

# Research on the Adaptability of Ecological Building in Construction of Beautiful Village

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**ABSTRACT.** *Under the background of sustainable development, ecological architecture is a kind of building system developed gradually under the condition of the continuous development of social factors such as economy, culture, science and technology, the deterioration of environment and the continuous improvement of people's living conditions. Because of the huge number of buildings, it has a significant impact on resources and environment. Similarly, if ecological buildings want to effectively improve resources and environmental problems, they must be constructed in large quantities. Human beings themselves are also moving towards high quality and high standard of life, which are two aspects of contradiction. Strengthening the construction of ecological buildings is one of the effective ways to solve the contradiction. The scientific concept of implementing architectural design is ecological building, saving energy, saving land, comprehensive consideration, and overall planning, adding luster to the beautiful rural construction. The use of local existing materials and conditions, the formation of ecological architecture with local characteristics, traditional architecture and the current concept of ecological architecture are consistent, there is a certain degree of interaction between the two. Strategies and ways to improve the adaptability of ecological building technology, hope to provide some help for the improvement of ecological building technology adaptability.*

**KEYWORDS:** *Beautiful countryside; construction; ecological architecture*

## 1. Introduction

Eco-architecture is sometimes called green building and sustainable building. In the 1960s, Paul Sollery, an Italian-American architect, put forward the concept of ecological architecture, that is, to understand Architecture from the perspective of ecology and apply the theory of ecology to architecture [1]. Use as little resources and economic consumption as possible to achieve the design objectives of the building. Economization mainly includes saving resources and energy. Rural area is a typical complex ecosystem. The coordination among its components, the

regeneration of material cycle, the low consumption of energy transfer, the optimum utilization of resources and the synergistic symbiosis between man and nature [2]. Because traditional rural development systems and architectural models are unsustainable, polluting the environment and degrading the quality of life, architects are inspired by green culture [3]. In the long-term survival process, organisms can improve their various functions and adapt to changes in the natural environment in order to survive. If a building project can have some properties similar to those of a living organism, it can adapt well to the environment. The countryside has gradually been marginalized, and it has only been taken into consideration in recent years, and the beautiful vision of “beautiful villages” has been proposed. Arrange and organize the relationship between the building and other related factors, so that the building and the environment become an organic combination, with good indoor climatic conditions and strong bio-climatic adjustment ability [4].

In the design process of rural ecological buildings, the actual situation of the countryside should be fully taken into account, starting from the economy, practicability, practicability and suitability. Eco-architecture takes resources and pollution as its basic elements, and tries its best to protect the natural environment and improve the health of users without reducing the use function of buildings [5]. In order to build an ecological village, we must attach great importance to the protection of natural landscape, historical and cultural relics landscape, especially the diversity of natural species, so as to preserve the unique features in the process of construction [6]. Energy-saving ecology will reduce the impact of the building itself on the environment, make the building itself an independent operation of life, with its own metabolism, and even improve the surrounding environment. Areas that need to be preserved and revamped are separated, systems that need to be protected, revamped and constructed but are not available at the base status quo [7]. As one of the concrete measures to achieve sustainable development, ecological buildings have the responsibility to contribute to the continuation of local culture and the realization of global cultural diversity. Its means include: the protection and inheritance of traditional neighborhoods, the characteristics of local settlements; the continuation of appropriate traditional and local construction techniques. Ensure that construction projects are more coordinated with the natural environment. Ecological building technology can imitate creatures from different angles, whether it is biological form, structure or movement mode, can be applied to architectural design [8].

## **2. Basic Characteristics of Ecological Architecture**

Eco-architecture not only creates a small environment for people living in it to satisfy their physiological and psychological needs (such as comfortable temperature, light environment, humidity, sound environment and good air quality). At the same time, we should also consider the relationship with the local natural environment. After the site selection is reasonably completed in environmental design, the climate characteristics should be analyzed, the surrounding environment should be designed, and the climate conditions should be improved. In order to effectively correct the shortcomings of traditional buildings and improve the resources and environment,

ecological buildings must be constructed and used in large quantities. Only in this way can we achieve the goal that ecological buildings want to achieve. In the design process, the important principle to follow is to maximize efficiency. At the same time, some very mature process technologies in the design field are just the technologies needed for ecological buildings. If the construction industry can adhere to the concept of “ecology” in the construction of beautiful countryside, the environmental resources and ecological problems in the region will be greatly improved.

In the construction of beautiful rural ecological architecture, we must first understand the natural process of the environment in which the village is located fundamentally, make full use of the natural resources and conditions in the development and construction of the village, and make the artificial system and the natural system coordinate and harmonize. Because of the complex function space and the use of the underground floor, the comfort of some space can not meet people's requirements, which needs to be solved by consuming huge energy, mechanical ventilation, lighting and central air-conditioning system. Secondly, for some relatively developed economies, the promotion of high-tech ecological buildings will not only establish a good example, but also play a huge role in publicity and promotion. Transplanted according to ecological requirements, with the application of high-tech as the main body, even if some traditional techniques are used, it is based on scientific analysis and research, and is realized by advanced materials and techniques. Participate in the construction process of ecological buildings. This kind of multi-level and multi-faceted coordination and cooperation must have a unified evaluation and evaluation standard, which can reach consensus among all parties and implement this consensus. To truly meet the needs of rural buildings, and to promote the value of construction.

In the design of rural ecological architecture, we should make full use of local materials and create reasonable ecological value in a simple way of technical construction. Let the building and the natural environment combine into an organic whole, and at the same time should have good indoor climate conditions to make users live more comfortable and healthy. Structural components should be standardized and serialized. Green ecological building technology is used to ensure that the life cycle cost of construction projects is reduced. In the design process, attention is paid to the selection of building technology, materials, natural ventilation and landscape design. The imitation of ecological architecture design is not the artistic needs such as modeling, nor the expression of cultural concepts. It is mainly to learn the adaptability of biological, machine and traditional architecture to the changes of the external environment, the rationality and efficiency of the use of resources and energy, etc. . According to the climatic characteristics of the region, select appropriate building materials and structural forms, adapt to local conditions, select materials locally, and reduce energy consumption in material transportation. In response to the requirements of ecological green design, we must pay more attention to whether it has a high degree of safety in the choice of building materials, including whether it has radiation and has certain harm to the human body. Establish

and improve the building environmental assessment system to supervise the built environment to achieve optimal configuration of the building and environment.

### **3.Application of Ecological Architecture**

Whether a new building meets the requirements of the ecological environment requires a corresponding evaluation system to evaluate it and determine its good standards. Comprehensive and scientific testing for the related characteristics of materials such as density, strength, heat transfer coefficient, durability and so on is carried out to ensure that these indicators meet the design requirements. Architects play a major role in organizing and coordinating, and many structures and details must be designed strictly according to the results of scientific calculations. Also consider the need to be consistent with the aesthetics of the building facade. Repeated photovoltaic modules will form a certain rhythm on the facade of the building, and will create new technical features for the facade of the building facade photovoltaic components. When planning the building layout, in order to increase the lighting and improve the ventilation conditions, you can change the orientation of the building to design the building. Try to let the natural wind swirl indoors, so that the ventilation effect will be better. In the design and construction of building infrastructure, more emphasis is placed on the application of local resources and recycled materials.

Rural ecological building construction should also follow this principle, the same mode will affect and destroy the ecological balance of the region. Only by combining with the characteristics of the region, the construction of regional ecological buildings can be integrated into the ecological balance. Greening and covering the ground can cool the surrounding environment as high as trees can form shade on the ground, reduce heat absorption on the ground, purify the air and improve the oxygen content of the air. At the same time, technology is also developing dynamically, and technology between different levels will be transformed with the development of social and economic technology. Any kind of high technology, after long-term industrial development, low-temperature radiant heating and cooling efficiency is high, the temperature is uniform, and the system does not occupy the indoor space, will not damage the overall appearance of the building, basically can achieve no wind, no noise. Improve the utilization rate of regenerative clean energy, thereby reducing the emission of soot and sulfur dioxide, purifying the air, creating a sustainable, zero-energy, zero-pollution, and affordable low-carbon residential image, and truly achieving energy-saving and emission reduction targets. To ensure the continuous development of China's ecological building technology level, and continue to promote and apply high-level ecological building technology, effectively reduce capital investment in construction projects and promote the development of ecological building technology.

Scientific planning, rational layout, saving arable land and developing economy are the keys to building well-off residential buildings in beautiful countryside. When planning the well-off residential buildings in the new countryside, we should combine the distribution of land resources and try to choose the safe geographical

position which occupies less arable land. It is necessary to establish ecological indicators for construction projects. On this basis, conceptual design, compilation of performance indicators of ecological buildings, and selection of reasonable technology for investment and effect comparison, the economic and technological development speed is still at a relatively low level. Therefore, in the study of the adaptability of ecological technology, we should also formulate the development strategy of ecological building technology which is more in line with the actual situation of our country. The materials and energy input in the rural production process are maximized, that is, the waste of resources and energy is minimized, and the waste discharged is also minimized, and the waste can naturally penetrate into nature. The relationship between biological forms and functions and the relationship between the form and function of architecture and the principles and architectural principles of the living body itself. These mutually comparable characteristics determine that buildings can benefit from biological learning. We will strive to make effective use of the existing natural ecological conditions in the environment, and combine the natural climatic conditions of the area where the base is located and the small environment unique to the building base for site design and architectural design.

#### **4. Conclusion**

In this paper, the adaptability of ecological architecture in the construction of beautiful countryside is studied, which is based on the principle of ecological design and aims at human survival and comfort needs. To maximize the utilization of energy and materials, to minimize environmental pollution during construction and use, site selection, resource utilization and building forms. In the design of rural ecological architecture, we should fully tap the connotation of local traditional construction technology, and strive to find the combination of traditional construction technology and modern architecture in line with regional characteristics. A complete ecosystem can fundamentally change human living space and optimize environmental quality. In the acquisition process of eco-building technology, we absorb the operating rules of life system and apply these laws to the design of construction projects, so that they gradually develop into eco-building technology. In the architectural design, the treatment of aquaculture and domestic garbage should be comprehensively considered to reduce environmental pollution. Taking the scientific principles of ecology as the guiding ideology, the created architectural space environment is a harmonious and organically unified building site between man and nature. It is necessary to make rational and effective use of land resources and maintain the sustainable use of land and water resources. Appropriate application of ecological building technology to buildings will inevitably enable people, architecture and ecological environment to achieve harmony and unity on the basis of ensuring regional culture.

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