (-21.8 %) had considerably reduced (Table 6).

Table 6: Extraction of Common Minerals in Rural Areas of the Novosibirsk Region, thous. m³ [11]

Item	Years						2017 in % as compared to 2012
	2012	2013	2014	2015	2016	2017	
Building stones	6,333	6,096	5,696.2	4,901.1	4,283.86	4,951.86	78.2
Building limestones	346	424	364	386.1	375	425.1	122.9
Sands and sand and gravel mix	2,634	4,422	5,023	4,324.93	4,019.64	3,931.22	149.2
Brick raw materials	961	963	927.1	902.3	634.3	634.1	66.0

One of the most important elements of the economic potential of the Novosibirsk Region is forest resources. Forests are located in all 30 municipal regions and occupy about 6.5 million hectares, which is 36 % of the region. The largest area of the forest fund is concentrated in the northern regions: in Kyshtovsky, Northern, Ubinsky, and Kolyvansky regions where there are 59 % of the forests, and 20 % of the forests of the region are found in the largest Northern region.

The area of the water fund of the Novosibirsk Region is

650 thous. ha, and it holds the third place in Russia. About 2,000 lakes out of 4,500 ones in the region are of fishery interest, despite their small size and freezing.

Agricultural production is one of the largest and most important sectors of the economy in the Novosibirsk Region. 465 enterprises are involved in agriculture. During two and a half decades in the Novosibirsk Region the grain production has remained relatively stable (Table 7).

Table 7: Dynamics of Using Arable Land and Production of Grain in Farms of the Novosibirsk Region [13]

Indicators	Years				2016	
	1990	2000	2010	2016	+/- as compared to 1990	in % as compared to 1990
Area of agricultural lands, thous. ha	7,846.9	7,768.0	7,536.6	7,534.3	-312.6	96.0

Arable land, thous. ha	3,662.0	3,643.2	3,601.4	3,105.8	-556.2	84.8
Area under crops, thous. ha	3,442.9	2,718.2	2,326.2	2,350.9	-1,092.0	68.3
Grain crop acres, thous ha	1,976.7	1,739.5	1,562.0	1,549.5	-427.2	78.4
Area of feed crop acres, thous. ha	1,672.9	873.9	683.5	700.6	-972.3	41.9
Area of fallow land, thous ha.	132.1	455.0	503.0	501.9	369.8	379.9
Grain production, thous. t.	2,532.3	3,002.0	2,672.3	2,566.0	33.7	101.3
Grain yield, c/ha	12.8	17.2	17.1	16.6	3.8	129.7

However, over the period under analysis, the area of agricultural land had decreased by 4 %, the area of arable land – by 15.2 %, the cultivated area – by 31.7 %, and the grain yield has increased by 29.7 %

Agricultural enterprises account for 62 % of the agricultural output. In 2017 the gross agricultural output amounted to RUB 98.6 bln. In the volume of gross agricultural production, livestock production is 56.9 %, and crop production – 43.1 %.

Small forms in the region’s agriculture are represented by

233 thousand personal subsidiary farms, 2,420 peasant farms (farms), and 20 agricultural consumer cooperatives.

During 2012 – 2017, 172 peasant farms had been established, state support had been provided to 77 family livestock farms and one consumer cooperative. It is especially important to develop this area because due to its development, jobs are created in those settlements where there is no large employer who also needs additional measures of state support (Table 8).

Table 8: Support of Beginning Farmers, Family Livestock Farms and Agricultural Consumer Cooperatives in the Novosibirsk Region [10]

Item	Years					
	2012	2013	2014	2015	2016	2017
Grants to beginning farmers	10	22	23	41	47	27
Average grant	1,316	1,123	1,290	1,417	1,440	2,660
Budget, thous. RUB, including	13,160	24,697	29,666	58,094	67,700	71,823
regional	4,343	8,150	13,350	16,823	16,800	16,823
federal	8,817	16,547	16,316	41,271	50,900	55,000
Grants for developing family livestock farms	7	10	15	16	16	8
Average grant	6,179	5,188	3,571	5,044	4,800	10,380
Budget, thous. RUB, including	43,254	51,884	53,571	80,697	76,900	83,036
regional	19,897	26,400	30,000	30,000	30,000	24,036
federal	23,357	25,484	23,571	50,697	46,900	59,000
In total, including	56,414	76,581	83,237	138,791	144,600	154,859
regional	24,240	34,550	43,350	46,823	46,800	40,859
federal	32,174	42,031	39,887	91,968	97,800	114,000
Support of agricultural consumer cooperatives						4
Budget, thous. RUB, including						21,964
regional						5,964
federal						16,000
Grants, total	17	32	38	57	63	176,823

Nowadays, agricultural production in the Novosibirsk Region is ensured by the fleet of basic mobile vehicles, which

structurally consists of tractors – 71.4 %, harvester threshers – 24.3 %, and forage harvesters – 4.3 % (Table 9).

Table 9: Structure of the Fleet of Basic Mobile Agricultural Vehicles in the Novosibirsk Region as on 01.01.2017 [13]

Item	In total, items	up to three years		from 3 to 10 years		more than 10 years		
		Number, units	%	Number, units.	%	Number, units	%	
							2017	2007
Tractors	10,385	656	6	2,309	22	7,420	72	92
Harvester threshers	3,530	380	11	1,240	35	1,910	54	79
Forage harvesters	619	106	17	299	48	214	35	75
In total	14,534	1,142	-	3,848	-	9,544	-	-

It is necessary to note that 65.7 % of the equipment used in the agricultural production is more than ten years old, including 71.4 % of the tractors, 25.1 % of the harvester threshers, and 34.6 % of the forage harvesters.

E. Analysis of the personnel potential of rural areas

Only 6 % of the total population of the region are employed in agriculture in the Novosibirsk Region. Over three decades, the average number of workers engaged in agricultural production has been declining (Table 10).

Table 10: Average Number of Employees in the Agricultural Production and Provision of Agricultural Organizations of the Novosibirsk Region with Machine Operators and Machine Milking Operators [10, 13]

Indicators	Years				2016 in % as compared to 1986 – 1990
	1986 – 1990	2012	2013	2016	
Machine operators, thous. people	31.3	7.1	6.4	4.5	14.4
Machine milking operators, thous. people	20.9	4.6	4.2	3.5	16.7
Rural population, thous. people	708.0	605.0	603.0	601.0	84.9
Average number of agricultural employees, thous. people	212.3	43.6	42.9	34.9	16.4

Currently, agricultural organizations of the region are provided with the chief specialists at the level from 43 to 67 %. One of the reasons was the dismantling of the efficient system of early vocational guidance for schoolchildren to

consolidate them in the village, including after obtaining secondary and higher education. From 2010 to 2016 the number of chief specialists had decreased by 24.7 %, or by 286 people (Table 11).

Table 11: Provisions of Agricultural Organizations of the Novosibirsk Region with Chief Specialists (Technologists) [13, 14]

Profession	2010				2016			
	In total		Higher	Vocational school of college	In total		Higher	Vocational school of college
	Number	%	Number	Number	Number	%	Number	Number
Chief agriculturist	320	58	241	79	159	46	119	40
Chief zootechnician	284	53	152	132	193	43	108	85
Chief engineer	274	75	156	118	221	64	108	113
Chief veterinarian	280	63	131	149	299	67	143	156
Total	1,158	-	680	478	872	-	478	394

The average age of machine operators and livestock breeders in the Novosibirsk Region is 50 – 55 years old, and there is no recruitment of young personnel. In this case the school reform had a negative role (Figures 1 and 2).

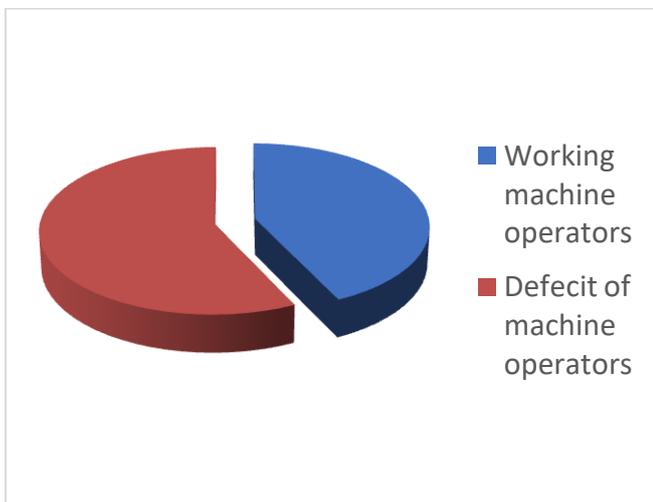


Fig. 1: Provisions of Agricultural Production of the Novosibirsk Region with Machine Operators, % [13, 14]

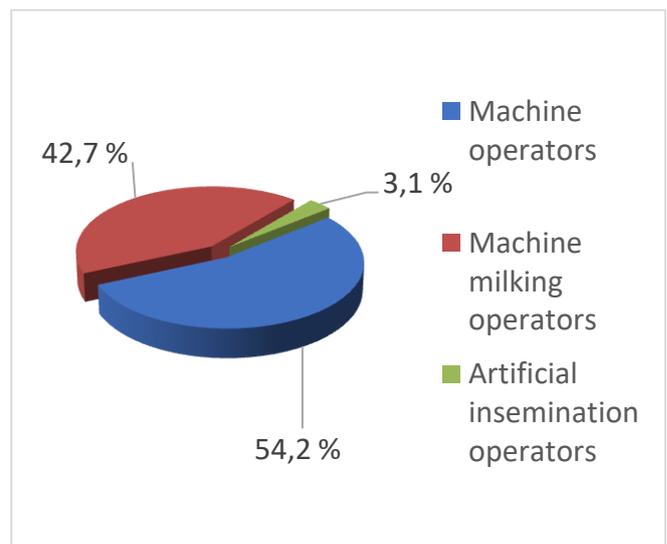


Fig. 2: Structure of Service Specialists Employed in Agriculture of the Novosibirsk Region, % [13, 14]

The reason for the reluctance of young specialists to go to the village is the standard of living in the rural area – the lack of roads, basic social and living conditions, and medical services. The creation of modern agro-industrial complexes with a highly developed social and household infrastructure meets 50 % of the metropolis needs in the supply of agricultural products.

On the one hand, this is good. However, unfortunately, far from all municipal entities have enough investments, and the products of many small and medium agricultural producers become uncompetitive and the able-bodied population from rural areas have to move to city studios, agricultural firms, and agricultural complexes.

The problem of training personnel to ensure sustainable development of rural areas is very multifaceted. First of all, engineering and technical specialties are demanded. There is their deficit in the construction industry, and infrastructure complex. In addition, the demand for skilled workers is growing in agriculture, housing, and communal services.

Not only the economy, but also municipal entities are in special need of qualified specialists, especially due to implementing the relevant reforms at the local level.

Here, employees of local governments demonstrate both a lower level of knowledge and lower susceptibility to legislative, socio-economic, and political changes. They have a lower level of education, they include “older” officers, who in spite of this have less experience (which indicates a greater “staff turnover”), fewer employees undergo training, the work on forming a personnel reserve is less active than in other types of municipal entities, and there are fewer legal grounds for this. An insufficient number of applicants included in the personnel reserve causes a shortage of reservists who are subsequently employed in the municipality [15, 16].

In rural areas of the Novosibirsk Region, in the municipal administration, 33 people, or 7 % of the total number have a basic general education. At the same time, in 2016 their number was 28 people (6 % of the total number). In the early 2017 the number of heads who had higher education was 67 % (326 people), which is 4 % (or 10 people) less than in 2016. Accordingly, the share of people with secondary vocational education increased: their number was 126, or 26 % of the total number (Figure 3).

In the early 2017 the number of heads who obtained higher education in the specialty “State and Municipal Administration” amounted to only 19 people, or 3.8 % of the total number of heads of municipal entities of the Novosibirsk Region. The majority of the managerial staff are people who have the relevant education in agriculture (131 people, or 27 % of the total number) and pedagogical education (113 people, or 23 %).

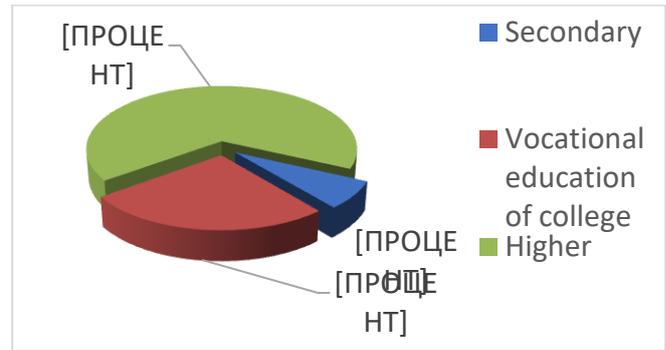


Fig. 3: Structure of the Heads of Rural Municipal Entities of the Novosibirsk Region by Education, % [14]

The average age of the heads of municipal entities is 50 years old. The share of people aged 51 years and older is 58 % of the total number, 66 heads of municipal entities (14 %) are older than 60 years old. The smallest category – people under 35 years old – includes 29 people, or 6 % of the total number of heads of municipal entities (Table 12).

Table 12: Structure of the Heads of Municipal Entities of the Novosibirsk Region by Education in 2016 [14]

Education	Number, persons	Structure, %
Secondary	33	7
Vocational education or college	126	26
Higher	326	67
In total	485	100

A similar situation is determined when analyzing the staff on the deputy heads of district administrations, including the positions of first deputies and deputy heads of administration: only eight people have specialized education in the specialty “State and Municipal Administration” (which makes up 8 % of the total number).

The age of the managerial staff of people supervising the agricultural industry in municipal entities can also be referred to as the main problem in the area of staffing rural territories: out of 30 managers who head regional agricultural departments, almost half (47 %) are people aged 55 years or more. However, only 10 % are the people under the age of 35. Currently, only three persons (10 % of the total number), in addition to specialized education in the area of agriculture, are qualified in the specialty “State and Municipal Administration”, “Management”.

In the healthcare sector, there is a relatively stable situation related to training heads and deputy heads of medical organizations in the municipal districts of the region. All 123 people who take managerial positions in medical organizations have higher medical education or underwent professional retraining in the specialty “Organization of Public Health and Public Health”. However, the average age of management is 49 years old. The people aged 51 years old and older make up almost half (48 %) of the total number of people fulfilling managerial functions in medical organizations in municipal districts of the Novosibirsk Region.

In education, one of the problem areas is the increase in the average age of senior employees. All 625 school principals in rural areas of the Novosibirsk Region have higher education. 17 % of the rural school principals have the highest qualification category, and 60 % have the first category. 83 % of the rural principals have been working for more than 20 years, 23 % have a retirement age. The share of principals of rural schools under the age of 35 is 4 %. Among the heads of education departments of municipal districts' administrations, 13 % of the managers are up to 35 years old, and 37 % – of the retirement age. These results are a signal for resolving issues on the efficiency of the personnel policy aimed at rejuvenating the managerial staff.

In state and municipal cultural institutions in rural areas there is an insufficient level of personnel qualification. Out of 499 heads of cultural institutions in rural areas, more than half (51 %) do not have specialized education, the majority of people in the cultural management (51 %) are older than 50 years old.

In the area of social security in municipal areas, more than 70 % of all management personnel have higher professional education or have undergone professional retraining in the areas corresponding to the specified area of activity. However, the average age of management is 48 years old. There are 13 heads of departments of social protection of the population in the administrations of districts of the Novosibirsk Region aged 51 and more, or this is 43 % of the

total number. In 2017 the number of directors of municipal budgetary institutions for social services in rural areas aged 51 and older amounted to 15 people, or 48 % of the total number of heads of institutions. The share of people under the age of 35 in the managerial staff in the area of social services in the regions is only 4 % (three people).

This indicates the need to take measures aimed at updating (rejuvenating) the managerial staff in rural areas, the need to form a personnel reserve of those who in the future can take managerial positions in local governments, state and municipal institutions, who have knowledge and skills required for the efficient management solutions.

The formed municipal reserves of managerial personnel in the municipal districts of the Novosibirsk Region are formal. As on 01.07.2017 2,490 people were registered in the municipal reserves of managerial personnel, including only 672 people (27 % of the total number) aged under 35 [14].

During 2011 – 2016 in the Novosibirsk Region, 8,310 employees holding municipal and municipal service positions had obtained additional vocational education, including only 226 people (2.7 %) who had undergone vocational retraining, 8,084 (97.3 %) had improved their qualifications. It is obvious that with this approach, it is rather problematic to solve the strategic mission on training personnel to ensure the advanced development of rural areas because formal improvement of qualification does not solve the personnel problem at the local level (Table 13).

Table 13: Number of Employees of the Novosibirsk Region Taking Municipal and Municipal Service Positions and Having Obtained Additional Professional Education [17]

Item	Years						2016 in % as compared to 2011
	2011	2012	2013	2014	2015	2016	
Number of employees	7,140	7,169	7,011	7,078	7,038	6,991	97.9
Including the ones who obtained additional vocational education	1,045	1,173	1,343	1,715	1,412	1,622	155.2
Including on additional professional programs							
Professional re-training	49	12	15	33	23	94	191.8
Further training	996	1,161	1,328	1,682	1,389	1,528	153.4

The main sources of financing additional professional education for employees in the Novosibirsk Region who take municipal and municipal service positions are the budget of the constituent entity of the Russian Federation and the budgets of municipal entities of the region.

Thus, in 2016, for these purposes, 446 people obtained additional professional education at the expense of the budget of the Novosibirsk Region, 638 people were additionally

trained at the expense of the budgets of municipal districts. Among the employees of municipal districts who take municipal and municipal service positions and obtained additional vocational education in 2016, the organizational and economic area prevails with a share of 28 %, management – 16 %, budgeting and finance – 14 %, and law – 10 % (Figure 4).

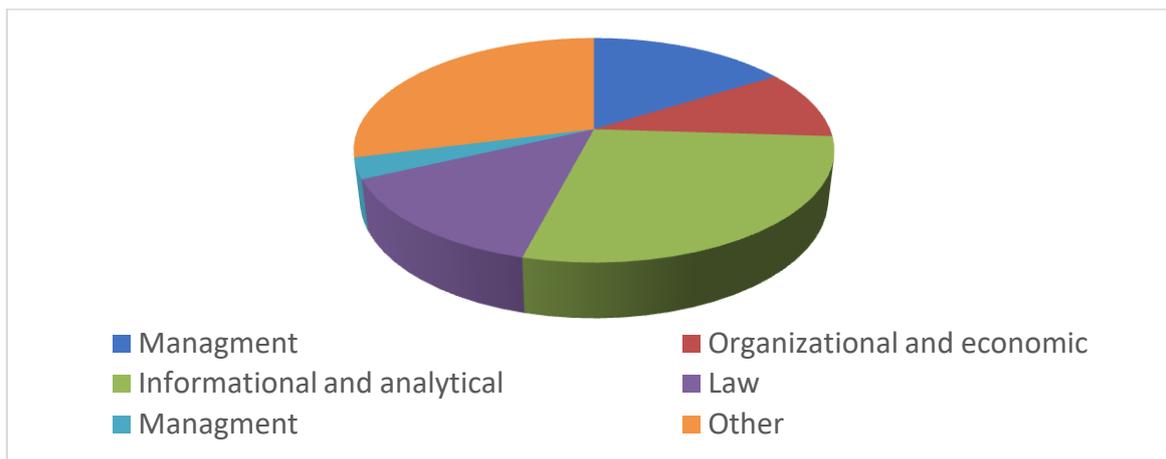


Fig. 4: Structure of Additional Professional Education of Workers of Municipal Entities in the Novosibirsk Region Taking Municipal and Municipal Service Positions by Areas of Additional Professional Education in 2016 [18]

Besides, in addition to the above problems that impede the sustainable development of rural areas in the Novosibirsk Region, it is possible to specify the following:

- Low financial security of rural municipal entities,
- Disordered local authorities and their partial mismatch with the issues of local importance,
- Difficulties in interacting with state control and supervision bodies and in coordination with regional authorities, and
- Unsatisfactory conditions for providing citizens with municipal services, including access to interactive technologies, etc. [15].

F. Mechanisms for rural territories to change over to advanced socio-economic development

The use of strategic management in the sustainable socio-economic development of rural areas of the region involves the allocation of resources (organizational, material, financial) to certain areas – the rural areas that should become growth poles (centers of economic attraction) and extend their pole effects to the adjacent territories, which will ultimately improve the economic growth of the entire region.

According to this provision, the centers of economic attraction actively influence the surrounding areas, activate and change them, improve the socio-economic development of the territories and the life of the rural population living there. This principle is applied not only to some business entities, but also in various sectors of the economy. One of these types of deformation is the polarization of the space around the “growth pole” based on the dominance effect [19].

Depending on the scale, industry, package of privileges and preferences provided by the state, growth poles can form zones to develop high-tech agricultural production, zones of technological and economic development, agricultural parks, etc. In all cases, these are specially allocated territories where the required infrastructure is created [20, 21].

The formation of growth poles in the regional strategy for sustainable socio-economic development of rural areas should include the following stages:

1. Identification of the existing or potential development poles in rural areas.
2. Development of recommendations for consolidating municipal entities in the “growth poles”.
3. Training of the personnel and the formation of the

system of advanced personnel support for the innovative development of the municipal economy.

4. Development of programs to establish relations between production, science and education.
5. Scientific and technical justification for the creation and development of areas of economic growth within the poles.
6. Formation of offers to provide the “growth pole” with efficient transport and high-speed communications.
7. Promotion of the concept of the growth pole development at the municipal, regional, federal and international levels.

8. Interaction of the PSEDA (Priority Social and Economic Development Area) with state authorities, local authorities and business community of the region.

Moreover, in order to implement the growth poles theory on a certain territory, it is required to take into account the following points:

- The growth pole is not a goal in itself, but a source of the socio-economic development of the territory,
- The growth pole is efficient only in close connection of the same poles, i.e., it is necessary to comply with the cluster approach,
- The growth pole must have sustainable economic connections with most areas in the region in order to use its resources as development impulses,
- The growth pole should have economic relations with the region and the state as a whole,
- Growth poles can be important in different ways – international, national, regional and local, as well as in terms of the scale – from a locality to the whole region; and
- The main goal is to activate economic processes and self-development forces [22, 23].

In the rural areas of the Novosibirsk Region, the use of the cartographic method makes it possible to single out seven centers of the population concentration. Based on them, it is possible to create growth poles to ensure the comprehensive development of rural areas of the region:

1. The western rural pole of the socio-economic growth, including the Tatarsky, Ust-Tarksky, Vengerovsky, Kyshtovsky and Chistoozerny municipal areas with the center in Tatarsk.

2. The North-West rural pole of the socio-economic growth, including the Kuybyshevsky, Barabinsky, Northern, Chanovsky and Zdvinsky municipal areas with the center in Barabinsk.

3. The South-West rural pole of the social and economic growth, including Kupinsky, Bagansky, Karasuksky, Krasnoozersky municipal areas with the center in Karasuk.

4. The Central rural pole of the socio-economic growth, including Kargatsky, Ubinsky, Chulymsky, Ordynsky, Dovolensky and Kochkovsky municipal areas with the center in Kargat.

5. The Eastern rural pole of the socio-economic growth, including Kolyvansky, Kochenevsky, Moshkovsky, Bolotninsky and Novosibirsk municipal areas with the center in Moshkovo.

6. The South-East rural pole of the socio-economic growth, including the Iskitimsky and Toguchinsky municipal areas with the center in Iskitim.

7. The Southern rural pole of the socio-economic growth, including Maslyaninsky, Suzunsky and Cherepanovsky municipal areas with the center in Maslyanino.

In the offered grouping, it is necessary to take into account the principle of identifying limited growth centers (“locomotives”) and ensuring the development of adjacent areas as economic satellites whose socio-economic development is related to the development of “locomotives”. At the same time, it is necessary to take into account the principle of relatively high transport accessibility to the centers of the population concentration fulfilling the functions of inter-settlement territories [24].

IV. CONCLUSION

Thus, according to the results of the study, it is possible to make the following conclusions:

1. The analysis of the demographic situation in rural areas of the Novosibirsk Region indicates a difficult situation: the number of underpopulated settlements increases, the number of villages decreases, the rural economy is unsustainable, the level and quality of life of the rural population are still low, and territories continue to deplete.

2. The decline in agricultural production, jobs reduction, and low income of agricultural employees cause the outflow of population from villages.

3. The number of the rural population continues to decrease. It is impossible to suspend the reduction of the network of social infrastructure facilities in the village, the rural housing stock remains mostly undeveloped and is highly depreciated.

4. As a result, the low population of rural settlements does not allow forming a sufficient basis for the socio-economic development and is the reason for the uneven distribution of local budget expenditures between the costs of maintaining municipal authorities and solving local issues.

5. The current level of state support for rural areas is not sufficient to break the socio-demographic situation in the countryside and solve the problem of providing the agricultural sector with qualified personnel that can master innovative technologies and modernize agricultural production.

6. There is the imbalance in labor markets in rural areas:

redundancy and unused labor force, together with a deficit of personnel in the required professions exacerbate the problems of staffing rural areas with engineering and technical specialists.

7. Both the economy and rural local authorities are badly in need of qualified specialists, especially due to implementing relevant reforms at the municipal level.

8. All the above indicates the need in an efficient mechanism to stabilize the socio-economic situation in rural areas and the transition of rural territories to the trajectory of the advanced socio-economic development.

9. The use of strategic management in the sustainable socio-economic development of rural areas of the region involves the allocation of resources (organizational, material, financial) to certain areas – rural areas that should become growth poles (centers of economic attraction) and extend their pole effects to adjacent territories, which will ultimately improve the economy of the entire region.

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