PRINCIPLES OF REORGANIZING LANDSCAPE ARCHITECTURE IN THE SOUTHERN REGIONS

Safarboyev Akmal Anvar o'g'li
Master's student
Tashkent University of Architecture and Construction

Abstract: *This article also includes measures for the restoration of ecology and landscape, practical work in this area is being carried out in Karakalpakstan. However, the lack of scientific research and studies aimed at solving these important issues in the fields of architecture, urban planning and landscape sciences in Uzbekistan justifies the relevance and necessity of the topic of this article.*

Keywords: *urban planning, landscape architecture, Aral Sea region, Aral Sea, extreme territories, desert.*

The correct selection of plant species is of great importance in the formation of an ecologically sustainable landscape environment in the southern regions of the Republic of Karakalpakstan. The sharply continental climate of the region, soil salinity, limited water resources, and the complex natural conditions resulting from the Aral Sea ecological crisis require special attention to the biological and ecological characteristics of plants used in landscape architecture. Therefore, in the process of landscaping, the selection should be made not only based on aesthetic criteria, but also based on the ecological adaptability of plants, wind and dust resistance, water requirements, and longevity.

One of the main principles of developing landscape architecture in the southern regions is the use of plant species suitable for local natural conditions.

Studies show that many introduced ornamental trees and shrubs cannot withstand high salinity, drought, and sudden temperature changes. As a result, their survival rate decreases and they become economically unproductive. Therefore, choosing native tree and shrub species that are adapted to the natural and climatic conditions of the area is the most environmentally and economically optimal solution [1].

When choosing suitable plant species for the area, the first thing to consider is the climatic factor. In the southern regions, the very hot and dry summers and cold winters require high ecological resistance from plants. Especially in the summer months, when temperatures exceed +40°C, there is little precipitation and strong winds, it is important to use drought-resistant plants. It is advisable for local dendroflora representatives to play a leading role in the landscaping of the area. In particular, saxaul, yulgun, zhiyda, elm, poplar and various halophyte shrubs are important from the point of view of ecological stability. These plants have formed the ability to survive in the saline and arid conditions of the area as a result of many years of adaptation. In particular, saxaul is one of the most effective plants in combating wind erosion and strengthening sandy areas. Saxaul forests are of great importance in forming ecological buffer zones in the Aral Sea regions [1].

Tamarix is one of the plants most adapted to the conditions of the region and grows well on saline soils. This tree-like shrub is characterized by its ability to withstand strong winds, deep root development, and dust retention. Therefore, tamarix is recommended for widespread use along highways, protective green belts, and around collector canals.

Tamarisk is also one of the most environmentally friendly trees for southern regions. The main advantage of this tree is its resistance to drought and salinity, as well as its ability to restore soil fertility. Tamarisk biologically enriches degraded soils with the help of nitrogen-fixing bacteria in its roots.

Therefore, the use of tamarix is effective in reclamation areas, on the edges of agricultural fields, and in protected zones [2].

Elm is also one of the tree species that can be widely used in the landscape of the region. This tree can withstand strong winds, has a shade-loving nature and is long-lived. The use of elm on city streets, avenues and public areas helps to improve the microclimate.

Elms planted in rows are especially effective in reducing summer heat.

Caution is required when using coniferous trees in the region. Since some coniferous trees are sensitive to salt dust and high temperatures, it is recommended to choose only adaptable species. According to research, Crimean pine, Eldar pine and some types of juniper adapt relatively well to the conditions of the region. These trees can be used mainly in recreational areas, parks and decorative compositions.

As a result of research conducted in the city of Nukus and adjacent areas, it was found that there are 52 species of trees and shrubs in the main street areas and green areas of public use. Also, Academician F.N. The Rusanov Botanical Institute has recommended 62 types of trees and shrubs for landscaping the territory of Karakalpakstan, most of which are species adapted to local climatic conditions.

The principle of functional zoning is also important in selecting suitable plant species for the region. It is advisable to use gas and dust-resistant trees in green areas along transport routes. The studies recommended 29 types of trees and 3 types of shrubs for roadsides that are environmentally friendly, shape-retaining, and resistant to atmospheric pollution. These plants not only create an aesthetic environment, but also reduce noise, reduce the harmful effects of vehicle emissions, and improve the microclimate [3].

In residential areas, it is recommended to use tree species that provide shade, purify the air, and have recreational value. Especially in the hot summer

months, shade trees create an environmentally friendly environment for pedestrians and residential areas. For this purpose, the use of trees such as elm, plane, poplar, catalpa, and acacia is effective.

It is recommended to use plants with decorative properties in parks and avenues. Magnolia, false chestnut, acacia, Indian nasturtium, siren, forsythia, and roses create an aesthetically attractive landscape. However, when using such plants, their irrigation requirements and ecological adaptability must be taken into account.

The use of special halophyte plants is important for the saline soils of the region. Studies have recommended plants such as salyanka, cinquefoil, amorpha, tamarix, indigofera, and saxaul, which are adapted to grow in saline soils. These plants play an important role in strengthening the soil, reducing wind erosion, and restoring the ecological environment.

In sandy areas, it is advisable to use psammophyte plants. Such plants have the property of preventing sand migration and strengthening the soil. Especially in the dried-up areas of the Aral Sea, the widespread use of psammophyte plants is of great importance in ensuring ecological safety [4].

The method of planting trees and shrubs in rows is effective in forming green protective belts in the region. The row spacing of trees should be determined based on their biological characteristics, body shape and root system. Green protective belts reduce wind speed, trap dust particles and ecologically protect residential areas.

It is also important to correctly form the composition of the plant assortment in landscaping. According to the recommendations, 60–65% of the planted trees should be 2–4-year-old standard trees, 25% should be 5–12-year-old trees. It is advisable that the total volume of coniferous trees be 25–30%, and shrubs and lianas - up to 25%.

Due to the limited water resources in the region, it is recommended to reduce the share of water-intensive lawns. As noted in studies, maintaining large lawns in very hot and dry climates requires a lot of water and economic costs. Therefore, the use of natural ground cover plants and drought-resistant shrubs is considered more environmentally effective [5].

When choosing plants in landscape architecture, not only ecological, but also aesthetic and functional factors should be taken into account. The body shape of trees, leaf color, flowering period and compositional harmony form the visual appearance of the area. The harmonious use of pyramidal, spherical, umbrella-shaped and sedge-shaped trees in landscape compositions increases the aesthetic quality of the area.

In general, the selection of plant species to form an ecologically sustainable landscape system in the southern regions of the Republic of Karakalpakstan requires a scientifically based approach. In the conditions of the region's sharply continental climate, soil salinity and water scarcity, the use of local and ecologically adapted plants is the most optimal solution. With the help of saxaul, yulgun, zhiyda, kayragoch and other drought-resistant plants, it is possible to form green protection zones, green up transport routes and residential areas, and ecologically enrich recreational areas. At the same time, the introduction of modern irrigation technologies, the selection of the composition of the plant assortment based on regional conditions, and the rational use of the potential of local dendroflora are important directions for the reorganization of landscape architecture in the southern regions.

REFERENCES

1. I.S. Aimbetov. Formation of the master plans of the city of Nukus and analysis of landscape architecture. Scientific and practical journal of architecture, construction and design 2024/1.

2. D.U. Isamukhamedova., M.K. Akhmedov., M.A. Talipov., K.D. Sattarova. "Urban planning and landscape architecture". T-2019.

3. E. V. Kaydalova. Landscape architecture. Lecture notes. Nizhny Novgorod 2019.

4. Invest in Karakalpakstan investor's guide 2018.

5. J.K. Shnekeev . Features of the development of modern architecture of Karakalpakstan. Dissertation. T-2023