Organization of recreational facilities in the mountainous territories of Uzbekistan

Asilbek Tolibjon ogli Juraboyev
asilbek.juraboyev@fstu.uz
Fergana State Technical University

Abstract: *In this article, methods for establishing resort complexes in the mountainous regions of Uzbekistan are presented. Recommendations have been developed for the proper selection of suitable areas for resorts within the country. In organizing recreational facilities in the mountainous zones of Uzbekistan, the designated land size and degree of greening, the scale of the complexes, and the inclusion of road infrastructure within the resort composition are differentiated. Furthermore, the functional use of the recreational sites and their analysis in relation to natural conditions are discussed, and corresponding recommendations are provided.*
Keywords: *Recreational sites, Katabatic winds, Mountain slopes, Expressiveness, Aesthetics, Climate*

INTRODUCTION

At present, a number of laws and decrees have been adopted in the Republic of Uzbekistan aimed at promoting a healthy lifestyle for the population and ensuring the well-being and health of workers, which in turn contributes to the steady improvement of the population's material and spiritual standards of living. In the near future, the extension of annual paid leave in organizations, as well as the introduction of twice-yearly leave, will create more favorable conditions for both long- and short-term vacations. In this context, the rational organization of the national recreation system is becoming one of the pressing issues.

By the Decree of the President of the Republic of Uzbekistan No. PQ-4477 of October 4, 2019, approving the "Strategy for Transition to a Green Economy in 2019-2030," a number of tasks were outlined, including adaptation to climate change, mitigation of negative impacts, increasing the efficiency of natural resource use, and preserving natural landscapes. The optimality of a recreational site is determined primarily by factors such as the size of the allocated territory, the convenience of transport accessibility, the level of service provision, the comfort of recreational zones, geological and seismic characteristics, and the conformity of natural climatic conditions, all of which are crucial for effective organization.

Therefore, in the design, construction, and use of recreational sites in Uzbekistan, it is necessary to thoroughly study the main factors, including climatic, geographical, natural-industrial, sports, and tourism opportunities. The recreational potential of a given area largely determines its economic capacity. Skilled labor resources, quality of services, and the suitability of natural conditions are of significant importance in recreational areas.

In the process of developing and effectively using these territories, maintaining ecological balance, expanding the population's opportunities for leisure, and ensuring economic efficiency must all be considered as key criteria. For this reason, the establishment of recreational areas should be consistent with ecological requirements, rational use of natural resources, and their preservation.

In the mountainous regions of Uzbekistan, the creation of recreational facilities requires special consideration of natural and climatic conditions, the accessibility of transport routes, the presence of leisure infrastructure, health institutions, and tourism facilities, as well as their integration. Thus, the

development of new concepts for recreational sites in mountainous areas and ensuring their effective use remains a highly relevant issue today.

MATERIALS AND METHODS

When the elements under consideration are applied in accordance with the indicated principles for the creation of recreational areas in mountainous regions, the intended goal of shaping the visual arts in general, and architectural environment design in particular, can be achieved. It should be emphasized that in this formulation, the "triad" of the objective consists of aesthetics, expressiveness, and functionality [1]. In architectural design, aesthetics places the notion of "beauty" at the forefront, and the substitution of the concept of "strength" with "expressiveness" indicates that, within a spatial-ecological context, this term may be understood solely as "internal expression."

Aesthetics (beauty) - in this context, the term is used to denote well-organized and harmonious objects or places. Most people perceive beauty as a symbol of perfection and rarely tarnished qualities. "A very simple definition of beauty is the unity of qualities pleasing to the eye and ear" [1]. This philosophical category has been interpreted in different ways by thinkers and creators of various eras and nations. The concept has been studied within aesthetic philosophy, and a deep understanding of this terminology not only helps to better comprehend the subject matter but also assists in clarifying and articulating one's own aesthetic perceptions.

One of the best approaches to explaining this quality of the natural-anthropogenic environment in its entirety is to convey the expressiveness of architectural forms through elaborate narrative and poetic metaphors. In this regard, spatial planning should always strive to achieve "eurhythmy." The use of this almost forgotten term is justified by the complex nature of the object under study-its internal relationship with the environment - whose various qualities are revealed only in visual and historical "connections" evolving through time and space.

According to Vitruvius (as cited by D. Barbaro), *eurhythmy* is "the beautiful appearance and appropriate form of members assembled together." Every skillful work, until completed, should be compared to a verse where each line is replaced in succession by the most harmonious, and in architecture as in music, this grace and delight is called eurhythmy [2]. Thus, in addressing large-scale issues, the modern architect and the ancient architect can easily find a common language. However, when evaluating composition, the main and most comprehensive criterion is its triad and beauty. Vitruvius emphasized that in composition, it is not brilliance, novelty, or ostentation that matters, but only those parts which embody beauty [3].

Expressiveness - refers to the harmonious arrangement of forms directed toward refinement, polishing, and interior embellishment. Regardless of its scale, one of the most intriguing integrative tendencies is that expressiveness is regarded as a means of enhancing the impact of spatial "perceptions." Therefore, it is important to demonstrate expressiveness through architectural tools. Expressiveness is often described as its characteristic feature and is associated with "inner expression." As such, facial expressions or manifestations of expressiveness evoke emotional responses, reflecting the human nature inherent in the word "face" itself [1].

Functionality - is directly linked to the practical needs of human activity and, alongside aesthetics and expressiveness, is viewed as part of the triad of architectural art.

In twentieth-century architecture, practicality was always regarded as a necessity, meaning that buildings had to be useful and efficient. By drawing from traditional modes of habitation, it is possible to create "modernity" even today. However, the functionality of new houses must not be sacrificed. Their "users" should be provided with comfortable conditions for relaxation and stress relief. At the same time, recreational sites should combine natural scenic views and expressive backgrounds,

thereby enhancing the overall experience. Thus, the close integration of aesthetics, expressiveness, and functionality can lead to architectural ideals.

Achieving such unity in the architectural regulation of enclosed spaces within mountain landscapes is one of the primary objectives of this research. It is not accidental that the theory of creating recreational systems has been developed based on the formation of the natural-anthropogenic environment in Uzbekistan, a country characterized by numerous mountainous landscapes. The abundance and diversity of valleys and basins with more or less enclosed orographic formations provide a typological foundation for designing anthropogenic environments, taking into account natural, climatic, and landscape conditions.

In addition, it should be noted that in the mountainous regions of southern Uzbekistan, ancient settlements located on hilltops or gentle slopes (e.g., Shohimardon and others) illustrate another type of development.

In the Pamir-Alay, many medieval stone houses share structural, architectural, and planning similarities with mountain dwellings in the Caucasus. These villages were often situated on mountain slopes, in gorges, or near rivers and streams. Their layout typically consisted of residential and household premises placed beneath high flat roofs built on rocky mountain ledges.

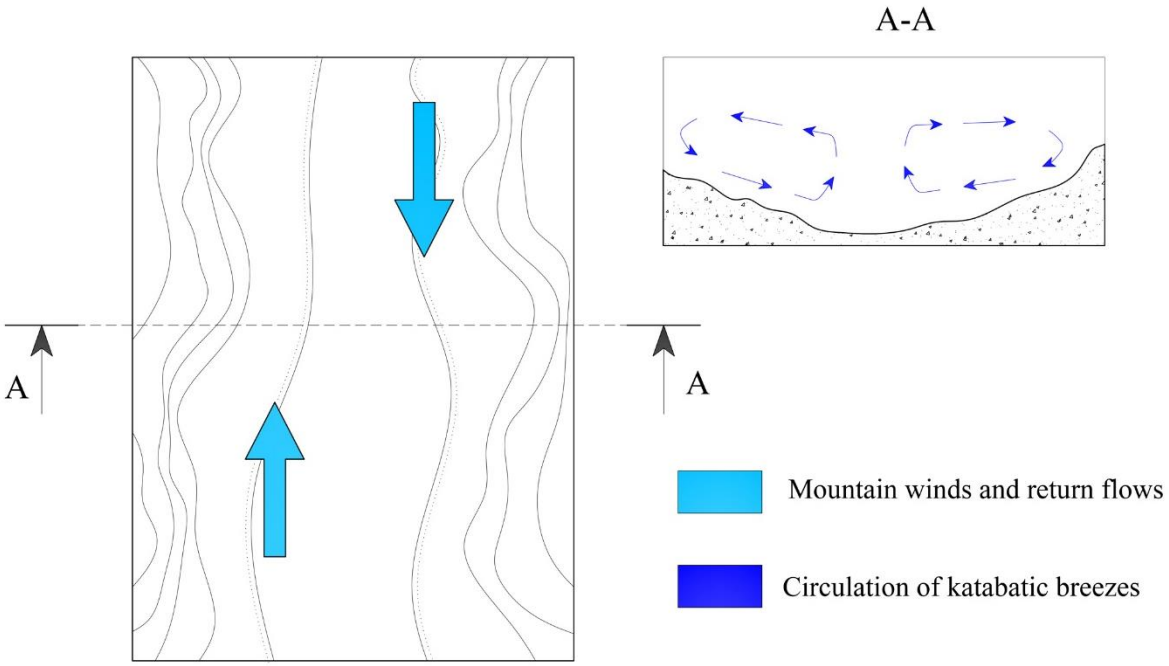

Figure 1. Scheme of katabatic wind circulation

To present the landscape-design approach to the architectural environment more fully and visually, it is necessary to examine the various aspects of natural-anthropogenic environment formation using the example of settlements and recreational sites in the mountainous areas of the Fergana region. In the purest mountain-air landscapes, the katabatic winds of mountain valleys, as previously mentioned, descend from the slopes into the valleys during the morning as part of the mountain-valley circulation. This process may be compared to unique “rivers” of cool, moist, fresh air, which are of great importance in the hot and dry climate of many mountain valleys of Central Asia. These “rivers” possess excellent disinfectant properties; however, such airflows can easily dissipate (disperse or fragment) under the influence of various orographic and landscape barriers. The Shohimardon region of Fergana province and its surroundings are distinguished by katabatic mountain flows directed towards the south and southwest:

• Katabatic winds resemble water flows: if the slope of the earth's surface is less than 2-3%, their speed decreases sharply, leading to the formation of "cold-air lakes" in the central Shohimardon area and the southern part of the Fergana region;
• In the central parts of the region, the reduction of wind speed due to morphological conditions results in increased air density and continuity of flow;
• The extension of the airflow pathway contributes to an increase in the physical volume of cold air masses, which raises the probability of stagnation processes at the lower slopes along the trajectory of winds in the southern and southeastern directions [5].

Under the influence of the daily cycle of alternating winds in opposite directions (the mountain-valley circulation phenomenon), weakly variable air layers with distinctly stable characteristics are formed, accompanied by air pollution and significant concentrations of temperature-orographic inversions.

The study of atmospheric processes over the investigated area revealed the phenomenon of temperature-orographic inversion. Such inversions inhibit the vertical movement of air masses, thereby creating a high potential for air pollution. Frequent calms and low wind speeds (2-3 m/s) further contribute to the persistence of these inversions.

CONCLUSION

Thus, the efficiency of recreation and the rational use of resort areas and facilities are largely associated with the aeration of the territory and the plasticity of the terrain surface in the main prevailing wind directions. The specific location and orography of a foothill-valley recreational site determine the variability of aeration regimes within certain parts of the area.

The most favorable ventilation conditions are created in landscapes with slopes of about 3%. In such places, relatively effective air circulation occurs, while the accumulation of surface-layer inversions and pollutants is less pronounced, since atmospheric stagnation is less frequent there.

In the central part of recreational areas, due to morphological features, the application of the principles of aesthetics, expressiveness, and functionality ensures the creation of a comfortable environment for visitors.

The northern, northwestern, and western districts of Fergana city are characterized by orographic conditions that do not significantly influence westerly winds but impede the inflow of the most favorable southerly winds. In these districts, inversion phenomena are observed rather frequently, albeit of short duration.

Based on relief conditions, aeration schemes, and development patterns, a comprehensive climatic-ecological assessment of individual urban districts should serve as a basis for differentiated approaches to urban planning solutions and for establishing regulatory constraints. This will provide a foundation for the development and landscaping of urban territories in Fergana city for various purposes.

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