Methodological Approaches to the Development of Public Spaces in Accordance with the Concept of Sustainable Development

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Abstract. The issue of urban area efficient use is one of the top-priority issues in planning public space development projects. The current trend is that public spaces and parks play an important role in increasing the attractiveness of cities as a whole and, in particular, individual city blocks and directly affect the quality of human life. Within the framework of Russian Federation priority national project “Formation of a comfortable urban environment” it is planned to carry out measures to improve municipal unit territories of the corresponding functional purpose (squares, embankments, streets, pedestrian areas, garden squares, parks, other territories). To implement this project, it is important to create a mechanism to increase the investment attractiveness of projects for the development of public spaces, as well as identify criteria for the selection of such projects. Within the framework of this article an attempt is made to classify the criteria that must be taken into account when developing public space development projects based on the concept of sustainable development. An algorithm for evaluating the criteria and parameters that would allow assessing the attractiveness of the territory for the implementation of the project for public space development is also given. The article also formulates the main areas of scientific research that would provide a more competent approach to the processes of urban planning and would help to formulate mechanisms for attracting investments in public space development projects, since these are not only of city-planning significance, but can also ensure social integration and support intercultural communication.

1. Introduction

Today the Russian government is actively engaged in urban environment development. In 2017, for the first time in the history of Russia, strategic direction of growth "Housing, public utilities and urban environment" was launched. Within the framework of this direction the following priority projects are being implemented: “Creation of a comfortable urban environment” and “Ensuring the quality of public utility services”. About 25 constituent entities of the Russian Federation have already taken part in project “Creation of a comfortable urban environment”: Amur Region, Belgorod Region, Bryansk Region, Volgograd Region, Kabardino-Balkarian Republic, Kaliningrad Region, Karachay-Cherkess Republic, Kemerovo Region, Kurgan Region, Murmansk Region, Republic of Buryatia, Republic of Dagestan, Republic of Ingushetia, Republic of Kalmykia, Republic of Karelia, Republic of Komi, Republic of Mordovia, Republic of Sakha (Yakutia), Republic of Tuva, Ryazan Region, Khabarovsk
Territory, Khanty-Mansiisk Autonomous District, Chechen Republic, Chukotka Autonomous District, and Tambov Region. [1]

Thanks to the implementation of this project it is planned to ensure high-quality maintenance of cities, improvement of yards, as well as creation and improvement of public spaces. For example, in 2017, thanks to the implementation of the project, more than 2,700 parks and other public areas throughout the country were improved. [1]

Today the Ministry of Construction of the Russian Federation has developed the passport of national project “Housing and urban environment”, which includes four federal projects: “Mortgage”, “Housing”, “Creation of a comfortable urban environment” and “Ensuring sustainable reduction of uninhabitable housing stock”. Duration of the national project: from October 2018 to 2024 (inclusive).

The main targets of the national project are as follows: a dramatic increase in the comfort of the urban environment, an increase in the urban environment quality index by 30%, halving the number of cities with an unfavourable environment, developing a mechanism for direct participation of citizens in creating a comfortable urban environment, increasing the proportion of citizens participating in the solution of issues related to urban development up to 30%. [2]

Public space planning has always been given great importance because of its influence on city development, enhancement of safety, increasing the attractiveness for local residents and improving the economic well-being of the region.

In the current conditions of spontaneous development, changes in the demographic situation, environmental degradation in the city, the issue of creating and using a public space is becoming extremely urgent.

Current trends in the development of public spaces require a change in approaches to the planning of such projects implementation for their balanced development in terms of consumer preferences.

Within the framework of priority project “Formation of a comfortable urban environment” it is planned to carry out measures to improve municipal unit territories of the corresponding functional purpose (squares, embankments, streets, pedestrian areas, garden squares, parks, other territories). A special place in this matter is given to the municipal government, which, in accordance with the charter of the city, contributes to the creation of comfortable conditions and places for mass recreation of the population.

2. Methodological foundations of the study

Within the context of this article a public space refers to the territory of a city that has developed thanks to historical, cultural, social, spatial, environmental features, ensures interpersonal relationships, equal access to services provided on a commercial or free basis (leisure, sports, cultural events) for the residents of all mobility groups.

All public spaces can be divided into open ones, which are part of the urban landscape, and closed ones, which are located in isolated territories and inside buildings. The latter, as a rule, are of a point nature and do not affect changes in the urban environment as a whole.

On a territorial basis public spaces are classified as follows:

1. Central - public - squares, parks, embankments, pedestrian spaces.
2. Peripheral - of district significance - territories in front of cinemas, garden squares, green areas.

The development of public spaces is a multi-stage approach to conceptual planning, detail design, construction and operation of public spaces.

The development of public spaces can increase not only the attractiveness of this place for citizens, but also the cost of housing nearby, as well as attract entrepreneurs (primarily tenants of commercial premises) and improve urban ecology. According to Tranio.com experts, prices for real estate in the neighborhood with a well-equipped public area may increase by about 5-8%. For example, the cost of a city apartment near a landscaped pedestrian area may differ by 10-15% of the cost of similar housing in another part of the city.
The capitalization of the territory allocated for the creation of a public space will be formed, first of all, by increasing the cost of real estate adjacent to this area and increasing the development potential of the territorial area as a whole.

The issue of urban area efficient use is one of the top-priority issues in planning public space development projects. All this allows making money on human flows. Ultimately, the creation of attractive public spaces that positively affect health, happiness, and well-being of people is valuable in itself. Experience shows that when private companies strive to satisfy the needs of the population as much as possible, they thereby save themselves from a significant part of problems. To do this, it is required to see the prospect for the development of a public space as a whole, and not focus on its individual fragments. Cooperation with the local population, attention to local peculiarities represent the best approach to the creation and development of public spaces.

In addition, an important indicator of a person’s life is not just the quantity, it is also the quality of public spaces - places where people can spend their free time outside the office and home. Investing in the pedestrian infrastructure presupposes not only social expenditures, but also a good investment in the city’s economy.

Transformation of public spaces in accordance with Jan Gehl’s theory “Cities for people” creates attractive places for users. Attractiveness involves not only the visual component, but also the useful one. [7]

Monofunctional garden squares and parks turn into a multifunctional space additionally filled with advanced technologies [8].

There are a lot of possibilities and methods of landscape architecture and urban environment design for the creation of territories with a special “character”. They often become central drivers of the economic viability of cities. For example, the Millennium Park in Chicago, USA, demonstrates the potential of new designed landscapes when the city becomes more concentrated, denser and as if “encloses” the newly created park around the perimeter [3].

The presence of an actively functioning public space on the territory largely determines the attractiveness and quality of life of a particular urban area and, ultimately, the city itself. Public spaces can be created at the initiative of the state in order to improve the quality of life of citizens and at the initiative of private companies for personal purposes, for example, to regulate consumer behavior. [4]

The complexity in the formation of projects for the development of public spaces is associated with their multicomponent nature, a variety of forms and the functional content of their characteristics (buildings, structures, urban equipment, landscape inclusions). Public spaces are dependent on urban development and determined by the main types of urban interiors.

3. Results: formation of the strategy canvas of megaprojects

Based on the abovementioned, two types of distinctive features of public spaces can be formed.

The first type is determined by architectural and spatial characteristics such as the dimensions, structure, compositional structure and geometry. [4]

The second one - with non-architectural conditions and parameters - this is a technology, operation, natural-climatic and landscape factors, space multifunctionality. [4]

Both types form their own system of vision and presentation and, consequently, certain requirements for the creation of public spaces, which entail inconsistency of actions, ineffective design solutions and, as a result, an uncomfortable urban environment.

In modern conditions, as practice shows, public spaces are formed spontaneously and are a random element that suddenly appears in an urban environment. This is due, first of all, to the fact that with the mass development of the city such elements of space are simply absent. Mass development is characterized by such features as uniformity, rigidity and a minimalist approach to the formation of its infrastructure environment.

In the absence of comfort in the interaction between space and passers-by, it becomes neutral for perception, uncomfortable and “empty” in terms of the meaning and cultural values. Such a space is
not perceived as valuable and can be captured and privatized by marginal elements of the urban community or spontaneous and uncontrolled communities.

In the process of development a person obtains new needs, and the environment must always correspond to these current needs. A person changes in the course of development, which means that the appearance of the surrounding space should also change.

It should be noted that all projects for the formation of a comfortable urban environment should be correlated with the concept of sustainable development of territories. And in a generalized sense a stable and comfortable urban environment is a harmonious combination of various components shown in the figure.

The current trend is that public spaces and parks play an important role in increasing the attractiveness of cities as a whole and, in particular, individual city blocks and directly affect the quality of human life. In addition, the need for public spaces and park areas grows as the environmental and social problems of cities increase. Economic efficiency is not only the ratio of the park’s budget for its construction, the popularity of the park and the impact on the financial performance of the city. The value generated by the designed landscape park, public space, roof garden [5] can be determined using a number of social, economic, cultural and other indicators that are outside the scope of this study and may be considered in the future.

The principles laid down in the planning of public space projects must comply with the principles of sustainable development of the city (fig.), the main purpose of which is to create such an environment where modern rational, economical, technological, environmental decisions are made that take into account not only the existing interests of residents, but also ensure the progressive development of the territory.

The criteria for evaluating the decisions made with this approach are as follows: accessibility, quality, resource efficiency, functionality, competitiveness, manufacturability and social orientation.

The implementation of projects for the development of public spaces immediately forms two broad topics for scientific research:

1. Determination of economic benefits from the implementation of these projects. For example, the Millennium Park opened in 2004 with an area of 10 hectares, which fair market value amounting to 490 million US dollars, is currently the subject of extensive research on the economic implications of its creation, it even gave rise to the new term - “Millennium Effect” [3].

2. Development of a mechanism and methodology for selecting projects taking into account consumer preferences. In particular, one of the targets for the implementation of the national project is precisely the creation of a mechanism for the direct participation of citizens in the formation of a comfortable urban environment. And, consequently, the methodology of selection of projects proposed for implementation in order to form consumer preferences should become an integral tool of this mechanism.

Figure 1. Sustainable urban environment components.
It should be noted that, first of all, when planning public space development projects, it is necessary to assess the attractiveness of the location of the public space itself, which will indirectly affect the attractiveness of this project. To achieve this goal, key groups of indicators were determined that should be taken into account when assessing the attractiveness of public space location:

**Use and activity:**
- Uniformity of place development
- Possibility to use the place all day long
- Suitability for single and group use
- Availability of various activities
- Possibility to use by people of different ages
- Demand for the place among city residents

**Comfort and prestige:**
- Safe stay
- Place cleanliness
- Maintenance quality
- Pleasant first impression
- Possibility to walk to the place
- Enough space to relax
- Conveniently located rest spaces

**Access and communication:**
- High foot traffic
- Connection of the place with nearby buildings, historical places of the city
- Possibility for residents of all mobility groups to use the place

**Sociability:**
- The place is used for meetings and walks
- or residents avoid it
- Regularity and intensity of place visits
- Compliance of the place with the needs of residents
- Presence of people of different ages and ethnic groups

To evaluate the abovementioned indicators, the method of point estimates for indicators for each group can be used. An example of a 5-point scale is shown in Table 2

\[ 1 \leq K_i \leq 5 \]  

where \( K_i \) is the value of the i-th indicator included in j-th group in points.

Depending on the focus of the public space project, each group of indicators is assigned a weight value based on its importance in this project. The total value of the weight indicators of all groups should be equal to one.

So, the final value of the indicator of the attractiveness of public space location will be calculated by the formula (2):

\[ W = \sum_i K_i^j \times Y_j \]  

where \( W \) is the value of the indicator of the attractiveness of public space location;

\( K_i^j \) is the value of the i-th indicator included in the j-th group in points;

\( Y_j \) is the weight value of the group, which includes the indicator for the public space development project;

So, as a result of the location assessment it is necessary to consider options with a maximum value of the attractiveness indicator for implementing public space development projects.

4. **Conclusions**

The trend to involve population in the planning of projects for public space development, in decision-making mechanisms has a positive effect, will help to avoid a number of mistakes and adjust the urban
planning policy in terms of consumer preferences. It is this trend that contributes to the maximum disclosure of the place potential and satisfaction of the needs and expectations of city residents to the fullest extent.

In this regard there is an urgent need to improve the existing approach to project planning for public space development by introducing at the stage of pre-project analysis and formation of the project vision a methodology for an integrated rating assessment of projects that takes into account the criteria for sustainable development of the urban environment. This methodology will allow selecting a project from a large number of existing alternative options at the very beginning of territory development planning, which would more closely meet consumer preferences.

So, thanks to an improved approach to planning a developer's project for public space development by introducing the developed methodology for a comprehensive rating assessment of developer's projects, it will be possible to choose the best option that would most closely match consumer preferences of city residents and, accordingly, would produce more beneficial effects.

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