Research on Environmental Protection Factors of Landscape Design in Garden Greening

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Abstract. At present, landscaping projects are continuously promoting the process of urbanization. As an important project to improve the urban ecological environment and enhance the image of the city, the construction of landscaping projects must fully consider the project benefits and incorporate the low-carbon concept, so as to allow urban garden plant landscape plays a greater role. This article starts with the principles of the application of low-carbon concepts and discusses the key points in the application of low-carbon concepts in urban garden landscape design, hoping to provide people with a better living environment with the help of garden engineering.

Keywords: Ecological garden, residential area, landscape design, application.

1. Introduction
In the urban environment, the garden landscape plays an important role, not only can effectively optimize the urban environment and air quality, but also meet the viewing needs of the people, and play a good role in improving the image of the city. In addition, the ecological function of the garden is also more significant, which can reduce noise, absorb dust, reduce haze, and improve the urban environment [1]. Under the background of constantly emphasizing the concept of low-carbon, when designing gardens, we should fully consider the function of gardens to reduce carbon emissions, improve urban air quality, reduce the greenhouse effect, and achieve environmental protection goals.

2. Garden landscape environmental protection design
Urbanization continues to accelerate, and the concept of conservation has gradually penetrated into the designer's mind and has become the core concept of construction. The concept of conservation requires the construction process to reduce the demand for each resource without affecting the final result, realize the reuse of resources, and ensure the maximum efficiency of use. In the environmental protection design of gardens and landscapes, the concept of conservation is the core concept [2]. Designers should pay more attention to the use of resources and energy when working, and realize the harmonious development of man and nature on the basis of promoting social and ecological progress. See Figure 1 for the road map of landscape environmental protection design.
Design is still quite blind. Not based on the protection of the original ecology, and not meet the requirements for environmental protection at this stage. At the same time, the artificial excavation to ensure that the building and landscape can be built after the land is levelled. This does not complete through multiple technical approaches such as field surveys, visits, ecological environment protection, expert consultation, and literature review. After the design plan is determined, it is necessary to determine the type of garden passage, internal design and traffic design based on the size of investment and the types of local animals and plants. The design should propose design concepts from both macro and micro perspectives. Together, the two constitute a more complete framework of new ideas for garden design under the guidance of environmental protection landscapes, which have a positive effect on promoting ecological balance and natural progress [3].

Environmental protection design can effectively achieve the great goal of urban green construction and improve the urban environment, which is of key significance to contemporary garden landscape design. Although contemporary garden landscape design has made great progress compared with the past, there are still many problems.

2.1. Design not adapted to local conditions
Resource consumption and carbon emissions are closely related. As resource consumption increases, carbon emissions will also increase. Therefore, it is necessary to control resource consumption to achieve the goal of reducing carbon emissions. However, there is still a problem of low resource utilization in some garden designs, which is inconsistent with the concept of low-carbon environmental protection [4]. For example, failure to design according to local conditions and surrounding environment factors, and failure to adhere to the principle of adapting measures to local conditions in the process of garden construction, resulted in the lack of correlation between waterscape design and natural water system, increased road laying, and earthwork excavation, resulting in serious problems. Waste of resources.

2.2. Destroy the original ecosystem
In the garden design and construction, the water system is usually blindly filled and the ground is excavated to ensure that the building and landscape can be built after the land is levelled. This does not meet the requirements for environmental protection at this stage. At the same time, the artificial design is still quite blind. Not based on the protection of the original ecology, and the lack of resources would be a serious problem.
scientific use of local vegetation, water bodies, topography and other elements, resulting in serious environmental damage. Therefore, in the process of construction, the cost of manpower and material resources will increase, which will cause energy consumption problems, and it is difficult to reflect the low-carbon concept.

2.3. The material does not meet the low-carbon index requirements

When designing gardens, the choice of materials has a close relationship with low-carbon indicators. At this stage, glass, steel and synthetic materials are selected in some garden designs, and the wide application of these materials will greatly increase carbon emissions. At the same time, in the process of using materials, there is no scientific calculation of the carbon emission data of the materials, which makes it impossible to effectively control the carbon cost during the construction process, and the subsequent construction and maintenance do not meet the requirements of low-carbon indicators. The proportion of plants should be greatly increased, the sponge city should be taken as the construction target, the proportion of vertical greening and three-dimensional greening should be increased, and plant varieties and vegetation should be selected scientifically.

3. Principles of applying low-carbon concepts in urban garden design

3.1. The principle of quantification

In urban garden plant landscape design, it is necessary to adhere to the concept of low-carbon and environmental protection, and it must adhere to the principle of quantification, which means that the garden landscape designer fully considers each element according to the specific reality of the garden project, calculates the emission of different harmful substances, and then The calculation results and design elements are scientifically planned for the garden landscape plan, which can fully improve the efficiency of resource utilization and create a green and ecological garden landscape.

3.2. Persistence principle

In the process of designing low-carbon garden landscapes, designers must adhere to the principle of persistence, which mainly refers to the rational use of local natural resources, which not only saves the construction cost of the project, but also reduces carbon emissions. While the garden landscape plays the role of greening, it can also adapt to the local economic development and attract tourists through the garden landscape to enhance the image of the city. Under the principle of persistence, after the design of urban garden landscape, it is necessary to strengthen the care, mainly to ensure the long-term healthy growth of various seedlings and flowers, so that the plants have more long-term viewing [5].

3.3. Ecological principles

As an important part of the city, the urban garden landscape can play a role in purifying the air and beautifying the environment to a certain extent. In the process of designing the garden landscape, it is necessary to fully consider the surrounding environment and integrate land resources and original natural vegetation. Reasonable utilization and maximum retention of the original landscape. The selection of plants also needs to take into account the ecological characteristics and try to select the local vegetation type, which can not only ensure its survival rate, but also save construction costs.

4. The method of plant configuration in residential area landscape design in the concept of ecological garden

Plants are an important part of the ecological system of residential areas. Plant landscaping uses trees, shrubs, herbs and other plants as materials to create garden landscapes. Scientific plant configuration should not only present a rich garden landscape, but also reflect local characteristics and improve ecosystem. As shown in picture 2.
Figure 2. The basic ecological planning concept in garden landscape design.

Ecological planning proposes long-term and sustainable development goals for landscape construction from a macro perspective. Ecological planning mainly focuses on ecological construction, natural resource utilization, and ecological environmental protection, coordinating the contradiction between resource consumption and environmental protection during the construction and use of garden landscapes, so as to build a harmonious and comfortable environment suitable for human life and work.

4.1. Diversified plant configuration

In terms of plant configuration, reasonable use of Arbor, shrubs, and herbaceous plants are used for planting, taking into full consideration the change and unification of plant collocation, the contrast and harmony of colour use, the rules and symmetry of layout form, the rhythm and rhythm of planting rules, etc. The unique tree shape, colour, line, texture and other physiological characteristics of different plants form a complex plant community structure with reasonable structure, rich variety, colourful, perfect function, high biomass, and stable population. As shown in Figure 3.

Figure 3. Ecological design principles in garden landscape design.

Whether it is designing a city or designing the garden landscape of a community, we should follow and respect the laws of nature, coordinate the relationship between man and nature, and design sustainable garden landscapes. Ecological design requires the recycling of resources as much as
possible in the process of garden landscape design, giving full play to the ecological functions of the
garden landscape, and forming a true "ecological landscape design".

4.2. Local characteristics
Native plant species are rich in resources. In the landscape construction, the community uses native
plants to account for 90% of the total plant volume, and rationally embellishes high-quality introduced
varieties (such as Japanese cherry blossoms) at the landscape nodes. Among the native plants,
Osmanthus, camphor, and bamboo are the most representative: the central main landscape axis
running through from north to south creates themed boulevard with Osmanthus, palm, and camphor,
showing the regularity, sequence and ecology of the landscape; garden square More than 180
Osmanthus fragrans were planted, which accounted for about 50% of the total native plants. The
graceful postures of Osmanthus were displayed in rows, clusters, and solitary plants, especially during
the Mid-Autumn Festival, when the Osmanthus blossoms in full bloom and the garden is full of
fragrance; Combining the sloping hilly terrain, cobblestone paving, and deep and secluded trails with
bamboo (love bamboo) to form a winding tree-lined trail, creating a small regional landscape. The full
and reasonable use of native plants in the landscape design of the residential area not only reflects the
characteristics of the local forest vegetation community, but also fully demonstrates the historical and
cultural characteristics of China's Osmanthus hometown, southern Hubei bamboo township, and
liveable city.

4.3. The combination of ecological design ideas and garden landscape design
As an ecological landscape design, we should not focus solely on design, nor on nature itself, but
should focus on "combination", which includes human cooperation and other biological partnerships
the meaning of. As an excellent designer, what he seeks should not be arbitrary and rigid design, but to
make full use of the potential provided by nature. Of course, this must be designed according to the
constraints of nature itself [6]. For example, in the design, it is necessary to use materials made from
recycled raw materials as much as possible, and recycle the materials on the site as much as possible
to maximize the potential of the materials, reduce the energy consumption for production, processing,
and transportation of materials, and reduce waste in construction It also retains some cultural
characteristics of local traditions. More and more landscape architects follow ecological principles in
their designs. These principles are expressed in many ways, but specific to each design, it may only
reflect one or a few aspects. Generally, as long as a design is more or less applied to these principles, it
may be called "ecological design". Make full use of the original buildings and facilities on the site to
give new use functions. Using water efficiently and reducing water consumption are important
manifestations of ecological principles. Some landscape design projects can solve most of the
landscape water use through the use of rainwater, and some can even be completely self-sufficient, so
as to achieve zero consumption of urban clean water resources. In these designs, the recycled
rainwater is not only used for the creation of waterscapes and irrigation of green spaces, but also for
internal cleaning of surrounding buildings. Or use the mechanism of natural purification to design
various artificial wetlands. The flow of water and the growth of aquatic plants are related to the
purification of water quality, so that the landscape is rationally integrated into the principles of
ecology. As shown in Figure 4.
Figure 4. An example of making full use of natural landscape for garden design.

In the design of this drawing, there are many ways and methods that can use the concept of ecological design, such as: carefully selecting plants with environmental protection functions to maximize their ecological and environmental protection functions; design water should be as efficient as possible and use as much as possible Rainwater in nature is used to create landscape water and irrigate green spaces; some aquatic plants can also be planted to purify water quality.

5. Conclusion
At present, the concept of low-carbon and environmental protection has permeated all aspects of people's lives and every field of urban construction. The design of urban garden landscape with the concept of low-carbon and environmental protection has a positive effect on promoting sustainable urban development. At present, the concept of low-carbon environmental protection has been well reflected in the construction of gardens and landscapes. It can effectively reduce energy consumption, reduce urban heat island effect, realize water recycling, and protect the ecological environment. It plays a vital role in the construction of ecological cities.

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