

# *Current Status and Management of Green Development in Architecture and Real Estate Economy*

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**Abstract:** In order to meet the sustainable development strategy goals of green environmental protection, energy conservation and emission reduction in China, construction enterprises should recognize the importance of promoting green buildings, actively introduce new environmental protection materials and green construction technologies, and comprehensively improve the quality of green buildings, in order to ensure that construction enterprises obtain more economic, social, and ecological benefits, and promote the healthy development path of green environmental protection for construction enterprises. This article conducts research and analysis on the current status and management of green development in the construction and real estate economy.

## **1. Introduction**

Green buildings have become the future development trend of real estate in China. By vigorously promoting green buildings, it can promote the integrated development of China's green economy and enable construction enterprises to obtain more economic and social benefits. Therefore, real estate development enterprises should recognize the importance of the role of green and environmentally friendly buildings, establish a sound, unified, and standardized green building management system, and effectively apply green building materials and technologies, so as to improve the core competitiveness of the enterprise, and comprehensively promoting the enterprise to move towards a long-term stable and sustainable development path.

## **2. Current situation and development of materials based on green buildings**

### **2.1. Green steel**

In the traditional construction process, quenched and tempered steel is mainly used as the building material, which does not have high stability and uniformity. It is necessary to heat the quenched and tempered steel before the construction work is carried out. However, in the process of heating the quenched and tempered steel, one ton of quenched and tempered steel needs to consume 1000kW/h of electricity. Compared to quenched and tempered steel, green steel does not require pre heating treatment, which can effectively reduce power resource loss. At the same time, it can effectively

reduce the labor and financial costs generated in the real estate construction process, thereby achieving the ultimate goal of cost reduction and efficiency increase. In 2022, Swedish steel company has launched the world's first batch of green steel, mainly fossil free electricity and extracted steelmaking materials. It will be widely used in the future construction industry, effectively reducing the loss of renewable resources, and ensuring that construction enterprises move towards a green development path of energy conservation, emission reduction, and environmental protection.

## **2.2. Green decorative materials**

In traditional decorative materials, toxic substances such as NH<sub>3</sub> and RN are usually included. During the traditional building decoration process, a large amount of harmful gases and substances are generated, which can affect the physical health of building users and staff, such as acute leukemia and immune dysfunction.[1] At the same time, it will also cause damage to the surrounding natural ecological environment. However, in this process, the scientific and reasonable application of photocatalyst decorative materials, soft film ceiling decorative materials, recyclable decorative materials, etc. can effectively solve the above problems and will be widely applied in future construction engineering decoration processes. Firstly, green decorative materials can ensure that the entire building is more comfortable and aesthetically pleasing. In addition, green building materials can ensure the physical safety of personnel, effectively reduce building pollution, ensure the balance of the surrounding ecological environment, and achieve the ultimate goal of green environmental protection, energy conservation and emission reduction.[2]

## **2.3. Green concrete materials**

Currently, intelligent concrete materials and lightweight concrete materials are widely used as new green concrete materials. For intelligent concrete materials, they mainly include various new types of concrete materials such as carbon fiber, intelligent temperature control, optical fiber sensing, and intelligent water permeability. They can meet the actual needs of different buildings, effectively control the permeability and crack resistance of concrete, and comprehensively improve the quality and efficiency of buildings, effectively reduce construction difficulties, and ensure that the building's use process is more safe and reliable. For lightweight concrete materials, their production costs are relatively low and there is relatively little energy loss during the production and manufacturing process, which can meet the development needs of green building enterprises that save resources and are environmentally friendly. Generally, lightweight concrete materials are mainly made by foaming machines, which can fuse cement materials with foam produced by foaming machines, and then produce new concrete materials with a large number of voids. By scientifically applying lightweight concrete materials, cement consumption can be effectively reduced, ensuring that concrete has high strength and insulation performance, which can meet the actual needs of green building enterprises in the future development and promote construction enterprises to move towards a long-term and stable sustainable development path.

# **3. The current status and development of green building technology**

## **3.1. Net zero emission technology**

Net zero technology mainly refers to the energy loss and carbon emissions that approach zero in the future construction production process. By scientifically and reasonably applying net zero emission technology in green real estate buildings, green and clean energy sources such as solar and wind energy can be reasonably applied in new building structural energy, so that the energy loss of

the building structure approaches zero and does not generate carbon emissions. In addition, through the energy+building model, buildings can achieve self-sufficiency in the energy supply layer. At the same time, due to the fact that some buildings generate energy losses during use, which are lower than the full demand of the HVAC system electrical system, energy losses can also approach zero without generating carbon emissions.

### **3.2. Green HVAC system**

Under current circumstances, energy losses in buildings in China are mainly caused by the operation of related equipment such as heating, ventilation, and air conditioning. Normally, green HVAC systems are mainly composed of air handling foundations, heat recovery devices, and other components, which can effectively reduce the cooling load of chillers and achieve the goal of energy conservation and emission reduction in green buildings. In addition, in order to create a good and harmonious indoor environment and comprehensively improve air quality, the carbon dioxide sensors contained in green HVAC systems can be effectively displayed through personalized and controllable ventilation systems through scientific and reasonable utilization. This enables the public to effectively regulate the carbon dioxide content in the air and reduce power consumption when carrying out corresponding activities inside buildings. Overall, compared to traditional HVAC systems, green real estate buildings include green HVAC systems that can effectively reduce electrical energy loss during building use, ensure air quality, and comprehensively improve the living environment quality of residents.

### **3.3. Cold roof technology**

In the traditional process of real estate construction, some construction units do not recognize the importance of building roof energy, which can seriously hinder the positive role of building roof energy. Specifically, in hot summers with high temperatures and relatively abundant photovoltaic energy, even if heat can be effectively obtained, it cannot meet the cooling load generated during the actual construction process, further leading to increased power loss. In addition, in winter when the temperature is relatively low, if the insulation performance of the roof is relatively low, it will also lead to indoor heat dissipation, further increasing electrical energy loss. In this process, cold roof technology, as a new type of green building energy technology, can effectively utilize sunlight and the heat generated by it. Through reflection, it comprehensively improves the building's ability and level of heat absorption and dissipation, thereby ensuring a more comfortable and balanced indoor temperature. Overall, through the scientific and reasonable application of cold roof technology, it can effectively block sunlight, ensure a more closed roof, prevent the exchange and alternation of cold and warm air, and create a good and harmonious indoor environment, effectively reducing power consumption.

### **3.4. Photovoltaic energy-saving technology**

Photovoltaic energy-saving technology, also known as photovoltaic power generation technology, can convert solar energy into electricity through corresponding photovoltaic devices equipped with semiconductor interfaces. Currently, photovoltaic energy-saving technology has been widely used in green real estate buildings. Firstly, active photovoltaic power generation. By scientifically and reasonably applying active photovoltaic power generation methods, it can effectively absorb the radiation energy generated by the sun, thereby providing energy for water heating and power supply to buildings. Usually, active photovoltaic power generation systems require a significant investment in costs and funds. However, through long-term considerations, they can also have high economic

value, effectively reducing renewable energy losses in buildings and reducing carbon emissions. In addition, passive photovoltaic power generation. By scientifically applying passive photovoltaic power generation, green door and window systems can be effectively made using power generation glass, energy storage glass, and other methods. Through strategic layout, the building's ability to absorb heat and dissipate heat can be comprehensively improved, ensuring that indoor lighting meets practical needs while also making the indoor environment temperature more comfortable.

### **3.5. Water saving technology**

In the current process of green real estate construction, the importance of water conservation should be recognized. By saving water, various water resource losses in the operation, management, and maintenance of buildings can be effectively reduced. In response to practical needs such as greening maintenance and circulating water cooling, the goal of water conservation can be achieved through exchanging poor water quality and secondary recycling of water sources; For drinking water, installing water-saving and water purification devices indoors can effectively reduce the additional costs incurred by residents in purchasing purified water. At the same time, promoting faucets, shower heads, toilets and other equipment should also be promoted to comprehensively improve the efficiency and quality of water-saving, thereby saving water resources, preventing wastewater generation during the water use process, and avoiding environmental pollution.

## **4. The impact of green buildings on the development of real estate economy**

### **4.1. Reduce construction cycle costs**

By vigorously promoting green buildings, real estate construction costs can be effectively reduced. Therefore, in the current situation, construction enterprises should clarify the impact of the concept of green building development on their own economic and social benefits, and ensure that real estate development can move towards the ultimate path of green environmental protection, energy conservation, and emission reduction through the scientific and reasonable use of green building materials and green building technology. While effectively reducing production costs, it can create a good and harmonious green living environment for the people, thereby comprehensively promoting the long-term and stable sustainable development path of real estate enterprises.

### **4.2. Sublimation of building technology and economy**

Compared with traditional buildings, green buildings have a higher level of production technology, and the construction materials and equipment they use are more progressiveness and forward-looking. Under the current situation, the development of green economy in China is relatively simple, and the application level of green technology is also relatively high. However, China has a vast terrain, and there are significant differences in living environments and building structures in different regions and zones. Therefore, construction enterprises should combine the actual geological and climatic conditions of the local area to vigorously carry out targeted green buildings in order to ensure the continuous improvement of the economic and social benefits of real estate.

## **5. Important measures to ensure the green economy of real estate**

### **5.1. Direct incremental economic benefits.**

Firstly, it is necessary to comprehensively improve the temperature regulation ability and control

performance of green buildings, thereby achieving a net zero energy mode, ensuring that energy-saving equipment of various types and contents comply with green design, meeting the needs of warm winter and cool summer buildings, and effectively reducing energy losses generated during the use of buildings, as well as the electricity and water expenses incurred by real estate users during the use of buildings. In addition, the existing green building performance should be optimized and improved to extend the service life of building materials, so as to prevent frequent replacement of building materials, effectively reduce the maintenance and operation costs of the building during use, and ensure that enterprises can obtain more economic and social benefits.

## **5.2. Economic benefits of recycling and utilization**

By recycling and reusing plastic products, harmless waste, and alloy products generated during the construction and manufacturing process, it is also possible to comprehensively reduce construction production costs, improve the green economic value and social benefits of real estate. Specifically, if it is not possible to recycle and reuse the waste and harmless waste generated during the construction process, it is necessary to reduce the use of renewable resources while fully ensuring the quality of the building to reduce the cost of real estate construction. At the same time, it is also necessary to strengthen the recycling and utilization of water resources. By scientifically and reasonably applying recycling technologies and supporting complete recycling facilities, the purified water resources can be used for green maintenance and concrete mixing processes, effectively reduce the cost of water resources in the construction process, and comprehensively ensure the continuous improvement of the economic and social value of green buildings.

## **5.3. Emphasizing ecological and economic benefits**

Compared with traditional buildings, green buildings are more in line with the actual demand for carbon emissions in the process of building construction and transportation, and can meet China's strategic development goals of carbon peaking and carbon neutrality. However, in the current situation, the existing green building concept in China is not yet mature and perfect, and most real estate developers do not have a high awareness of green construction. They only use green environmental protection as a promotional gimmick to attract consumers' attention, but only have the outer shell of green buildings and do not have the actual connotation of green buildings. At the same time, some developers, in order to increase the green area, promote real estate sales by inducing consumers, but it will seriously damage the ecological environment around the building. Therefore, in order to maximize the positive concept of green buildings, more green materials and green building technologies should be used in the construction and transportation process of buildings, so as to effectively reduce energy losses generated in the production and operation process of buildings, and effectively integrate green buildings with the natural environment, ensuring that the two can complement and develop in a coordinated manner. At the same time, after the completion of the construction project, it is necessary to build a comprehensive, comprehensive, and standardized building maintenance system that matches the surrounding ecological environment in order to comprehensively improve the ecological benefits of green buildings.

## **6. Conclusion**

In summary, green buildings have become the future development trend of China's real estate industry. By vigorously promoting green buildings, it can promote the integrated development of China's green economy and enable construction enterprises to obtain more economic and social benefits. Therefore, real estate development enterprises should recognize the importance of the role

of green and environmentally friendly buildings, establish a sound, unified, and standardized green building management system, and effectively apply green building materials and technologies, in order to improve the core competitiveness of the enterprise, and comprehensively promote the enterprise to move towards a long-term stable and sustainable development path.

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