Transformation of the City Environment: Functional-Planning and Territorial Aspects

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Abstract. The article discusses the functional planning and territorial aspects of the transformation of the city environment in Russian cities at the current stage of socio-economic development. Creating a comfortable city environment has been declared a strategic objective in Russia at the federal level since 2016. New standards of comfort affect the competitiveness of cities in the struggle for human capital and investment. The implementation of qualitative transformations of the city environment at the local level requires an understanding of the local urban context and the general directions of the territorial development of cities. The study is devoted to identifying the main directions of transformation of the city environment. Three main directions of transformation of the city environment are identified that allow cities to have a comfortable city environment. The study was conducted on the example of the Kazan agglomeration.

1. Introduction

In recent years there has been a significant trend towards maintaining a high-quality urban environment in the management of cities of the Russian Federation. The creation of a comfortable urban environment has been declared in Russia as a strategic task at the federal level since 2016. The priority project is “Formation of a comfortable urban environment”. The goal of the project is to ensure the integrated development of modern urban infrastructure based on common approaches. The project will be completed in February 2021.

The urban environment is one of the key concepts of research in the field of urban issues, urban development management, urban engineering and design. Interpretations of the concept of “urban environment” found in the scientific literature can be conditionally divided into two categories - “social (public)” and “subject”. In the first case, the urban environment is understood as a space organized by interaction and for the interaction of the urban community. For example, V. Glazychev defines the urban environment as composed of human communication (direct and indirect) habitable space of the city [1]. In the second case, the concept of “urban environment” has a narrow utilitarian semantic meaning - filling the city space with objects for the daily activities of citizens. So, S.A. Khasieva believes that “The urban environment is a complex functional-spatial system of inextricably
linked parts of the city. In this system, both buildings and structures, and the spaces of streets, intersections and squares interact equally. In addition, this system includes many other components: from unique works of monumental and decorative art to standard elements of urban equipment and landscaping [2, C.6].

In general, researchers note the multicomponent, complexity and complicacy of this concept. However, in practice, in the activities of the city administration there is a narrow ("substantive") approach aimed at landscaping - replacing the road surface, creating flower arrangements, arranging typical game and sports equipment, or at best for reconstructing a park or park. The creation and maintenance of a comfortable and safe urban environment occurs through city-wide functional planning territorial transformations, which in turn occur under the influence of changes in the socio-economic way of life of people. We propose to highlight the term "city environment" from the general term “urban environment” and to use “city environment” for cities with a population of over 100,000 people. Cities with large population have a significant difference in the environment associated with communication problems, distances, zoning, etc.

2. Results and discussions

The nature of transformations of the urban environment at the present stage of urban development was laid down as a world trend at the UN Summit in September 2015, Sustainable Development Goals (SDGs) were considered and adopted [3]. 193 countries have adopted 17 global goals, including Goal 11 “Make cities inclusive, safe, resilient and sustainable”. To achieve this goal, in October 2016, at the United Nations Conference on Housing and Sustainable Urban Development Habitat III, the “The New Urban Agenda” was compiled, combining the best proposals for creating a truly comfortable and safe urban environment [4]. Obviously, new standards of comfort affect the competitiveness of cities in the struggle for human capital and investment. Moreover, specialists from different fields have established the connections and influence of the quality of the urban environment on the physical and emotional health of people.

If we consider the urban environment from the perspective of functional planning and territorial aspects, then it is necessary to highlight the research and work of K. Alexander, K. Lynch, V.L. Glazycheva, A.E. Gutnova, I.G. Lezhava and A.A. Vysokovsky [1, 5, 6, 7].

The purpose of the study is to identify functional-planning and territorial aspects of transformation of city environmental of different size cities of monocentric city agglomeration (case-study of Kazan agglomeration), which lead to an improvement in the state of the urban environment.

The cities of the post-Soviet period have a number of characteristic features formed during the industrialization of the Soviet period and the market conditions of life in the post-Soviet period. Russia becomes an urbanized country in the sense of the predominance of the urban population over the population of rural settlements in the 50s of the twentieth century on the wave of accelerated industrialization and the country's economic recovery after World War II. The population growth of cities was accompanied by an increase in the number of cities with industrial specialization created in a planned economy.

Modern cities of Russia can be divided into two groups - with a pre-industrial history of origin and Soviet cities, the creation of which went according to a clear centralized plan in the conditions of command and administrative management. In the 90s of the twentieth century, cardinal changes took place in the entire socio-economic system of the country, which was territorially manifested in cities and villages. The transition to market management conditions from command and administrative was carried out with negative consequences for the city environment - the closure of industrial enterprises led to abandonment of industrial buildings and territories served by enterprises, deterioration in the quality and quantity of green spaces due to changes in management and management conditions, development of territories, including having environmental and social significance for the townspeople, deterioration of infrastructure, the spread of the area of the largest cities, a sharp increase in movements by personal cars, the chaotic development of suburbia with cottage and multi-apartment buildings. Such negative changes to one degree or another affected cities of different levels. Once
again, attention has been drawn to urban development problems and the quality of the urban environment since the 2000s.

Based on the analysis of the socio-economic and spatial development of domestic cities on the example of Kazan and Zelenodolsk are highlighted general changes in the territorial organization of cities for different hierarchical levels that contribute to improve the quality of the city environment.

Kazan is the capital of the Republic of Tatarstan, one of the leading socio-economic regions of Russia. The population of the city is more than 1.25 million people. The city has undergone all the negative aspects of the post-Soviet period that were listed above. The city environment was largely lost in terms of green spaces, small architectural forms, historical, cultural and architectural objects of the pre-Soviet and Soviet periods, industrial territories also underwent changes, some of which acquired new service functions. There was a centralization of not only labor and educational, but also recreational, socio-cultural functions in the historical part of the city, where residents of the outlying areas are forced to go in search of a comfortable city environment. The possibilities for walking on foot were narrowed in order to expand the roads for vehicles. Green streets turned into roads filled with vehicles.

However, the city was able to find a niche in the post-industrial economy as a territory for large international sports competitions, which positively influenced the recreation of the city environment. Since 2013, the city and republic administration has been implementing a number of programs aimed at creating a favorable city environment - the Green Record (2013), the Year of Parks and Public Gardens, and the Year of Water Protection Zones. In 2016, the Strategy for the Social and Economic Development of Kazan until 2030 was developed and adopted. The key strategic direction of spatial development is the transition from monocentric development to polycentric, which will achieve high quality of life throughout the city while providing transport connectivity, utilities infrastructure and preserving the identity of urban areas prevailing at previous historical stages. The city’s task is to create a people-friendly city environment that is safe, stimulating healthy behavior [8]. The results of the programs and the implementation of the Strategy are already noticeable in terms of saturating the social functions of public spaces in different areas of the city, which allows not only citizens, but also guests cities spend their free time in public spaces.

Zelenodolsk is the largest satellite city of the Kazan monocentric agglomeration, with a population of almost 100 thousand people. Both cities are located on the left bank of the Volga River. However, neither one nor the other has a well-maintained comfortable Volga embankment. In Zelenodolsk, the landfall is almost completely closed by city-forming industrial enterprises. In recent years, the city has implemented the federal project “Comfortable urban environment”, the federal program for the development of single-industry towns and the republican programs “Year of parks and squares” (2015), “Year of water protection zones” (2016) [10]. Zelenodolsk is a single-industry city and retains industrial specialization. The city environment in Zelenodolsk is virtually unaffected by point building and is characterized by a high level of landscaping. The city is influenced by Kazan as the core of the agglomeration, which in recent years has created a favorable comfortable environment for spending free time and recreation.

In the territorial structure of Zelenodolsk there are two significantly different districts according to the state of the city environment: the central and eastern residential areas. In the central residential area, a landscape-recreational framework was laid in Soviet times. Today, it is necessary to reconstruct urban recreational nuclei in the central urban area, form linear relationships between them, and create green logistics. Now on the territory of the eastern residential area there are no landscape and recreational spaces of regional significance. There are local spaces - squares. For recreation, sports, residents spontaneously use forests, natural meadow, ravine landscapes. Walking spaces in the form of boulevards, alleys are also absent. It is necessary to form a system of public landscape and recreational spaces on the territory of the eastern residential area.

In general, the transformation of functional planning and territorial aspects of the city environment in order to improve its quality should be carried out in the following areas:
Historically, settlements emerged due to the availability of premises in sleeping areas suitable for organizing trade. Suburban areas, including those associated with green areas and forest areas, which are currently experiencing a strong anthropogenic load, etc., and it was balanced by settlement centers, and during Soviet development - centers of planning or residential areas [9, 10]. From the beginning of the two thousandths until recently, due to limited financial resources, and largely due to the lack of a territorial development strategy, in many cities there has been an increase in traffic load, a functional imbalance in the central district of the city (an excess of trade, office, educational, administrative facilities in addition cultural, educational, recreational objects that already existed historically or were laid down in Soviet times).

- Changes in the functional purpose of large (significant) fragments of urban areas, including due to mixed use of objects and spaces, priority development of the service sector and related objects and spaces.

The Charter of Athens (1933), as a program document for the urban development of Soviet cities and the nature of the country's economic development, left a clear imprint on the city master plans in the form of hard functional zoning [11]. In this connection, huge industrial areas and a residential zone appeared in the cities, which turned into “sleeping areas”. Changes in the economic situation and the transition to the post-industrial stage of development have led a number of industrial enterprises, including large ones, to become ineffective, new areas of the service economy begin to develop in the city, primarily tourism and sporting events. The processes of redevelopment of production areas have already begun and are being implemented in large cities [12, 13].

- Changes in the communication system of the city

In this direction, it is necessary to note a complex of aspects - a change in the nature of mobility of citizens, strengthening agglomeration links, improving transport hubs, returning to the city streets the importance of public space, and not just transport movement [14, 15, 16, 17].

In Kazan, according to the Strategy for Socio-Economic Development until 2030, in order to create equal opportunities for residents of different areas of the city to use a high-quality city environment, long-term lines of action and immediate actions have been identified. For example, long-term lines of action: to preserve existing ones and contribute to doubling the area of green spaces in the central part of the city and the centers of planning areas; to preserve and improve the objects of historical and cultural heritage, environmental objects to create an original look of the city; to promote the construction and increase the availability of premises in sleeping areas suitable for organizing trade and the provision of socially significant services in the field of education, health, culture, sports in walking distance; create a unified transport and pedestrian carcass associated with green areas and attractive environmental objects, etc.

Examples of immediate actions are as follows: landscaping of yards; improvement city embankments, giving them the functions of public spaces while maintaining their natural and ecological significance; create infrastructure for holding festivals and events in open public spaces in various areas of the city; adapt the city environment for pedestrian movements, bicycle and other modern ways of car-free movements: create a navigation system in the city environment, using recognizable brands of local places and landmarks; to design and implement a system of safe school routes [8, 18, 19].

For Zelenodolsk, two directions of city-wide transformations have been identified: 1) the formation of recreational spaces in the coastal zone of the Volga, i.e. defined territories and their relations, accessibility to the main areas of housing, given preliminary sketch proposals for the development and improvement of these territories; 2) the creation of local buffer recreational zones on the border of residential buildings and forest areas, which are currently experiencing a strong anthropogenic load, are constantly polluted. The concept also defines the necessary transformations for the central and eastern regions [21]. For the central residential area, the creation of the boulevard ring is proposed as
the basis for the formation of a single green framework, for the eastern residential area, the formation of park areas, green ties in the form of boulevards connecting them, the reconstruction of small public spaces - squares and parks.

3. Conclusion
The urgent task of creating and maintaining a comfortable city environment facing cities can be solved by transforming a functional planning and territorial nature. Kazan and Zelenodolsk - the largest cities of the Kazan metropolitan area - are implementing a number of measures aimed at improving the state of the city environment, including due to the implementation of municipal, regional and federal programs. Further steps are largely determined by general functional planning decisions, taking into account the desire for polycentricity, while improving the communicative environment and changing the functional purpose of significant urban areas.

References
[1] Glazychev V L, Egorov M M, Il’ina T V et al 1995 Urban environment Development Technology: Handbook (Russia)
[2] Khasieva S A 2001 Architecture of the urban environment (Moscow: Stroyizdat) p 200
[3] Sustainable Development Goals https://www.un.org/sustainabledevelopment/cities/ (Accessed: 21 August 2019)
[4] The New Urban Agenda http://habitat3.org/the-new-urban-agenda/ (Accessed: 21 August 2019)
[5] Christopher A 1979 The Timeless Way of Building (New York: Oxford University Press)
[6] Lynch K 1960 The Image of the City (UK)
[7] Gutnov A, Lezhava I 1973 Some prerequisites for the formation of a promising resettlement system (Moscow: Stroyizdat) pp 273-287
[8] Vysokovskiy A A 2007 Russian expert review 4-5 pp 71-74
[9] Strategy of Kazan 2030 https://www.kzn.ru/o-kazani/strategiya-kazani-2030/ (Accessed: 21 August 2019)
[10] Parks and squares of Tatarstan http://park.tatar/ (Accessed: 21 August 2019)
[11] Gaykova L 2015 Architecton:proceedings of higher education 50 pp 69-81
[12] Pomorov S B, Zhukovsky R S 2015 Architecton:proceedings of higher education 52 pp 13-36
[13] Le Corbusier 1076 Three forms of settlement. Athens Charter (Moscow: Stroyizdat)
[14] Demidova E V 2013 Akademicheskij vestnik Uralniiproekt RAASN vol 1
[15] Vukan R Vuchic 1999 Published by Rutgers Center for Urban Policy Research
[16] Gehl J 2011 Life Between Building: Using Public Space (USA:sixth edition)
[17] Gehl J 2010 Cities for People (USA)
[18] Bobylev S N, Porfiryev B N 2018 Studies on Russian Economic Development vol 29 2 pp 116–123
[19] Revich B 2018 Studies on Russian Economic Development vol 29 3 pp 267-273
[20] Khusnutdinova S, Ulengov R, Zakirova J and Khusnutdinov R 2017 Proc. Int. Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 17, Ecology, Economics, Education and Legislation pp 621-628
[21] Dembich A A, Zakirova J A, Latypova M S 2017 News of the Kazan State University of Architecture and Engineering 3(41) pp 57-66
[22] Zakirova J, Khusnutdinova S 2018 IOP Conf. Ser.: Earth Environ. Sci. (Russia) doi:10.1088/1755-1315/107/1/012139.