

Features of urbanization: formation and development of Krasnoyarsk agglomeration

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Abstract: The article deals with the features of the urbanization process, taking as an example the Krasnoyarsk agglomeration formation, the purpose of which is to increase the efficiency of the economic, social and cultural development of Krasnoyarsk Krai. Urbanization is here presented as a global process, contributing to the development of urban agglomerations within the concept of sustainable development of the regions. The article also analyzes the territorial structure of the Krasnoyarsk agglomeration, taking into consideration modern demographic processes. The study is based on a wide range of scientific sources, socioeconomic statistics from 2008-2018 and analytical methods.

An analysis concluded that one of the main directions of the Russian Federation spatial development is the creation of the large agglomerations, that are centers of socioeconomic development of the regions. The Krasnoyarsk agglomeration formation and development takes place against the background of the concentration of production and the prevailing intraregional mechanical population influx with a persisting interregional population outflow.

Key words: urbanization, urbanized regions, agglomerations, urban environment, territorial concentration of production and population, Spatial Development Strategy, Krasnoyarsk Krai, Krasnoyarsk agglomeration, migration processes, municipal units, intraregional exchange.

1. Introduction

The relevance of the research topic is inherently associated with the modern urbanization processes, changes of the urbanized regions, city structure transformations and the agglomeration formations. Urbanization is a multifaceted global process, that contributes to the economic, social and cultural development of regions. Urbanized regions are traditional objects of study for urban planners, architects, economists, geographers, ecologists, demographers, sociologists, etc. The interest in the features, patterns and development factors of urbanized regions is rising due to the establishment of the post-industrial society, increasing mobility and concentration of population in the cities. Transformation of urban functions in the direction of enhancing the development of the innovation sector of the economy, changing the urban image and quality of life, is typical for the largest cities. It also leads to the need for in-depth studies of current processes in urban areas. The persisting high rates of urbanization determine the need for a more detailed study of urban agglomerations, which allow the complex development of large areas, where a significant number of people lives. Agglomeration is a complex phenomenon that has developed in the connection with the natural processes of "attraction" of nearby cities, strengthening mutual ties in the process of labor and activities of the population living in this territory. One of the important reasons for the closer attention to the study of urban agglomerations is the declining sustainability of the world economic system. Therefore, the increasing interest in the socioeconomic research of cities and their agglomerations, is not that surprising. The study of cities and agglomerations

as a way of creating a favorable environment for living is impossible without knowledge of economics, architecture, construction, sociology, culture, etc. Therefore, solving the problem of the increasing complexity of urbanization processes in the direction of the city structure transformations and agglomeration formations requires an integrated approach.

The concept formulation for the sustainable development of regions implies a search for a balance between economic growth and the life quality of the population and the implementation of spatial policy [1]. Within its framework a formation of a favorable environment for a human life in agglomerations is performed. Modern agglomerations are not only centers of population concentration and diverse connections, but are also centers of acute problems. Every year there is an increase in migration flow to the cities and their agglomerations. The growth of urban agglomerations is carried out mainly at the expense of medium-sized cities, the number of which does not exceed 500 thousand people. The underdeveloped social and economic structure and multiculturalism of the cities create unfavorable conditions for the residence of both migrants and the host community. Another important factor is an environmental degradation due to the overcrowding, consumption of a bigger amount of resources and, as a consequence, a greater release of waste. A number of sustainable development problems of the cities and their agglomerations in the context of increasing migration processes are determined, based on an integrated approach, that takes into consideration the interaction and mutual influences of various aspects (economic, social, environmental, etc.).

The purpose of the study is to identify the specifics of the urbanization process in Krasnoyarsk Krai. It is based on an analysis of the regional characteristics of the Krasnoyarsk agglomeration development.

2. Setting the research objectives. Results

One of the laws of society spatial organization is the law of the territorial concentration of production and population. The territorial concentration of social development is a territorial form of the law of the capitalist economy on concentration, along with the sectoral concentration of production. Functioning of this law is based on the consolidation of the productive forces of society, which cause scientific and technical progress. The growth of production volumes within the framework of the singular enterprises, inevitably leads to the concentration of economic activity in certain centers and territories, i.e., to territorial concentration of production [2, 3].

Primarily, the large cities that have formed socioeconomic system of settlements around itself and become the centers of urban agglomerations, play the role of the production and population centers [4, 5]. A well-known Russian economic geographer N. N. Baransky emphasized the enormous role of cities in the development of territories: "Cities and road networks are the framework, base, which holds everything together. It's the core that forms a territory and gives it a certain configuration" [6]. The concentration of population in the largest agglomerations and megalopolises is a natural consequence of the modern civilization development. The great majority of the Earth's population will continue to live in the large urban formations in the future [7].

Russia belongs to the countries with a high level of urbanization. The large urban agglomerations here play an important role in the space organization, organization of economical and social life [8, 9]. In 2015, there were 124 agglomerations in Russia that were mature enough or were at different formation stages. There were 85 million people, that were living in these agglomerations, i.e., 58% of the total population of the country or 80% of the urban population [10]. It is believed, that agglomerations are formed around large cities with a population of at least 100 thousand people [4].

The importance of the large urban agglomerations development as one of the country's development directions is emphasized in the "Strategy for the Spatial Development of the Russian Federation for the period up to the year 2025". It was approved on February 13, 2019 by the Government of the Russian Federation [4]. According to the Federal Law of June 28, 2014 N 172-FZ "On Strategic Planning in the Russian Federation". It defines priorities, goals and objectives of the Russian Federation regional development. It is oriented at maintaining the stability of the resettlement system in the Russian Federation [11].

The main problem of the spatial development of the Russian Federation is a high level of interregional socioeconomic inequality, which is, in particular, manifested in an insufficient number of economic centers to ensure the acceleration of the economic growth of the Russian Federation. The main goal of the country's spatial development is to ensure sustainable and balanced spatial development of the Russian Federation, aimed at reducing interregional differences in the level and quality of population lives, accelerating economic growth and technological development [10, 11].

The development of Russian Federation's largest centers of economic growth – the largest urban agglomerations, is one of the four main directions of the Russian Federation spatial development in accordance with the Strategy. Approximately 40 large urban agglomerations were formed in Russia according to the Spatial Development Strategy. These agglomerations provide the expansion of the territory and the acceleration of economic growth, scientific, technological and innovative development.

Krasnoyarsk Krai is one of the leaders among the constituent entities of the Russian Federation in terms of population, gross regional product, industrial production, investment in fixed assets and their contribution to the overall indicators of the country's development. The region's territory covers more than 2.3 million km² (13.86% of the country's territory). This is the second largest region in the country. Krasnoyarsk krai has a fairly high level of urbanization. 2 874 050 people lived in the region at the beginning of 2019. In terms of population Krasnoyarsk Krai is ranked as the 14th region among the constituent entities of the Russian Federation and the first among the subjects of the Siberian and Far Eastern federal districts. The urban population of the region consists of 2 226.1 thousand people, that is 77.4% (RF -73%) of the total population of the territory. There are 17 urban districts and 44 municipal districts, 27 urban and 487 rural settlements in Krasnoyarsk Krai. The majority of population is concentrated in the Krasnoyarsk agglomeration.

The Krasnoyarsk agglomeration is one of the eight emerging Siberian agglomerations. The specific development concept has been created for its purposes [12]. In 2008 the first results of the development concept formulation of Krasnoyarsk agglomeration were embedded by the materials, assessing the current state and usage of the Krasnoyarsk agglomeration territory. As a result of second stage, the concept of the "Territorial planning scheme of the Krasnoyarsk urban agglomeration" was developed [13, 14]. The final stage of the work is presented with an explanatory note - "The main directions of territorial planning of the Krasnoyarsk agglomeration until 2020".

The main purpose of these documents is to create a territorial entity - the Krasnoyarsk agglomeration, which will be able to compete on the global market, which will have a development strategy and the territorial planning scheme that would meet the goals and objectives approved by the long-term development strategy of the Russian Federation [10, 15]. The principal goal of the Krasnoyarsk agglomeration development is to initiate a systemic process of developing new socioeconomic reality - multiplying the resident population of Siberia, which has high social and economic opportunities [14, 16].

The determination of the content and boundaries of Krasnoyarsk agglomeration development concept is the initial stage of its formation. The analysis of the intensity of economic relations, business trips, movement of various types of suburban transport, the density of engineering infrastructure and the placement of horticultural societies made it possible to identify the content and boundaries of the Krasnoyarsk agglomeration. The territory of the agglomeration is defined as the area with the most intensive social and economic interconnections within an hour and a half access by public transportation. In 2008, four municipal districts and 189 settlements, including five urban districts headed by the regional center became a part of it [13, 14]. 1234.5 thousand people lived on the area of 2460 hectares. Over the last ten years (2008-2018) the population of the agglomeration increased by 12.7%. The territory itself has remained practically unchanged (Table 1).

Table 1. Structure of the Krasnoyarsk agglomeration, 2018 [17]

Territorial units	Distance to Krasnoyarsk	Area, thousand of hectares	Population, thousand of people	Population density, people/ km ²	Number of human settlements
Urban districts					
Krasnoyarsk	-	37.9	1091634	2880	2
Divnogorsk	22	50.2	33490	67	2
Sosnovoborsk	27	2.6	40128	1543	1
Zheleznogorsk	60	45.7	92851	203	6
Kedrovyy (village)	53	2.8	5450	194	1
Municipal districts					
Berezovsky district	7	431.2	41727	10	26
Emelyanovsky district	16	743.7	50799	7	64
Suchobuzimsky district	64	561.1	20064	4	36
Masnky district	68	595.9	15668	3	45
Total		2458	1391811	57	189

If we want to clarify the Krasnoyarsk agglomeration structure, it's important to view it in terms of the modern migration processes. Unlike the statistical services of other countries, Russian statistical services, unfortunately, do not collect information on agglomerations. Analysis of the migration situation is the most accessible way of analyzing the intensity of connections between the agglomeration center and its periphery. It is a method for identifying its territorial structure.

In 2017, 125.011 people arrived to Krasnoyarsk Krai, including internal and international migrants. 124082 people left, therefore the positive migration balance was 929 people [18].

In comparison with the Siberian Federal District, the intensity of internal arrivals of the Russian migrants to Krasnoyarsk Krai is lower, and the intensity of the departures is higher than the average number of arrivals and departures for the district (Figure 1) [19, 20].

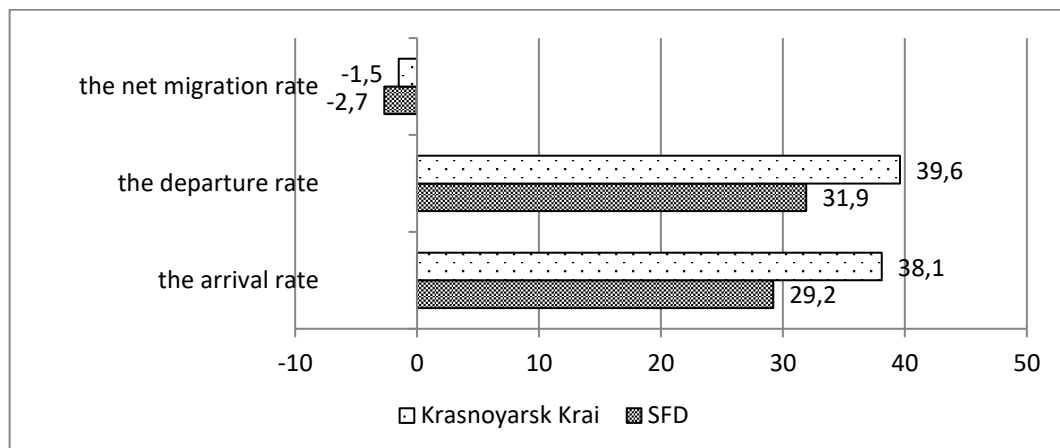


Figure 1. Indicators of internal migration Siberian Federal District and Krasnoyarsk region, 2017, % [21]

A significant part of the migrants - 57% of the total number, are migrants, who move within the region. In the exchange with other Russian regions, the migration balance of the Krasnoyarsk Krai is negative, but it is positive in the exchange with foreign countries; therefore, the mechanical decline of the population to other regions of Russia is compensated by the population influx from the CIS countries, primarily from Central Asia.

A steady-positive mechanical increase in all types of migration has been observed for many years in seven out of 44 municipal districts of Krasnoyarsky Krai: Berezovsky, Yemelyanovsky, Mansky, Sukhobuzimsky, Rybinsky, Minusinsk, and North-Yenisejsky. Positive mechanical population growth has been noted in four out of thirteen cities of regional subordination: Krasnoyarsk, Sosnovoborsk, Divnogorsk and Minusinsk. We can observe the population outflow in the vast majority of the districts of Krasnoyarsky Krai, both in exchange with other regions of Russia and in intra-territory exchange. The predominant mechanical population influx in the intraregional exchange with a persisting population outflow in the interregional exchange (the exchange of the population within Russia) is a specific feature of the cities and territories of the Krasnoyarsk agglomeration. This proves, that the administrative units, which form the Krasnoyarsk agglomeration are very attractive for internal migrants.

However, a big concern about negative migration balance of the Mansky district and Kedrovyy village in the context of general migration "well-being" of Krasnoyarsk agglomeration territories, has been arisen during the recent years. It is obvious, that the population outflow in these formations is associated with the less favorable economic and geographical position of the Mansky District, which is the furthest district from the agglomeration center. Despite the negative migration balance, these municipal units should be included into Krasnoyarsk agglomeration due to the division of labour, since its territories are attractive recreational areas and dormitory districts of agglomeration.

3. Conclusions

1. Urbanized regions are characterized by the complex multi-functional territorial structure and interpenetration of social and economic spheres.
2. The study of urbanization processes in the framework of the cities structure transformation and the agglomerations formation requires an integrated approach to the solution of the strategic tasks for their study and development.
3. The creation of large agglomerations, which are the centers of socioeconomic development of regions, is one of the main directions of spatial development of the Russian Federation.
4. The formation and development of the Krasnoyarsk agglomeration takes place against the background of the production concentration and the intraregional migration flow, with a persisting migration loss in interregional exchange.

References

- [1] The concept of the long-term socio-economic development program of the Russian Federation for the period up to 2020 -Order of the Government of the Russian Federation of November 17, 2008 No. 1662-r.
- [2] Bochkova E V, Kuznetsova E L and Sidorov V A. 2014 *Cluster as an institutional structure in the system of territorial division of labor* Krasnodar: Novatio), p. 143
- [3] Gorkin A P 2013 The systematic-structural approach in the book. Socio-economic geography. Concepts and terms: Glossary Smolensk: Oikumen p. 232-236.
- [4] Lappo G, Polyan P and Selivanova T 2007 Russia's agglomeration in the XXI century of *Reporter of the Regional Development Fund of the Irkutsk Region* No. 1 pp. 45-52.
- [5] Pertsik E N 1991 *Geography of cities (geo-urban studies)* Moscow: High School p. 350
- [6] Baransky N N 1980 *The formation of Soviet economic geography* Moscow: Thought pp. 204-254.
- [7] Pivovarov Yu L 1999 *Foundations of Geo-Urban Studies of Urbanization and Urban Systems* Moscow: VLADOS p. 232
- [8] Zubarevich N V 2006 Russian Cities as Growth Centers of *Russian Expert Review* No. 2 (16).
- [9] Polian P M and Selivanova T I 2007 Urban agglomerations of Russia and new trends in the evolution of its network (1989-2002) *Izvestia RAN, ser. Geogr* No. 5 p. 18-27.
- [10] The spatial development strategy of the Russian Federation for the period up to 2025 years. - Directive of the Government of the Russian Federation of February 13, 2019 No. 207-p. Web:

- (<http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=318094&fld=134&dst=1000000001.0&rnd=0.7110187172203024#07522147145383609>)
- [11] Federal Law of 28.06.2014 N 172-FL "On Strategic Planning in the Russian Federation" http://www.consultant.ru/document/cons_doc_LAW_164841/
- [12] Dorofeeva L A. Geographical features of the formation of the suburban territory of the Krasnoyarsk agglomeration - FSBEI HE "Krasnoyarsk State Pedagogical University. Named after V. P. Astafiev" Web: <http://irigs.irk.ru/download/dissertationDorofeevaLA.pdf>
- [13] Polishchuk V I 2010 The Comprehensive Development Strategy of the Krasnoyarsk agglomeration: 2020-2030 (Krasnoyarsk: OAO Krasnoyarsk-2020 Corporation).
- [14] Planning scheme of the Krasnoyarsk agglomeration. Regulations on spatial planning Web: (<http://mmstmy.krskstate.ru/graddoc/tenplan/0/id/3620>)
- [15] Territorial planning scheme of the Krasnoyarsk agglomeration. - Ministry of Construction and Architecture of the Krasnoyarsk Krai. Web: (http://www.krskstate.ru/dat/bin/art_attach/1103_arh.pdf)
- [16] Development of a project for amending the Territorial Planning Scheme of the Krasnoyarsk agglomeration. Krasnoyarsk: Krasnoyarskgrazhdanproekt, 2018 Web: (<http://minstroy.krskstate.ru/graddoc/terrplan/0/id/34342>)
- [17] The main indicators of the socio-economic situation of the municipalities of the Krasnoyarsk Krai - Web: (http://krasstat.gks.ru/wps/wcm/connect/rosstat_ts/krasstat/ru/municipal_statistics/krasnMstat/main_indicators)
- [18] Krasnoyarsk Regional Statistical Yearbook 2018 *Statistical collection* No. 1.37.5. - Rosstat. The Office of the Federal State Statistics Service for Krasnoyarsk Krai, the Republic of Khakassia and the Republic of Tyva (Krasnoyarskstat) Web: (http://krasstat.gks.ru/wps/wcm/connect/rosstat_ts/krasstat/ru/publications/pubKras/official_publications)
- [19] Russian internal migration, the areas of arrival and departure 2018 - Russian statistical yearbook *Statistical collection* M.: Federal State Statistics Service Web: (http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1135087342078)
- [20] The main demographic indicators by regions of the Russian Federation in 2017 - the Russian statistical yearbook *Statistical collection* - M.: Federal State Statistics Service Web: (http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_113508734207)
- [21] The number of arrivals, the number of departures, the migration gain in Krasnoyarsk Krai - *Database of indicators of municipal units in the Krasnoyarsk Krai* Web: (<http://www.gks.ru/dbscripts/munst/munst04/DBInet.cgi>)