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Settlement System of Belarus. Spatial and Temporal Trends at the End of 20th and the Beginning of the 21st Centuries

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ABSTRACT

This paper analyses the formation factors of Belarus settlement system. We characterized the spatial and temporal trends in urban and rural settlement system of Belarus for the period of 1979-2009. Spatial and temporal shifts in the distribution of urban and rural population and the structure of urban and rural settlements are emphasized. Therefore, we presented the types of rural settlement of Belarus. Eventually, we discuss how agrotowns are developed and the features of distribution and demographic development of this new Belarusian rural settlements form.

1. INTRODUCTION

Having formed as a result of a combination of natural geographic and historical factors, since the late 20th century the Belarusian settlement system has been characterized by a number of transformational trends that are evidence of the substantial spatial and temporal shifts in the settlement system.

The main factors, which had the greatest influence on the changes in the spatial structure and pattern of the urban and rural settlement in the 20th century in Belarus, are: 1) the pre-WW I industrialization; 2) the World War I and the Civil War; 3) the collectivization, creation of co-operative farms, active industrialization and transport construction; 4) the World War II, 5) peculiarities of the post-WWII economic recovery; 6) the demographic transformation; 7) political changes of the two last decades and their influence on the economy.

Over the whole 20th century, administrative territorial transformations did not have the least influence on the evolution of the rural settlement. In the 21st century, the socio-economic factor is dominating in the transformation of the Belarusian urban settlement and the demographic factor of rural settlement.

2. THEORY AND METHODOLOGY

The modern level of the geographic science imposes new methodological requirements on the settlement studies. We carried out an economic-geographical analysis of Belarusian settlement dynamics using the comparative-geographical method, the method of dynamic series, the geographical systematization and typology.

To analyze temporal shifts in urban and rural settlement of Belarus we used a system of indicators (population density, average population size of settlements, the density of settlements, the average distance between settlements, etc.). Unlike the previous papers that analysed the Belarusian settlement using the traditional methods of geography, this study is the first to present a two-component analysis consisting of the general patterns discovery in the Belarus population structure, and internal, with regard to the inhabited location classes according to the size. The mapping of the Belarusian settlement processes has been conducted using the geoinformational technologies and the ArcGIS software.

The study period covers the years 1979-2009, when large-scale evolutionary and transformational

changes in the spatial structure of the settlement took place as a result of the *urbanization boom* in the middle of the 20th century of Belarus. The USSR 1979 census data and Belarusian 1999 and 2009 censuses data served as informational basis.

3. RESULTS AND DISCUSSION

According to the Russian Empire census in 1897 the territory of modern Belarus was typically rural; the share of urban population was only 13.5 % of total. In a very short historical time period, in 1975, urbanization transition in Belarus had happened and urban population exceeded the level of 50%. At the present time Belarus is an urbanized state, and the share of urban population accounts for 75.1 % (2011).

The current structure of Belarus settlements includes 112 cities and towns, 94 urban-type settlements and 23,467 rural localities according to the recent census in 2009 [1].

3.1. Urban settlements of Belarus

The network of Belarus urban settlements was formed over a long period of thousand years under the influence of a complex set of natural, historical and socio-economic factors. Even the network of urban settlements was formed under the influence of natural and geographical features of the country.

New urban settlements tended primarily to follow transport communications at all historical stages. Initially, it was the waterways, and with the construction of railways the abutting framework of settlements began to form along the trunk roads. Cities located along railway lines received additional impetus to economic development, because the leading role in the planning axes was moved to the railways.

Currently, the influence of natural and geographical factors on the location of settlements and urban development is manifested in the connections with the system of rural settlement, which is still particular to natural and geographical factors to a large degree.

Thus, in the North and North-East parts of Belarus the settlement system was formed as a dense network of small towns, transformed into polarized with the dominance of large industrial centres in the middle of the 20th century due to rapid industrialization. As a result, there is a lack of medium-size cities in these regions of Belarus.

The central part of Belarus is characterized by more favourable climatic conditions that determined a resistance of rural settlement and therefore the stability of small and medium towns as centres of rural settlement framework. Therefore, relatively uniform zones of medium and large cities formed in the Southern regions of Belarus.

The differences in the level of urbanization of western and eastern regions of Belarus are determined by socio-economic factors. The process of industrialization was the earliest and most rapid in the eastern part of Belarus, as a result large industrial cities forming there early, by 1979, and thus they became the nuclei of the settlement system polarization. At the same time urban settlement system in the Western part of Belarus was more even.

Position of agriculture was stronger there because of natural and historical reasons, therefore the growth of large cities was more uniform, and demographic potential of small and medium-size urban settlements was maintained.

Thus, the urban settlements spatial distribution in Belarus is characterized by even distribution of small towns with irregular, well-localized placement of large cities - regional centres.

The national hierarchy of the towns in the settlement system of Belarus includes one city of European significance – Minsk. Regional centres have national significance as well as other large towns, small and medium towns have regional and local ranks, except for the ancient historical and important touristic places such as: Turov, Nesvizh, Braslav (fig. 1).

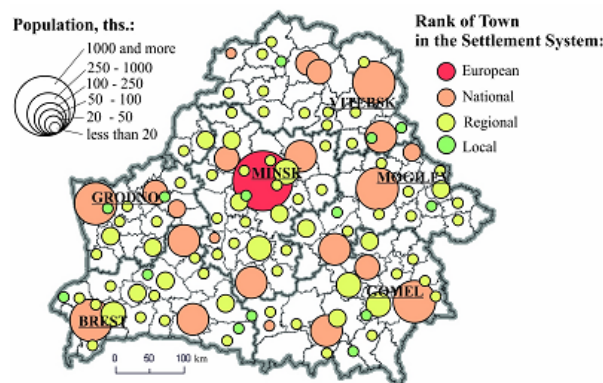


Fig. 1. National hierarchy of the towns in the settlement system of Belarus.

In the second half of the 20th century the network of urban settlements of Belarus had faced significant changes under the influence of the active process of urbanization. In the period of 1959-1989, 30 cities were established as urban-type settlements. Only six of these settlements are classified as new, emerging in the post-war period: Beloozersk, Novolukoml', Svetlogorsk, Zhodino, Novopolotsk, Soligorsk.

These cities are formed as a result of building and development of large industrial enterprises with all Soviet Union importance. The growth of urban population in this period contributed to the transformation of about 30 villages to the rank of urban-type settlements.

In 1964, Naroch resort urban-type settlement was founded and is the only settlement in Belarus with this function.

In 1979 the network of urban settlements included 207 settlements, 96 of which were cities and towns, 111 urban-type settlements. In 1999, according to the first census in sovereign Belarus, there were 212 urban settlements, 104 of which - cities and towns, 108 - urban-type settlements. Compared to the 1989 census, among the cities included also ex-urban-type settlements Berezovka, Dyatlovo, Krupky, Logoysk, Myadel, Uzda and Fanipol. The village Dribin in Mogilev region received the status of urban settlement, as a centre of Dribin district. In the last intercensal period of 1999 - 2009, other 11 urban-type settlements have received the status of town (Mikashевичi in Brest region, Ivie and Svisloch in Grodno region, Kirovsk and Klichev in Mogilev region, Turov in Gomel region). At the end of March 2012 the urban-type settlement Ostrowiec in Grodno region was categorized as town. The urban population is located on the territory of the country extremely uneven, which is reflected at the regional level of administrative regions. The most urbanized part of Belarus is in the centre, whereas Western regions (Brest and Grodno regions) have the lowest level of urbanization (65 and 68 % respectively). Minsk metropolitan area concentrates 37.2% of the total urban population, most of which is attributed to the capital city.

Grodno region has the lowest share in total urban population (10.5%). Mogilev, Brest and Vitebsk regions have almost equal shares in the regional structure of urban settlement of the country (12-13%) (table 1).

Table 1. Regional structure of urban settlement system and the distribution of the urban population of Belarus, 2009.

Regions	Number of urban settlements		Urban population size		Share of urban population in total population of region, %
	No.	(%)	Thou. people	(%)	
Brest	29	14.1	918.6	13.0	65.0
Vitebsk	43	20.9	897	12.7	72.4
Gomel	35	17.0	1,050.8	14.9	72.4
Grodno	31	15.0	740.1	10.5	68.3
Minsk	44	21.4	2,624.8	37.2	55.1
Mogilev	24	11.7	833.2	11.8	75.5
Belarus	206	100	7,064.5	100	73.9

The modern dynamics of the Belarus urban population is different from the general country trend of population dynamics and the dynamics of the rural population. Although the total population of Belarus during the period of 1979 - 2009 remained virtually unchanged (about 9.5 million people), the rural population decreased by 1.8 times (from 4.3 million to 2.4 million people), and urban population increased from 5.2 to 7.1 million people (26%).

The dynamics of Belarus urban population is different in various classes of cities in population size. Population growth is typical for small towns, because of administrative reforms – the transformation of urban-type settlements into towns. Natural movement of Belarus urban population significantly differentiated between classes of cities by population size. During the study period, the highest birth rate and death rate was typical of small towns, the highest birth rate and the lowest mortality rates - of large cities. Higher values of fertility rates in large cities are due to the higher level of socio-economic development and the continued migration to cities in the 21st century. The higher fertility in small towns is associated with two factors: government support of small businesses in small towns and attracting young professionals to the newly created enterprises in small towns. All classes of towns and cities in Belarus, except for small ones, are characterized by natural population growth at the present stage of development. The highest rates of natural increase is typical of large cities with population over 100 thousand people. The average population size of towns and cities in Belarus increased by 1.3 times as a result of rapid urban population growth. In 1979 the average size of the Belarusian town was 26 thousand people, as in 2009 this parameter reached the value of 35 thousand people.

As a result of accelerate growth of regional centres, the average population size increased from 316.1 thousand people up to 379.3 thousand people during the study period (20%). Large cities with a population of 100-250 thousand people had not increase in this indicator due to transition of rapidly increasing settlements to the higher classes by population size. A stable level of the average population size was registered by the smallest, small, medium and semi-medium-sized towns with population of 5 - 100 thousand people. Tiny towns (less than 5 thousand people) are the only class of urban settlements that are characterized by a decrease in the average population size during the study period (24%). The most rapid increase of population size we find in the capital - from 1,276.0 to 1,843.7 thousand people (44%). This trend will continue in the future, which leads to a further increase in disproportionate share of capital in the total Belarus population - megacefaly (table 2, fig. 2). Distinctive features of Belarusian urbanization are: the dominant role of the metropolitan area and small-urban nature of the settlement system. The dominant class in the structure of urban settlements are the towns with a population of less than 20,000 people (82% of all urban settlements in Belarus), which comprise only 17% of the state urban population. In the middle of the 20th century urban settlements with population of less than 20,000 people inhabited 37% of the total urban area, and this category of settlements was more widen in the settlement system - 91%. The most numerous classes now are the tiny towns with a population of less than 5,000 people (32.5% or 67 settlements). The share of

smallest settlements with a population of 5-10 thousand people is preserved in the range of 27-33% during the study period, the share of the population of this group of settlements was reduced by 32% (from 8.9% in 1959 to 6% in 2009).

A relatively stable share of the population preserves the class of small towns 10-20 thousand people (7-10%), primarily due to the quantitative growth of this group (from 28 in 1979 to 45 settlements in 2009) (table 3).

Table 2. Change in the average size of Belarusian urban settlements by population size classes, 1979 – 2009.

Population size classes	Average size of urban settlements by the population size classes, thou. people			Dynamics index 1979/2009
	1979	1999	2009	
Tiny, less than 5	2.8	2.5	2.4	0.86
Smallest, 5-10	7.1	7.6	7.3	1.03
Small, 10-20	13.6	13.7	13.8	1.01
Semi-medium, 20-50	30.2	30.1	31.1	1.03
Medium, 50-100	67.7	68.3	70.9	1.05
Large, 100-250	151.6	134.4	141.3	0.93
Largest, 250-1000	316.1	352.0	379.3	1.2
Cities with a population of one million or more	1,276	1,673.8	1,843.7	1.44

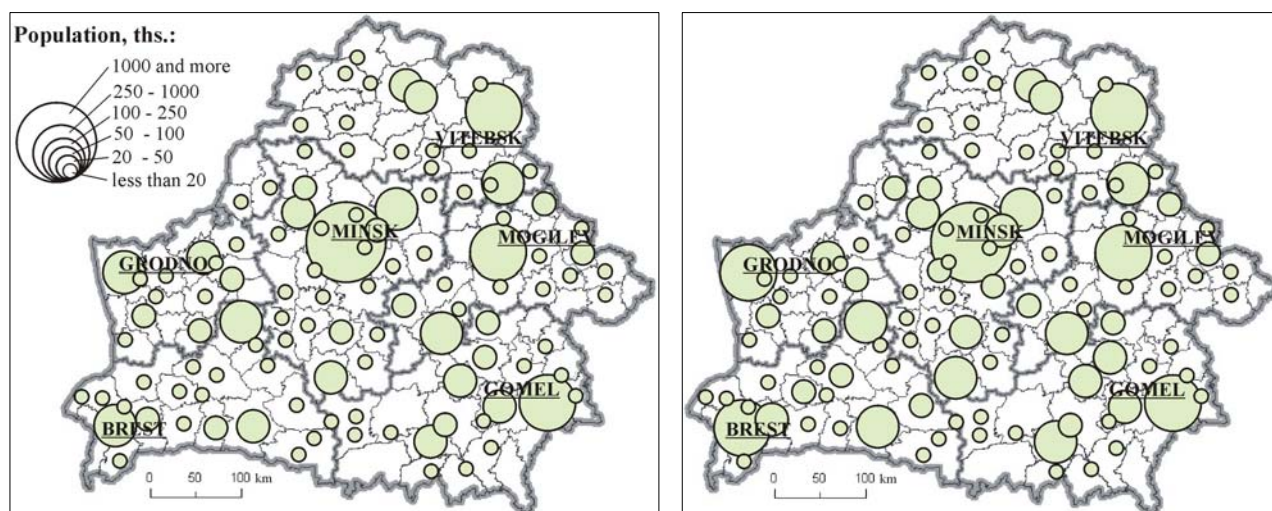


Fig. 2. Dynamics of population size of urban settlements of Belarus, 1979 – 2009.

Table 3. Structural shifts in the Belarusian urban settlement system, 1979 – 2009.

Population size classes	Share of urban settlements in Belarusian urban settlement structure, %			Share of urban population in total Belarusian urban population, %		
	1979	1999	2009	1979	1999	2009
Tiny, less than 5	36.2	31.9	32.5	3.9	2.3	2.2
Smallest, 5-10	33.2	25.5	27.2	8.9	5.7	5.7
Small, 10-20	14.1	23.0	21.8	7.3	9.3	8.6
Semi-medium, 20-50	7.0	7.8	6.8	8.1	6.9	6.0
Medium, 50-100	4.5	4.4	4.9	11.7	8.9	9.8
Large, 100-250	3.0	4.4	3.9	17.4	17.4	15.7
Largest, 250-1000	1.5	2.5	2.4	18.2	25.4	26.3
Cities with a population of one million or more	0.5	0.5	0.5	24.5	24.1	25.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Thus, the share of towns with a population less than 20,000 people is stable throughout the study period of 1979 - 2009 (83-85%). The share of urban population of this class is steadily declining (1959 - 37%, 1979 - 20%, 2009 - 17%).

Small-urban nature of the system of settlement in Belarus has historical conditioning - the process of urbanization was characterized by an artificial increase in the number of urban settlements at the expense of the formal transfer of the traditional historic centers to the urban-type settlements [2]. There are 94 urban-type settlements at the present time, of which 63 have a population of less than 5,000 people. Many of urban-type settlements and small towns have a functional profile that would mainly characterize rural localities in other countries - agricultural, agro-industrial and environmental.

A characteristic feature of urbanization in

Belarus, corresponding to global trends, is the increasing concentration of population in cities with more than 100 thousand people. This trend first appeared in the period of 1960-1980 during the most intense stage of urbanization. By 1979, about 60% of the urban population lived in large cities. Rapid growth of the capital greatly contributed to this share (in 1972 the population of Minsk reached 1 million) as well as regional centers. Currently, 67% of the urban population lives in cities with population of more than 100,000 people, including the large share of capital (26%).

As a result of all these trends, the main features of the Belarus structure of urban settlements in the second half of the 20th century is the quantitative predominance of small towns, a constant increasing of population concentration in large cities (more than 250 thousand people) and increasing the share of metropolitan area (fig. 3).

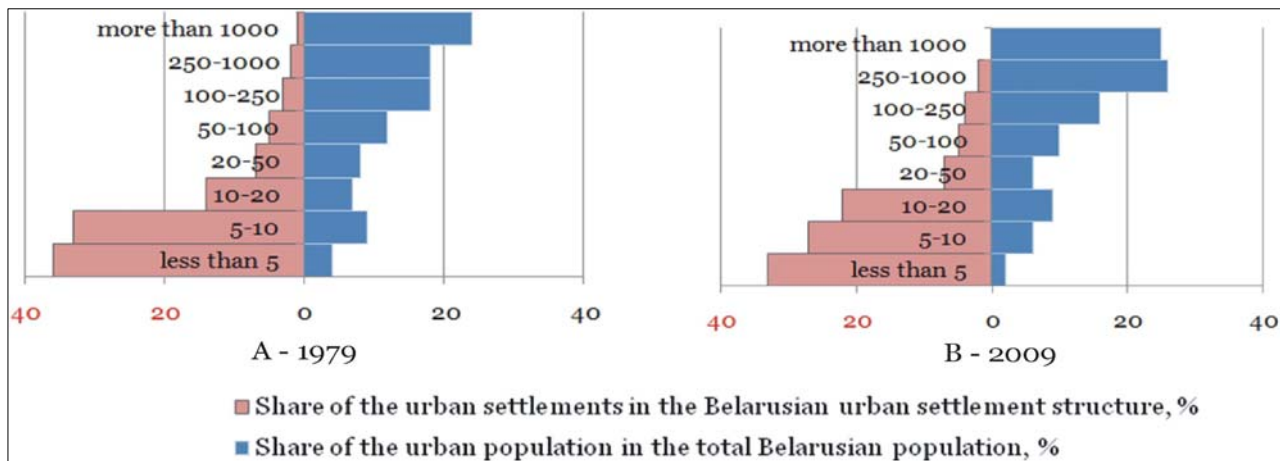


Fig. 3. Dynamics of the urban settlement structure of Belarus.

Urban settlement system of Belarus is significantly differentiated at the level of administrative regions due to various factors described above.

The Northern part of Belarus, Vitebsk region, is characterized by the greatest number of small and smallest towns, the average population size of urban settlements in the region is of 20.8 thousand people and the share of urban population in total urban population is small - 13%. The northern region has a high level of population concentration in large industrial and multifunctional centers, such as Vitebsk, Novopolotsk, Orsha, which concentrate 64% of the total urban population of the region against the background of small-urban nature of the system of settlement. The only medium sized settlement in the region is Polotsk. All other urban settlements belong to a class of small towns with a population of less than 20 thousand people, which are characterized by a depressive nature of the demographic development, population decline, both due to natural decrease and migration outflow. Large and largest cities in the region register increase in population due to migratory inflow, against a background of natural decrease.

The Eastern part of Belarus is characterized by the same demographic trends as the Northern part - migration and natural decrease. Small towns in these regions have lower demographic stability because of natural geographic, historical and socio-economic factors. The average population sizes of urban settlements are higher than in the Vitebsk region - 34.7 thousand people in Mogilev region and 30.0 in Gomel region. Large cities are characterized by progressive nature of population dynamics and increase of population, both due to migration inflows, and natural growth. The structure of urban settlements in Mogilev region is characterized by absence of medium-size cities (50-100 thousand people) as well as virtually presented semi-medium towns (20-50 thousand people). Only 3 settlements Krichev, Gorki, Osipovichy belong to this class. There is a very high level of concentration in large cities in the region - 70% of urban population accounts for Mogilev and Bobruisk.

In Gomel region large cities (Gomel and Mozyr) concentrate only 58% of urban population, provided that the regional center accounts for 47%. In the medium and semi-medium settlements are

concentrated 279.5 thousand people or 26% of the regional urban population. The system of urban settlements of Western and South-Western parts of Belarus is characterized by more widespread medium-size, semi-medium and large urban settlements than in other regions, and a greater stability of these classes of cities. In all classes of cities there is natural increase, but in small towns, it does not exceed migration outflows. In Brest region there are 3 large cities (Brest, Baranovichi, Pinsk), 1 medium city (Kobrin) and 3 semi-medium ones (Bereza, Ivatsevichi, Luninets). Large cities concentrate about 66% of urban population, and medium and semi-medium ones - 14%. The average population size of urban settlements is of 31.7 thousand people. Grodno region is characterized by almost equal role in the urban structure of large cities and medium towns. The only large city in the region (Grodno) accounted for 45% of the urban population, whereas the medium and semi-medium towns (Lida, Slonim, Volkovysk, Smorgon, Novogrudok) include about 34%. The system of urban settlements of the central part of Belarus developed under the strong influence of the capital, which concentrates 70% of the urban population of Minsk region. That is why there is a great share of small towns in the settlement structure – 79.5% of all urban settlements in the region. The shares of large and medium-sized cities are practically the same - 9.4 and 8.3% respectively. In the zone of the capital influence the progressive nature of population dynamics is observed in all classes of cities by population size. Thus, the nature of urbanization process in Belarus in the second half of 20th - early 21st centuries has specific features, such as: 1) the historically conditioned small-urban nature of the system of settlement; 2) a positive trend in the dynamics of the urban population due to migration inflow and the natural population increase; 3) the

concentration of population in cities with more than 100 thousand people; 4) the dominant role of the capital city in the settlement system; 5) the prevalence of urban settlements with agricultural, agro-industrial, tourist, recreational and environmental functional profile, typical mainly of rural localities in other countries.

3.2. Rural settlements of Belarus

The modern Belarusian rural settlement system structure amounts to 23.5 thousand of rural localities that have been historically characterized by spatial distribution non-uniformity with regard to the natural landscape factor.

The national hierarchy of rural settlement system is presented on 2 levels – rural settlements and rural councils (1,343 in accordance with the 2009 census results). A special type of rural settlements is the agrotown.

At the present time, spatial peculiarities of rural settlement in Belarus are manifested in four zones subject to the nature-landscape conditionality: Northern Poozerye zone with dominance of small localities by population size, low average population size of the rural localities, relatively high density and maximal quantity of rural localities in Belarus; Central zone with dominance of medium localities by population size on flat surface relief mainly with hilly moraine-erosion and secondary moraine landscapes of Western Belarusian upland province, secondary outwash and moraine-outwash landscapes of Eastern Belarusian province; Southern Polesye zone with dominance of large localities by population size on alluvial-terrace, secondary outwash and marsh landscapes; dispersed sharply transformed settlement of Chernobyl zone [3] (table 4).

Table 4. Regional structure of the rural settlement system and the distribution of the rural population of Belarus, 2011.

Regions	Number of rural localities		Rural population size	
	localities	(%)	thousands of people	(%)
Brest	2,167	9	467.7	20
Vitebsk	6,316	27	318.8	14
Gomel	2,403	10	376.1	16
Grodno	4,338	19	317.0	13
Minsk	5,208	22	623.7	26
Mogilev	3,035	13	255.5	11
Belarus	23,467	100	2,358.8	100

In the second part of the 20th century natural landscape factors in the Belarusian rural settlement dynamics have been pushed aside by the socio-economic policy, but have not lost their influence. However, the general depopulation of the rural areas and regional polarization of the demographic

development currently exert the ever-increasing influence of the changes of the rural settlement changes pattern. Rural population size of Belarus reduced by 44% in the period of 1979–2009. Under the influence of the demographic factor – the natural and migration population decline – in the rural areas of Belarus at the

period of 1950-1970 with its *Belarusian urbanization boom* — massive population migration from the rural areas into cities — descended abrupt decrease of rural population density and the uniform de-densification of the rural areas all over the country. Compared to 1979, when the population density increased to 21 people per km², by 2009 it has been reduced to 12 people per km². Therefore, significant parts of the rural areas became lowly populated or almost uninhabited. At the beginning of the 21th century, the main factors of the rural population de-densification appeared as: migration outflow (departure of the

population from the rural areas into towns and cities for work or study); natural losses of the rural population, accounted for by the transition from the population reproduction mode to the depopulation status and demographic ageing.

At the present time the most sparsely-populated regions in Belarus are the Northern and the Eastern: Vitebsk region with rural population density of 8.3 people per km² and Mogilev region with rural population density of 9.2 people per km².

The most densely-populated is the capital Minsk region (table 5).

Table 5. Dynamics of the Belarusian rural settlement indexes, 1979 – 2009.

Rural settlement indexes	Years	Regions						Belarus
		Brest	Vitebsk	Gomel	Grodno	Minsk	Mogilev	
Average rural localities population size, people	1979	327	73	263	144	185	150	190
	2009	223	53	158	77	122	87	103
Rural localities density, per 100 sq. km	1979	8	16	7	17	13	10	12
	2009	7	16	6	17	13	11	-
Average distance between rural localities, km	1979	4	2	4	2	3	3	3
	2009	4	2,5	4	2,4	3	3	-
Population density, people per sq. km.	1979	22.3	14.9	18	24.8	24.1	19	21
	2009	14.7	8.3	9.7	13	16	9.2	12
Number of rural localities with population size of over 1000 people	1999	116	32	71	31	90	25	365
	2009	88	24	51	28	89	22	302
Number of uninhabited rural localities	1999	8	236	307	78	53	25	763
	2009	40	589	235	214	156	161	1,395

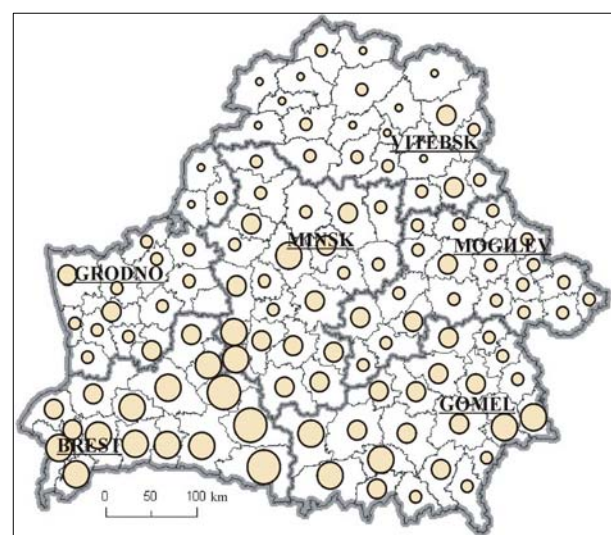
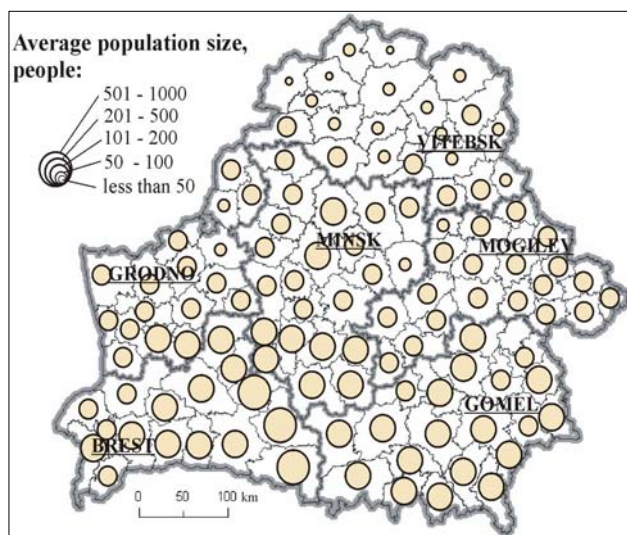


Fig. 4. Dynamics of the average population size of the rural localities in Belarus by districts, 1979 – 2009.

By 2009, the sparsely-populated regions with the density of less than 15 people per km² (92 of 118) are the prevailing type according to the density in the Vitebsk, Gomel and Mogilev regions. In the Northern Belarusian region there appeared districts, where the population density registered less than 5 people per km² (Gorodok and Rossony districts). In the south of the country — on the territories that suffered from the

Chernobyl accident — several extremely scarcely populated districts have formed (Bragin, Narovlyany, Khoyniki) [4]. Therefore, the Belarusian rural areas that were densely, have become scarcely populated, relatively continuum demographic space acquired focal, fragmentary nature for the period of 30 years. In addition to population density reduction, a decline in the average population size of the rural localities took

place in the Belarusian rural areas. The average size of the modern Belarusian village has decreased by about 2 times as compared to 1979 and increased to 103 people in 2009. The largest rural localities in Belarus are concentrated in the Southern part – in Polesseye – Brest and Gomel regions, whereas the smallest – in the Northern part – in Vitebsk region. The average population size of the rural localities has decreased by

the largest value among the regions in Grodno – by 47%, and Mogilev – by 42% (fig. 4).

With regard to the population size classes of the rural localities, a change in the average population size of the rural localities has taken place. The population size has decreased in tiny, small and semi-medium settlements. In the large, largest and medium settlements the population size has increased (table 6).

Table 6. Change in the average size of the Belarusian rural localities by population size classes.

Population size classes of the rural localities	Average size of the rural localities by the population size classes, people			Dynamics index 2009/1979
	1979	1999	2009	
Tiny, less than 50	28	20	17	0.61
Small, 51-100	74	82	71	0.96
Medium, 101-200	140	140	142	1.01
Semi-medium, 201-500	359	374	321	0.89
Large, 501-1000	666	679	674	1.01
Largest, above 1000	1,568	1,764	1,862	1.19

Transformation of the settlement system in Belarus to the small localities settlement type has taken place as a result of rural population size decrease and reduction of the average population size of the rural localities. Four population classes of villages (less than 50, 50-100, 100-200, 200-500 people) had approximately the same share in the settlement structure in 1979. In 2009 settlement acquired focal nature and some zones of rural population concentration and large area without population can be distinguished. In accordance with 2009 census results, 1395 villages in

Belarus have been left without population. At the same time, a reduction and a structural redistribution of the demographic potential took place in rural localities.

In 1979 as well as in 2009, the majority of the Belarusian rural population was dwelled in the semi-medium and the largest rural localities. However, a redistribution of the demographic potential into the large and the largest rural localities has occurred.

Compared to 1979, when only 6% of Belarusian rural population lived in the largest villages, currently 23% population is concentrated in this class (table 7).

Table 7. Structural shifts in the Belarusian rural settlement system.

Population size classes of the rural localities	Share of the rural localities in the Belarusian rural settlement structure, %			Share of the rural population in the total Belarusian rural population, %		
	1979	1999	2009	1979	1999	2009
Tiny, less than 50	36	56	61	6	8	10
Small, 51-100	12	16	12	10	10	9
Medium, 101-200	27	13	8	19	13	11
Semi-medium, 201-500	19	9	8	31	25	25
Large, 501-1000	5	4	3	19	22	22
Largest, above 1000	2	2	1	16	21	23
Uninhabited	-	3	6	-	-	-
Total	100	100	100	100	100	100

Consequently, the main trend of the Belarusian rural settlement system over the period of 1979–2009 is the transformation of the settlement structure towards the smaller localities settlement population sizes, whereas in the rural population distribution there is a shift towards larger rural localities settlements. This feature of the dynamics allows classifying the Belarusian rural settlement

structure to the type that is characterized by the population concentration in the large localities, having an insignificant share in the settlement structure (fig. 5). With regard to the Belarusian regions, hypertrophied small rural localities settlements by population size have become the main feature of the rural settlement in the Vitebsk region, where small settlements account to 72%. In Minsk, Mogilev and

Grodno regions about 50% of settlements belong to this category. Brest and Gomel regions form the only area of concentration of large rural localities settlements by population size in Belarus.

The general spatio-temporal trend of the region rural settlement structures is the following: in 1979, the prevalence of small rural localities settlements by population size in the Vitebsk and Grodno regions, medium rural localities settlements by population size in Minsk and Mogilev, large rural localities settlement

by population size in Brest and Gomel regions; in 2009 — spatially synchronous shrink of all the regional structures from the large, medium and small rural localities settlements by population size to the medium and small rural localities settlements by population size.

In the final stage, the forenamed regional differences in the Belarusian rural settlement nature were synthesized, using the method of cluster hierarchical analysis of 20 indices, and 3 types of the rural settlement districts were selected:



Fig. 5. Dynamics of the rural settlement structure of Belarus.

1). *Southern large rural localities settlement type by population size.* It includes large rural localities settlement districts with an average land burden, average or lower than average de-densification and depopulation speediness and stable settlement structure. It puts together 12 Polesye districts in the Gomel region and three Polesye districts in Brest region (12%). Over the study period, spatial compression of this type took place, which was called forth by the shift of the districts that used to be large rural localities settlements to the medium rural localities settlement category as a result of the general trends of the Belarusian rural settlements under the influence of the demographic factor [3].

2). *Central medium rural localities settlement type by population size,* comprises two subtypes that include 35 districts (30%):

a). *Central-South,* uniting regions with medium rural localities settlements, medium or scarcely populated, primarily Polesye areas with medium or high land burden, average or higher than average de-densification and depopulation speed;

b). *Central-suburban,* consolidating suburban districts with medium rural localities settlement and medium populated, large or extremely large land burden, average or above the average de-densification and depopulation speediness.

3). *Northern-Central small rural localities settlement type by population size.* It includes the smallest and small rural localities settlements, scarcely populated districts with a large land burden, high de-densification and depopulation speediness, and consolidates 68 rural districts (58%), from the Gomel region. The largest number of districts of this type is traditionally confined to the Vitebsk region. This type has seen a significant spatial extension on account of the districts of the Grodno and Mogilev regions that have been to a larger extent under the influence of the demographic and socio-economic factors. The position of the Minsk region districts have retained quite stable (fig. 6).

Crisis phenomena in the socio-economic development of the Belarusian rural areas at the beginning of the 1990s caused the need for the development of the National program of the rural revival and development over the period of the years 2005—2010 in the Republic of Belarus. With a view to the stable development of the rural areas, the program provided for the formation of quantitatively new settlements — agrotowns, comfortable rural localities, in which industrial and social infrastructure was to be created, to assure the social standards for the population living in them and the inhabitants of the bordering areas.

Agrotowns have been created in the Belarusian rural areas on the base of the existing administrative-territorial units, territories of which are the established administrative formations, as well as central farmsteads of agricultural organizations. In the Republic of Belarus, 1481 agrotowns were created, including 222 in the Brest region, 254 - in Vitebsk region, 238 - in Gomel region, 239 - in Grodno region, 325 - in Minsk region, and 203 - in Mogilev region [5].

In the Belarusian rural settlement structure, agrotowns account for 3% population, the average rural localities population size is of 839 people. The largest agrotowns are concentrated in the Southern part of Belarus, in Polesbye (980 people) and in the capital city region (970 people).

The size of the rural population living in agrotowns amounts to 542.9 thousand people, or 20%

of the total Belarusian rural population.

The largest population size of agrotowns is registered in Minsk and Brest regions — 122.2 and 102.9 thousand people accordingly, where on average one rural dweller in five lives.

The smallest population size of agrotowns is in the agrotowns of the Vitebsk region — 61.9 thousand people, or 16%.

All in all, in the years to come the nature of the natural population movement and age population structure of the Belarusian rural areas will not essentially change, therefore, on the basis of the strategic goal of their creation, all the agrotowns, under condition of the socio-demographic monitoring, should become the centers of the demographic growth in the rural areas against the overall development of the Belarusian countryside.

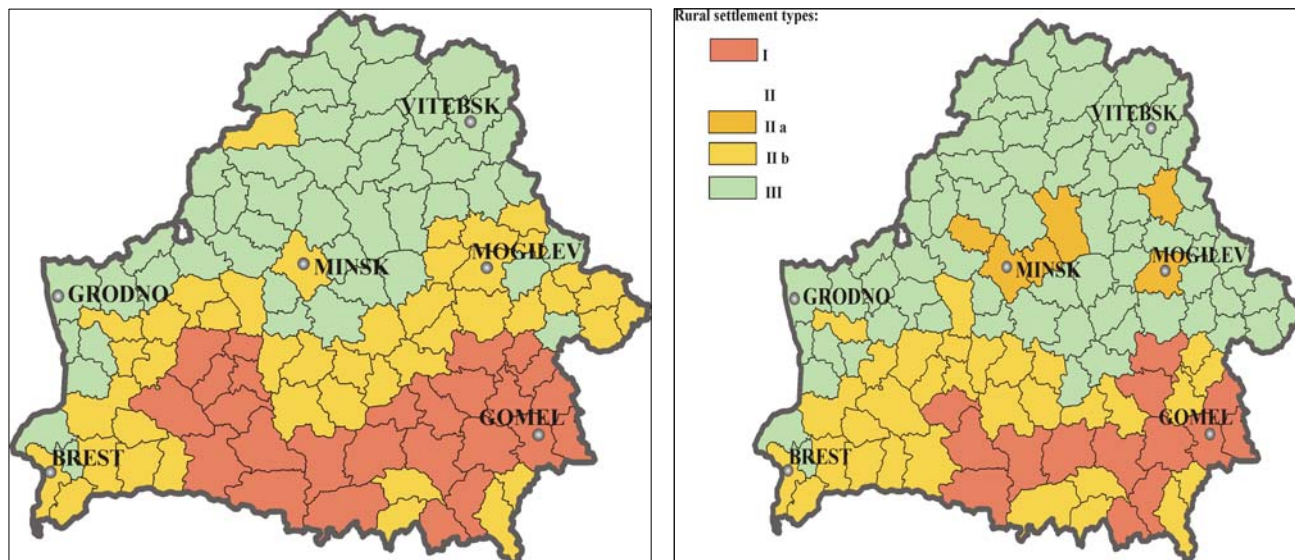


Fig. 6. Belarusian rural settlement types.

4. CONCLUSION

Therefore, the analysis conducted gives ground for a conclusion that the main trends that have taken place in the spatial structure of the Belarusian settlement system are concentration and polarization. Concentration manifested itself in the structural aspect — in the progressing population centralization in large and the largest cities of Belarus and in the first place — Minsk, the capital. Features of concentration are also notable in the rural settlement — in the progressing population centralization in relatively few rural localities (the largest and viable) with a significant increase in the number of localities of this type, as well as in the territorial aspect, when the focal nature of the rural settlements becomes more defined. The structural concentration gave rise to the polarization of the settlement landscape that is expressed through the increase in the share of tiny and largest localities and

simultaneous decrease in the number of medium localities by population size. Polarization in urban settlement expresses in different urban population dynamics vectors in varied classes of towns by population size. Predominance of natural increase in all classes of towns by population size, except small ones, forms center-peripheral pattern of urban settlements.

The changes in the nature of the economic and industrial pressure on the territory are becoming one of the important consequences of the population concentration. On the one hand, well-defined focuses of the anthropogenic impact are formed, and on the other hand, inter-central spaces that are less intensively used. The first variant of changes is characteristic of the rural areas that are close that are close to the large cities. Having drawn a significant part of the rural population first, and therefore having served as one of the main reasons of the village neglect, the individual large Belarusian cities have in due course became a source of

rural areas repopulation. The second variant of changes is characteristic for a larger number of rural districts, and its most vivid expression is depopulation that has deformed the typical settlement forms and structures, whereas the intensive migration outflow has been accompanied by the disappearance of the significant part of the inhabited locations. Migration inflow forms sustainability of urban settlement structure. To ensure the sustainable development of the Belarusian rural areas, new types of the rural localities — agrotowns — are being formed, and on the long term they will have the functions of the core elements for the demographic development of the Belarusian countryside. Therefore, in the Belarusian settlement system in the 21st century, two distinct traits are visible: abrupt structural changes in average population size and territorial dispersion of the settlements; well-defined spatial differentiation by settlements population size and distribution uniformity. The named peculiarities of the Belarusian settlement system deserve close attention for governmental regulation and call for the development of the territorially differentiated effort of spatial optimization of the human living environment.

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