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Sustainable development of urban areas

Sustainable development of cities and rural settlements is one of the main tasks of urban planning and design, which is relevant not only in Russia. The paper raises the issues of ensuring sustainable development of urban areas, as well as the main problems standing in the way of achieving its goals, which is one of the most urgent topics of modern technogenic society. The criteria necessary for a comprehensive objective assessment of the sustainability of urban areas development are defined. Based on the analysis of numerous studies of the theory of sustainable urban development, five main regularities are highlighted. The analysis has shown that in relation to urbanistic concepts, the consideration of the regularities of urban development of city territories reduces the competitiveness and investment attractiveness of the urban environment. In this regard, the regularities of urban space development have dual and economic nature, on the one-hand taking into account the peculiarities and diversity, economic activity of urban economic systems on the other hand, the tendencies of equalization and convergence of sustainable development of urban areas. The study explains the essence of the regularities of the socio-economic and technological system of the city. The main regularities of urban development as a basis for the formation of a new managerial functionality of sustainable development of urban territories are highlighted. Studying the conditions and principles of ensuring sustainable urban development, the author came to the conclusion that a systemic solution to emerging and multiplying problems of urban development cannot be provided without the priority of the city as a self-developing system over its components, and the synthesis of the main directions of urbanistics: technological, social and aesthetic. The logical consequence of ensuring systemic unity will be the expansion of the subject area of urbanism and the development of urban planning concepts, which are based on the goals of restructuring the real estate of urban spaces.

**Keywords:** sustainable development of territories, principles of sustainable development, urban planning, the territory of urban settlements, urban spaces



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INTRODUCTION

Sustainable development of cities and rural settlements is one of the main tasks of urban planning and design, which is relevant not only in Russia. Currently, several scientific concepts underlying its solution are widespread: the concept of sustainable development, biosphere concept or technogenic concept.

Currently, more than half of humanity lives in cities. There are conditions for economic growth, development of creative thought and activity, creation of knowledge-intensive technologies, improvement of industrial production, satisfaction of socialization needs are created, therefore, most of the population of various countries, including Russia, is concentrated in cities. Creating a comfortable and safe environment for human life in the implementation of urban planning activities is defined by the Urban Planning Code of the Russian Federation as the main task, the realization of which should be carried out on the basis of the principle of ensuring sustainable development of territories<sup>1</sup>.

In the Urban Planning Code of the Russian Federation "sustainable development of territories" is characterized as ensuring safety and favourable conditions for human life in the implementation of urban planning activities, limiting the negative impact of economic and other activities on the environment

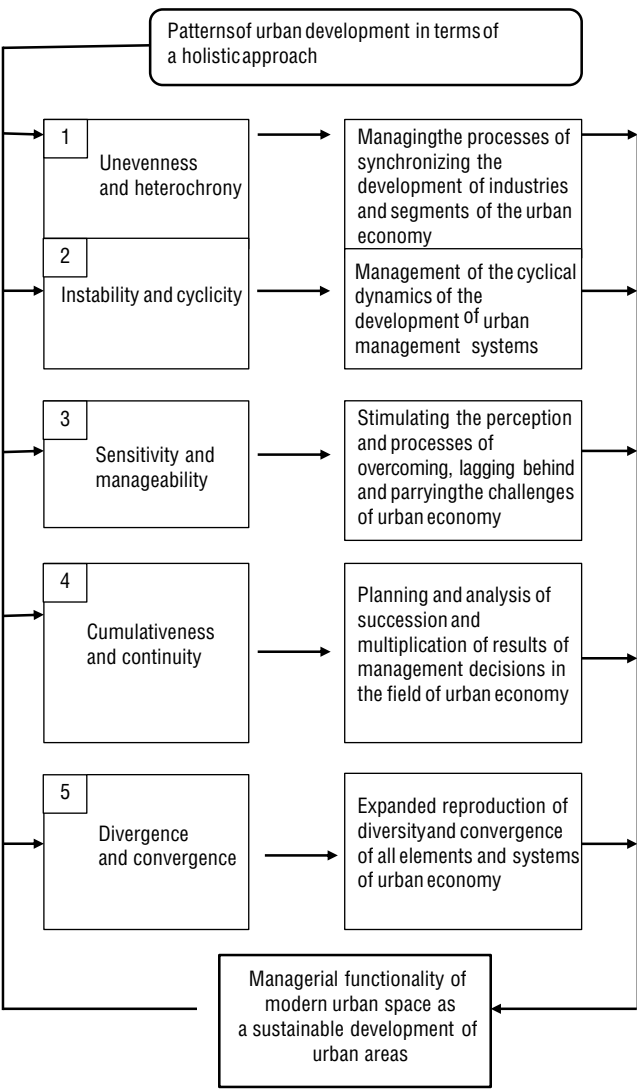
and ensuring the protection and rational use of natural resources in the interests of present and future generations<sup>2, 3</sup>. I.e. sustainable development is positioned as an activity aimed at creating favourable conditions for life and activity.

In today's world, increased attention has been paid to the issues of sustainable development of urban areas. This is especially true for developing countries, which are entering the era of mass urbanization. The process of sustainable development can provide a significant increase in productivity and living standards; however, it can generate environmental and other risks that can largely negate the achieved positive results [1–3]. Sustainable development implies economic growth, development of civilization, modern technologies and the quality of human life in general should take place in harmony with the natural environment and prevent the depletion of its resources. However, at the current level of socio-economic development it is not possible to achieve this [4–6].

MAIN PART

One of the most sustainable development trends of the second millennium of the planet is the movement of population to cities. People's desire to improve their living conditions has led to the rapid development of urban spaces [7].

1 Town-planning Code of the Russian Federation, official site "Consultant Plus". URL: [http://www.consultant.ru/popular/gskrf/15\\_1.html#p45](http://www.consultant.ru/popular/gskrf/15_1.html#p45)  
2 Territories of advanced socio-economic development in the Russian Federation : Federal Law of December 29, 2014 No. 473-FZ.  
3 Industrial Policy in the Russian Federation : Federal Law of December 31, 2014 No. 488-FZ.



Patterns of urban development as the basis for the formation of a new managerial functional for the sustainable development of urban areas (developed by the author)

At present, as a result of numerous studies of the theory of sustainable urban development, there are five synthesized basic patterns presented in Figure.

The analysis of scientific works has shown that in relation to urbanistic concepts, the consideration of the regularities of urban development of urban areas of the city, in general, reduces the competitiveness and investment attractiveness of the urban environment. In this regard, the regularities of development of urban spaces have dual and economic nature, on the one hand, taking into account the peculiarities and diversity, economic activity of urban economic systems on the other hand, the tendencies of equalization and convergence of sustainable development of urban areas<sup>4</sup> [8, 9].

Following the objectives of the study, let us explain the essence of some regularities of the socio-economic and technological system of the city, which includes:

- the uneven development of the urban environment, which

emerged as a result of the historical past of the city, currently leads to the emergence of development contradictions that particularly affect the competitiveness of urban space;

- cyclicity of urban systems development is inherently connected with its instability. For the city it is expressed in transformations of system parameters of urban environment in periods of sharp qualitative changes. Management of transformations forms a tendency to sustainability;
- cumulateness and continuity affect the multiplication of results of management decisions in the sphere of urban economy;
- the divergence and convergence of urban development is manifested in an increase in the diversity of lifestyles, and hence in the diversity of urban economic systems and types of urban real estate.

The selectivity of the consumer segment of the urban environment, as shown by the analysis, is currently concerned:

- the current state of the utility infrastructure;
- housing quality and affordability;
- development of street and road network and business environment of the territories;
- the share of green urban areas;
- the level of development of public and business infrastructure;
- availability of necessary social and leisure infrastructure;
- qualities of citywide spaces, etc.

At the same time, as it was emphasized in the Shanghai Declaration [8], the stratification of urban population becomes a factor of social instability, volatility and falling competitiveness of urban environment, and equality of opportunities — an additional argument of investment activity of business and residential environment.

RESULT AND DISCUSSION

Based on the identified regularities of the practical implementation of the holistic approach, let us formulate the main intrinsic properties of urban areas of the established city, bearing in mind that it is, first of all, the community of people living within the specified territorial boundaries and contributing to the revitalization of living spaces. Let us combine the properties into a Table and decompose them by levels of research.

The properties listed in Table together determine the “way of being of the city” as a whole and its territories, acting in the complex as a unity of productive forces concentrated in the city and formed production economic relations.

As follows from the analysis of scientific literature [4–7, 9], long economic cycles of development characterize the evolution of ways of being a city as the basis for the formation of the theoretical basis for ensuring sustainable urban development with inherent:

- urban environment;
- population structure;
- real estate structure;
- the structure of production and service capacities;
- social and housing and communal infrastructure, etc.

In fact, the integral urban space is heterogeneous. The levels of development of individual urban areas are different, and this applies not only to architectural appearance and environmental characteristics. The social profile of urban areas and even neighborhoods varies significantly. Consequently, there is a demand for management

4 Gagarina E.S. Sustainable development of urbanized territories : textbook-methodology. Construction. Novgorod, NNGASU, 2022; 36. URL: [https://bibl.nngasu.ru/electronic-resources/uch-metod/landscape\\_arch/876459.pdf](https://bibl.nngasu.ru/electronic-resources/uch-metod/landscape_arch/876459.pdf)

Interpretation of properties of territories of the historically developed city by levels of epistemological analysis (compiled by the author)

| Properties                                                                                                                               | Statistical level                                                         | Programme level                                                      | Problem level                                               |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------|
| Embeddedness of the city TC functioning processes in the spatial vectors of development and national goals                               | Key performance indicators (KPI) of the established city (TC) territories | Distribution of KPI by programmes and projects                       | Synchronization of KPI of different levels of urban economy |
| Integral existence of material and immaterial, subjective and objective, animate and inanimate, objective and subjective                 | Balance models of the city TC development                                 | Characterization of strategic initiatives software                   | Structuring of accumulated imbalances                       |
| Constellation of phenomena, processes, elements of the city, spatial synchronization and relative stability of spatial configuration     | System of indicators of sustainable growth KPI of the city TC             | Indicators of programme interoperability of the city TC              | Identification of depressive zones of urban development     |
| Self-sufficiency and balance (resource, spatial, subjective) of preservation and cyclic development of ascending type                    | Dynamics of indicators of sustainable growth of KPI of TC of the city     | Dynamic characteristics of development software                      | Fixing dynamics of turbulence zone parameters               |
| Self-optimization and self-regulation as conscious, as well as the reverse as spontaneous movement of resource flows towards the optimum | Development outcomes dependent on the urban areas' own capacities         | Development indicators included in projects of district significance | Deviations from the set strategic priorities                |
| Concentration and complexification of urban environment elements                                                                         | Results of the creation of microcomplexes on the city's TC                | Indicators of implementation of integrated education programmes      | Parameters of sedimentation from complexation               |
| Manageability as the ability to achieve goals                                                                                            | Indicators of economic reliability of the control object                  | System of resource characteristics of the control system             | Indicators of development resource scarcity                 |

functionality to mitigate inequality, equalize the level of comfort of districts and territories of the city. For conceptual identification it is important to take into account as much as possible all the variety of internal structural differences. Moreover, they are not just diverse, but can be represented in the form of some foreseeable order. In this case, the notion of diversity should be supplemented by the notion of structured diversity. Consequently, any urban "spatial fragment" can be studied:

- by a complex of assessments: level of convenience, level of housing availability, quality of services, feelings of safety, ease of breathing, aesthetics, quality of resources, beauty, etc., i.e. from the position of sensory perception;
- assessing the value of urban assets localized within a spatial format, i.e. in terms of an integrated dimension;
- structure/"profile" of residents by age, employment, living conditions, availability of benefits;
- the speed of educational, career, housing and business elevators, etc.

Moreover, a modern understanding of urban sustainability is not possible without realizing the potential of information and communication technologies and aligning the interests of all actors, namely:

- international organizations;
- governments;
- municipalities;
- public associations;
- business communities;
- scientific associations and organizations;
- populations, etc.

Modern cities generally consolidate the interests of residents, businesses and authorities. At the same time, the system-forming factor of the city is obviously the population as a subject, implying the focus of innovations on its vital activity and future development. It is obvious that the city is a systemic, complexly organized object, the initial element of which is the population. Providing its vital

activity, namely housing, jobs, educational, sports and entertainment facilities, transportation, energy and other real estate objects becomes the most important target of urban environment development [7, 8, 10, 11].

It is important to note that the goals of the authorities for sustainable urban development cannot be isolated from the external environment. The exchange of substance, information, energy, innovations, ideas, cultural values is becoming more and more important every year as a factor determining the strategic goals of sustainable urban development.

From the author's point of view, it is the four main projections that define urban vitality as a reflection of modern views on the system-forming conceptual apparatus that characterizes urban development<sup>4</sup> [10, 12].

Summarizing the implementation of best practices, let us highlight a number of features of maintaining the vitality of the city. Their systematization allows us to highlight the need to ensure:

- openness. Despite the fact that the city is a relatively independent complexly organized economic entity, it is necessary to ensure its openness, which means the possibility of resource flows into and out of the city. It is the resource turnover that ensures dynamic growth of key indicators of urban development. Resources fill the development projects of the transportation system, housing and communal infrastructure, green and public spaces, cultural and recreational complexes, education system, etc., meeting the growing needs of present and future generations;
- hierarchy. Being a complex heterogeneous system, ensuring the manageability of urban economy requires the formation of subordinate levels of management, i.e. hierarchy, provided that they are mutually consistent with the general target orientation. In this case, the interaction of the city with the region and the national economy, both in the economic and cultural context, is of paramount importance. Functional hierarchy is

also inherent in the main subsystems of urban economy (energy, transportation, etc.);

- emergent. The diversity of interactions between subsystems of the urban environment, forming a single whole — urban space, creates the potential of emergent nature as the excess of the whole over the sum of its parts. For example, the value of the assets of the urban development area, supplemented by the natural component, forms a market value that exceeds the value of buildings and structures. It is in all cases higher than the simple sum of its parts, and if we take into account the intellectual potential or the value of human capital as a whole, the city assets will significantly exceed the simple sum of parts;
- predictability, as a prospective determination of urban processes, including the continuous growth of population, fixed assets, intellectual potential, etc., in the city.

Achieving the target areas of sustainable urban development implies the organization of continuous monitoring in order to timely adjust urban plans, as well as the timely identification of tasks as events that initiate change occur [12, 13].

The highlighted properties of the city as a system also allow us to generalize the previous studies of socio-economic projections of urban planning. Among them it is proposed to emphasize:

- the relationship between society (man) and nature;
- relationship between society (human) and cultural heritage and development;
- financial and economic condition of the city territory;
- the relationship between society (human beings) and industry;
- demographic development of the city territory;
- geopolitical and migration condition of the city territory;
- infrastructural condition of the city territory aimed at human development in all spheres, its health saving and safety.

Thus, the close relationship between urban planning and socio-economic development of the city has a dual nature of interaction, defined by historical periods, which are essentially discrete projections of each other. It is proved that urban planning activity affects the social and economic life of the country in the long term.

## CONCLUSION

Summarizing the study of the evolution of theoretical views on ensuring sustainable urban development, we state that the *city is a chaotic system of joint life activity of all urban subjects in space, subjected to controlling influences of a developing type*. In this context, the *city becomes a control (power) centre, which regulates processes and ensures the evolution of the city's way of being*. At the same time, diffuse processes change the way of being of the city, opening new opportunities for development and creating smart, sustainably developing urban spaces. In this context, the author's interpretation of the decomposition of the concept of "sustainable urban development", the target orientation of which is determined by the creation of an image of investment-attractive object as a basis for competitiveness of attracting development resources to meet the growing needs of production and consumer segments of the urban economy. At the same time, it is important to take into account the territorial section, bearing in mind

that even strategic decisions should be made taking into account the *local phenomena of the territories of the established city*.

Thus, in the study as a theoretical basis for ensuring sustainable spatial-territorial urban is understood as a cyclically formed, innovative type of development, which is based on the use of information and communication, environmental, socio-economic and production technologies that improve the quality of life and the level of accessibility of housing of different classes and increase the efficiency of urban works and services, providing investment attractiveness and competitiveness, underlying the satisfaction of the increasing needs of present and future generations in natural, climatic, economic, housing, social, and cultural benefits.

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## Особенности устойчивого развития городских территорий

Устойчивое развитие городов и сельских поселений — одна из главных задач градостроительного планирования и про-

ектирования, которая актуальна не только в России. В статье поднимаются вопросы обеспечения устойчивого развития городских территорий, а также основные проблемы, стоящие на пути достижения его целей, что является одной из наиболее актуальных тем современного техногенного об-

щества. Определены критерии, необходимые для комплексной объективной оценки устойчивости развития городских территорий. На основе анализа многочисленных исследований теории устойчивого городского развития выделены пять основных закономерностей. Проведенный анализ показал, что применительно к урбанистическим представлениям, учет закономерностей городского развития территорий города снижает конкурентоспособность и инвестиционную привлекательность городской среды. В этой связи закономерности развития городских пространств имеют дуальную и экономическую природу, с одной стороны, учитываются особенности и разнообразие, экономической деятельности систем городского хозяйства, с другой, тенденции выравнивания и конвергенции устойчивого развития городских территорий. В исследовании дано пояснение сущности закономерностей социально-экономической и технологической системы города. Выделены основные закономерности городского развития как основы формирования нового управленческого функционала устойчивого развития городских территорий. Исследуя условия и принципы обеспечения устойчивого развития городов, автор пришел к выводу, что системное решение возникающих и множащихся проблем городского развития не может быть обеспечена без приоритета города как саморазвивающейся системы над его составляющими, и синтеза основных направлений урбанистики: технологического, социального и эстетического. Логическим следствием обеспечения системного единства станет расширение предметной области урбанистики и развитие градостроительных концепций, в основе которых цели реструктуризации недвижимости городских пространств.

**Ключевые слова:** устойчивое развитие территорий, принципы устойчивого развития, градостроительство, территории городских поселений, городские пространства.

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