

CONCEPTUAL MODEL OF LANDSCAPE PLANNING AT THE
NEIGHBORHOOD LEVEL

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Abstract. *The article develops a conceptual model of landscape planning at the mahalla level and discusses its theoretical and practical foundations. During the study, the ecological state, recreational potential and socio-functional structure of mahalla areas in the conditions of modern urbanization were analyzed. A landscape planning model aimed at the integrated development of mahalla areas was proposed, which was based on the principles of ecological sustainability, green infrastructure, public spaces and the formation of an environment suitable for the needs of the population. The results of the study can be used in the reconstruction of mahallas and the design of new residential areas.*

Аннотатсия *В статье разработана концептуальная модель ландшафтного планирования на уровне махалли и рассмотрены её теоретические и практические основы. В ходе исследования были проанализированы экологическое состояние, функциональная структура и социальные потребности территорий махалли, а также предложены принципы ландшафтного планирования, направленные на повышение качества жилой среды. Концептуальная модель обеспечивает устойчивое развитие территории посредством интеграции экологических, функциональных, социальных, инженерных и эстетических компонентов. Результаты исследования могут быть использованы при реконструкции существующих махаллей и проектировании новых жилых районов.*

Key words: *mahalla, landscape planning, conceptual model, green infrastructure, ecological sustainability, public spaces, residential area, urbanization, living environment.*

Ключевые слова: *махалля, ландшафтное планирование, концептуальная модель, зелёная инфраструктура, экологическая устойчивость, общественные пространства, жилая территория, урбанизация, среда проживания.*

Introduction. In recent years, as a result of the acceleration of urbanization worldwide, the demand for the quality of the living environment in urban and rural settlements has been increasing sharply. According to the UN, by the middle of the 21st century, it is projected that about 70 percent of the world's population will live in cities. In such conditions, the issue of environmentally and socially sustainable development of residential areas is gaining urgent importance.

In Uzbekistan, the mahalla, as the most important social institution of society, is considered one of the main links not only of the governance system, but also of territorial development.

Therefore, the formation of a comfortable, safe and ecologically balanced environment in mahallas is one of the priority tasks of modern urban planning and landscape architecture.

The use of landscape approaches in the planning of neighborhood areas allows for the expansion of green areas, the reduction of environmental problems, the improvement of the microclimate, and the improvement of the quality of life of the population. In this regard, the development of a conceptual model of landscape planning at the neighborhood level is of scientific and practical importance.

RESEARCH MATERIALS AND METHODS. The study is aimed at developing a conceptual model of landscape planning at the mahalla level and substantiating its practical significance, using modern scientific research methods based on an integrated approach. The theoretical basis of the study was scientific research conducted in the fields of landscape architecture, urban planning, ecology and territorial planning, the works of local and foreign scientists, regulatory legal acts, and recommendations of international organizations.

In the research process, first of all, a systematic analysis of natural, social and ecological factors affecting the formation and development of neighborhood areas was carried out. Through the method of systematic analysis, the neighborhood area was considered as a holistic system, and the interrelationships and levels of influence between its components were determined. In this, the territorial structure of green areas, transport and pedestrian networks, public spaces, recreational areas and engineering infrastructure was studied.

Using the method of comparative analysis, the landscape organization of Uzbekistan's neighborhoods was compared with modern landscape planning experiences used in residential areas of foreign countries, in particular Finland, Germany, Singapore, and South Korea. As a result, advanced solutions for the development of green infrastructure, the creation of an ecological framework, the formation of public spaces, and the creation of a pedestrian-friendly environment were identified and the possibilities of adapting them to local conditions were assessed.

The functional structure, land use characteristics, level of greening and ecological status of the study areas were studied using the method of cartographic analysis. The landscape potential of the mahalla areas was assessed based on the available master plan materials, aerospace images and territorial schemes. The natural relief, climatic conditions, distribution of green areas and recreational resources of the area were also determined and their interrelationships were analyzed.

The current state of the neighborhood areas was studied using the observation method. In particular, field studies were conducted on the level of use of public spaces by the population, pedestrian traffic routes, the condition of green areas, the location of recreation areas and social infrastructure facilities. The results obtained made it possible to identify existing problems of the area and set priority areas for landscape planning.

The landscape planning method was used as one of the main methodological directions of the study. Using this method, the ecological, functional and aesthetic potential of the neighborhood areas was assessed, and conceptual solutions for the integrated development of

the area were developed. Particular attention was paid to the issues of creating an ecological framework connecting green areas, optimizing public spaces, organizing recreational areas, and ensuring environmental sustainability.

The research methodology was carried out in several successive stages. At the first stage, the natural landscape features of the area were analyzed, the relief, climate, vegetation cover, and the state of existing ecological resources were studied. At the second stage, the location and interconnections of existing functional zones in the mahalla, including residential, public, recreational, and transport areas, were assessed. At the third stage, the ecological state of the area was determined, and the level of greening, microclimate indicators, and ecological problems were analyzed. In the fourth stage, the needs of the population and the characteristics of the use of the territory were studied, and factors influencing the formation of a comfortable living environment were identified. In the fifth stage, based on the information obtained, a conceptual model of landscape planning at the mahalla level was developed. In the final stage, the practical effectiveness of the proposed model was assessed, and its ecological, social and functional advantages were identified.

The research methods and methodological approaches used made it possible to conduct a comprehensive assessment of the mahalla areas from a landscape perspective, identify existing problems, and develop a scientifically based conceptual model aimed at eliminating them.

Problems in the landscape organization of neighborhood areas. As a result of the research, a number of problems were identified in the landscape organization and development of neighborhood areas. In particular, the insufficient share of green areas in many neighborhoods leads to a decrease in the quality of the ecological environment, an increase in air temperature in the summer period, and a deterioration in the microclimate. The existing greening system is often arranged haphazardly and does not form a single ecological framework. At the same time, due to the incomplete development of a comfortable and safe pedestrian environment, the population remains highly dependent on vehicles in its daily activities. In some areas, poor quality or lack of connectivity of pedestrian walkways limits the population's ability to effectively use public spaces.

Conceptual model of landscape planning at the mahalla level. In order to eliminate the identified problems and ensure the sustainable development of mahalla territories, a conceptual model of landscape planning was developed. This model is based on considering the natural, ecological, functional and aesthetic characteristics of the territory as a single system and consists of interrelated ecological, functional and aesthetic-compositional blocks.

The mechanism of operation of the conceptual model. The proposed conceptual model operates on the basis of a systematic process that is implemented step by step. First, the current state of the territory is comprehensively analyzed, then its ecological, functional and aesthetic indicators are assessed. Based on the assessment results, development directions are determined and landscape planning solutions are developed. At the next stage, the project

is implemented in practice, and the necessary landscaping and greening work is carried out in the territory. At the final stage, monitoring is carried out, the effectiveness of the implemented activities is assessed, and, if necessary, improvement measures are developed. Thus, the operation of the conceptual model based on the sequence of “analysis - assessment - planning - design - implementation - monitoring” allows for the consistent and sustainable development of the mahalla areas, improving their ecological status, and creating a comfortable living environment for the population.



Figure 1. The working mechanism of the conceptual model

DISCUSSION. Analysis of the research results shows that the organization of landscape planning at the mahalla level based on an integrated approach is one of the important factors in improving the ecological, social and functional quality of territories. In world practice, landscape planning principles are widely used in the development of residential areas and are recognized as an effective tool for ensuring the comfort, ecological sustainability and aesthetic appeal of the living environment.

In particular, in the Finnish experience, the principle of maximum preservation of natural landscape elements in the planning of residential areas is a priority. In cities and residential areas, green areas are formed as a single ecological system, creating an integral connection between forests, water bodies and recreational zones. As a result, a favorable microclimate is created for the population, providing the opportunity to live in harmony with the natural environment. The Finnish experience shows that the formation of an ecological framework is of great importance in increasing the ecological stability of areas.

In Germany, the concept of “green infrastructure” is widely used in the development of residential areas. According to this approach, green areas are considered not only an aesthetic element, but also an integral part of the urban ecological system. Parks, green corridors, pedestrian walkways and public spaces organized at the local level stimulate social activity of residents and serve to reduce environmental problems. Also, the introduction of rainwater management systems and energy-saving technologies helps to increase the ecological efficiency of areas.

One of the important advantages of the proposed model is its focus on ensuring environmental sustainability. By developing a system of green areas, connecting groves and recreational areas, the microclimate of the area will improve, the quality of atmospheric air will increase, and the ecological balance will be strengthened. At the same time, the model will create a favorable environment for pedestrians and cyclists, reducing dependence on motor vehicles.

Another important aspect of the model is its social orientation. The systematic organization of neighborhood centers, children's playgrounds, sports areas, and public spaces serves to increase the social activity of the population, strengthen neighborhood ties, and create a comfortable living environment for different age groups. As a result, the neighborhood area becomes not only a place of residence, but also a center of social communication and collective activity.

The aesthetic-compositional approach of the model also serves to improve the architectural-landscape appearance of the area. The harmonious use of national landscape elements, decorative plants and small architectural forms preserves the originality of the neighborhood environment and increases its visual appeal. This increases not only the ecological and functional, but also the aesthetic value of the area.

CONCLUSION

As a result of the research, a conceptual model of landscape planning at the neighborhood level was developed. The model allows for the development of territories by integrating ecological, functional, social, engineering, and aesthetic components.

The proposed conceptual model will increase the share of green areas, improve the ecological balance, expand recreational opportunities for residents, create a comfortable environment for pedestrians, and improve the architectural and landscape appearance of neighborhood areas.

This model is recommended for use in the planning and reconstruction processes of existing and newly established neighborhoods in Uzbekistan.

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