

Problems and countermeasures of green building development under the "carbon peak, carbon neutral" policy¹

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Abstract

In the context of the goal of "carbon peak, carbon neutral", energy conservation and emission reduction in the construction industry plays an important role in the process of achieving the goal of "carbon peak, carbon neutral" in China, and the realization of green buildings is consistent with the goal of "carbon peak, carbon neutral" in China. Under the guidance of the Marxist concept of nature and the "carbon peak, carbon neutral" policy, the difficulties and challenges in the development of green buildings are how to better develop green buildings and realize the sound development of green buildings. For the existing problems and challenges, the countermeasures for the development of green buildings are put forward.

Keywords: Marx's view of nature; The goal of "carbon peak, carbon neutralization"; Green building;

China has included the goal of "carbon peak, carbon neutral" as an important goal in the overall layout of ecological civilization construction. By 2030, carbon dioxide emissions per unit of GDP will be reduced by more than 65% compared with 2005. In October 2021, the State Council issued the Action Plan for Achieving Carbon Peak by 2030 to promote the green and low-carbon transformation of energy use, improve the level of building energy efficiency, and optimize the structure of building energy use. The construction of green buildings emphasizes high efficiency and low energy consumption, and ensures the coexistence of environmental protection and economy. As a major carbon emitter, China's carbon emissions from buildings are still very high. How to solve the problem of developing green buildings is a top priority. Discover and solve problems to make green buildings develop healthily and help "reach the peak and neutralize carbon".

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1.The theoretical basis of green building under the "double carbon" policy

1.1 Green buildings under Marx's view of nature

The view of nature is a scientific view and understanding of the development and change of nature that human beings think and summarize under the existing natural and historical conditions. It is the relationship between human beings and nature. Marx's scientific understanding of the relationship between man and nature is a major principle of green building practice. Marx and Engels dialectically analyzed the internal relations among nature, man and human society. Marx's view of nature emphasizes the dialectical relationship between man and nature.

First, nature is the foundation of human society. "Man does not create the material itself. Even this or that kind of production ability of man to create the material can only be carried out under the pre-existing conditions of the material itself." [2] Nature is the basis of human survival and development, which shows the objective existence of nature, and also shows that man needs to live in harmony with nature. And the nature is also affected by people. When people practice through social labor, they will transform the nature to meet their own requirements. People depend on nature and change it at the same time.

Second, man is the product of nature. The first difference between people and animals is that people can use tools. Engels gave a clear definition from the biological point of view, "From the original animals, numerous classes, orders, families, genera and species of animals have been developed mainly due to further differentiation, and finally the most fully developed form of the nervous system has been developed, that is, the form of vertebrates. Finally, among these vertebrates, such a vertebrate has been developed, in which the nature has acquired its own consciousness, that is, man." [3] Human development needs to be in nature, And rely on tools to transform the nature to meet their own needs. Human material needs and spiritual needs need to be obtained in the nature. Therefore, human survival cannot be separated from the nature. In the process of human life, we must also face and deal with the basis of nature.

Third, practice is to realize the organic unity of man and nature. Human society is the product of the long-term development of man's transformation of nature. Man is not always there, but evolved step by step in nature. In the process of human evolution, labor plays a vital role. Labor creates people and human society. Labor is not only the basic form of human survival, but also the basic practice of material production. Practice will gradually transform the free nature that has not been transformed by human beings into artificial nature with its own purposeful factors. Gradually bring nature into the scope of human activities. Therefore, practice is the intermediary between man and nature, the interaction between subject and object, and the organic unity of man and nature under the conditions of following natural laws and giving full play to man's subjective initiative.

Fourth, harmonious development is the ultimate destination of the relationship between man and nature. The relationship between man and nature is two-way. When people create the environment, the environment can also restrict and affect people. On the one hand, the natural environment has the material and energy needed for human survival and development. On the other hand, human beings will produce some waste when they demand it. When human beings endlessly demand from nature, there will inevitably be ecological crises such as resource scarcity, energy shortage, biological extinction, environmental pollution, etc., and nature will instinctively retaliate against human beings, eventually leading to the imbalance of the relationship between human and nature, resulting in the survival of human beings. This requires that in the process of developing and utilizing nature, human beings should not only play their subjective initiative, but also consciously abide by the laws of nature, promote the harmony and stability between man and nature, and promote the coordinated development of nature and society. Harmonious development is the ultimate destination of the relationship between man and nature.

1.2 Green buildings under the "double carbon" policy

"Double carbon" means carbon reaches peak and carbon neutralizes. The core of the low-carbon concept is the application of energy conservation, environmental protection and other technologies to reduce environmental pollution. Comprehensive consideration should be given to environmental, social and economic aspects. As the name implies, green buildings can save energy consumption, provide people with safe, comfortable, healthy and pollution-free use space in the process of use after the completion of the building, and also play a role in protecting the environment. Buildings that meet the requirements of environmental protection can be called green buildings. China proposes to reach the peak of carbon by 2030 and achieve carbon neutrality by 2060. And promised that CO₂ emissions will not increase until 2030.

With the economic development of our country, our understanding of green building is more comprehensive. Facing severe environmental problems, the construction industry should control the total amount of carbon emissions. During the "Fourteenth Five-Year Plan" period, China's construction industry still has great development potential, with a lot of carbon emissions. Therefore, the task of reducing the carbon emissions of the construction industry is still very difficult, so the construction industry should focus on the use of green production technology in the development process to reduce energy consumption. The "Fourteenth Five-Year Plan" period is an important stage of reaching the peak of carbon in the "double carbon" goal. To achieve the "double carbon" goal, all industries and fields must cooperate cooperatively. In such an environment, reducing carbon emissions in the development process of the construction industry plays a very important role in achieving the "double carbon" goal. However, the carbon emissions of China's construction industry have been high, and the application of energy-saving technology is very few. Therefore, if the construction industry wants to reduce carbon emissions, it must use energy-saving technology, and cannot rely on traditional methods to destroy the harmonious coexistence of human and nature. Therefore, we should vigorously promote the development of green buildings. On the premise of reasonable planning, we should comprehensively consider regional factors and combine local environment, climate, economy, culture and other factors to build green buildings.

2.Problems and difficulties in promoting green building with dual-carbon strategy

Construction is one of the major industries of carbon emissions. The total energy consumption of the whole building process in China accounts for nearly 50% of the total energy consumption and carbon emissions of the country. That is why we should accelerate the function of green buildings. On this basis, in 2022, the Xi'an Municipal Bureau of Housing and Urban-Rural Development issued the Action Plan for the Creation of Green Buildings in Xi'an, which proposed the creation goal: the implementation rate of energy-saving standards for new urban buildings in the design stage should be 100%; The proportion of green building area in new urban civil buildings will reach 60% in 2021 and 70% in 2022; The proportion of prefabricated building area in new urban buildings will reach 30% from 2021 to 2022; We will accelerate the energy conservation and renovation of existing buildings.

2.1 The concept of green building is not clearly understood.

Marx's view of nature has not been better publicized to make it popular. In urban design, Marx's ideas are not better integrated into the design concept. And because China's green building industry started late, the understanding of green building is not deep enough. The understanding of the concept of green building is still superficial. Without a deep understanding of Marx's concept of harmonious coexistence between man and nature, he just kept asking for it from nature. And the implementation of the "double carbon" policy has just begun, and the concept of low-carbon life has not yet penetrated into people's lives. Although the country has made great efforts to promote environmental awareness, most people are still talking about environmental protection, and have not made much improvement in action. There are still many construction operations that are contrary to low-carbon environmental protection. In the development process of environmental protection, it needs a long time of action and continuous practice to get some feedback, and people's lack of cooperation makes its operation more difficult.. In this regard, how to let people establish the concept of sustainable development, carry out environmental protection and low-carbon life, and promote the development of low-carbon economy is a major issue in carrying out low-carbon concept life.

2.2 The green building technology is immature.

The good development of green buildings cannot be separated from technological breakthroughs. In the practice of building green buildings, we should constantly improve and combine modern means with traditional construction technologies to create the most reasonable buildings. Shaanxi Province has obvious regional characteristics. Northern Shaanxi, Guanzhong and southern Shaanxi have their own geographical environment characteristics. In the development of green building technology, good regional characteristics have not yet been formed. Reduce the waste rate of natural resources to the minimum and choose appropriate environmental protection measures as far as possible. The traditional construction methods basically neglect the protection of the natural environment and energy conservation, and often spend a lot of money to protect and repair after causing serious consequences. This is very unreasonable and wastes a lot of resources. The number of research literature on green buildings in China is considerable, but most of the literature bases are not combined with the local situation; At present, there are only a few architects in China who specialize in green building with low-carbon concept. Most architects are still ordinary architects and are also in the stage of groping and learning.

Lack of theoretical understanding of green buildings. In the actual building construction process, most of them are ordinary workers. The unclear concept leads to the unsatisfactory final results of green buildings.

2.3 The support of green building talents and technical talents is insufficient.

China's green building started late, and there are still many deficiencies in its development today. Some construction technologies need to be further improved. In recent years, although China's construction industry has vigorously promoted the concept of green building project management, many enterprises still focus on short-term immediate benefits, for example, the design scheme is not optimized enough; The use of materials with low cost and high pollution in the construction process, or the blind rush to work, has caused excessive air and noise pollution to the surrounding residents; There are environmental problems such as waste of resources and improper waste disposal. Compared with traditional construction projects, green buildings have higher requirements from design, development, construction to operation and maintenance. However, China's research on key technologies and practical management related to green buildings has not been advanced in developed countries. The research and development of environment-friendly materials and the application of renewable energy technologies have started relatively late, and some aspects are still highly dependent on foreign technologies, which also increases the cost of enterprise's early design of green buildings and the introduction of process equipment. The Shaanxi Provincial Department of Housing and Urban-Rural Development released the news that the "Three-year Special Action Plan for Building Energy Conservation" was officially issued. By 2020, the provincial engineering construction mode will be effectively transformed, with the proportion of green buildings reaching 50%, and the proportion of prefabricated buildings in key areas reaching 20%. Under this requirement, it is necessary to develop prefabricated building design, construction and other talents, strengthen the technical improvement in the construction of prefabricated buildings, and meet the requirements of green buildings. It is necessary to increase the application of prefabricated buildings in the design of public buildings and increase the green grade of public buildings. A large number of green building talents and technologies are needed, which is still lacking.

3.Countermeasures for the development of green buildings

3.1 Strengthen green building awareness

The development of green buildings can not be separated from the improvement of people's green awareness, and the promotion of low-carbon life should be strengthened to deepen people's understanding of green buildings. Let the concept of green building take root. The concept of green building will be introduced into all processes of building construction, which is not only conducive to the development of green buildings, but also conducive to the realization of the dual-carbon goal. The promotion can be realized by the people. Developers are investors in real estate projects, integrators of various resources in the development process, and important participants and implementers of green buildings. They should strengthen the publicity and education focusing on the economy and future development trend of green buildings. Architectural designers, constructors and supervisors are the specific implementation and supervisors of real estate projects. The media should focus on their professional knowledge and technology of green buildings and the social responsibility and mission of the construction industry, and provide them with professional training and education. Consumers are the ultimate users of real estate projects. The media should publicize the concept and connotation of green buildings as well as the characteristics of energy conservation, environmental protection, health and comfort of green buildings, integrate the knowledge of green buildings into television programs, cultural and cultural activities and social activities, and let consumers accept green buildings in a direct and vivid way. Marx's materialistic dialectics proposed that practice is the source of knowledge. While enhancing people's awareness of green buildings, we should join more practice and deepen our understanding of green buildings in practice.

3.2 Cultivate green professionals

Strengthen the cooperation and exchange with scientific research institutions, develop the application technology of mapping software, and strengthen the combination with practical operation. Improve various technologies and continuously optimize the process in terms of technology. Build a complete set of institutional mechanisms to continuously improve in green design, green development, green construction, green marketing, low-carbon operation and other aspects.

Support more enterprises to set up innovation platforms, develop green building capabilities on the basis of the platform, constantly innovate and optimize university courses, integrate Marx's view of nature into the classroom, increase practical opportunities, and strengthen the cultivation of green building awareness and knowledge. Pay attention to the distinction between theoretical academic and applied technical talents, so that theory and practice can be combined more closely. At the same time, we should strengthen international cooperation in talent training. Just as Hao Jiping, a member of the CPPCC National Committee and a professor of Xi'an University of Architecture and Technology, proposed at the CPPCC meeting that relevant departments should further introduce policies to clarify the proportion of prefabricated steel structures, such as the application of prefabricated wood structures, concrete structures and steel structures, and promote prefabricated steel structures in the residential sector. Under the guidance of such policies, it is necessary to strengthen the training of prefabricated construction talents and increase the knowledge popularization of prefabricated construction in universities. Accelerate the construction of green building talents.

3.3 Build a perfect evaluation system and supervision system

At present, China does not have a special law to regulate green buildings, but many laws have been promulgated in energy conservation, environmental protection and pollution reduction. These laws have played a very good role in the development of green buildings, but there are still some problems in the actual application and operation process. Therefore, it is necessary for the Ministry of Construction and local governments to formulate specific operational measures and regulations to promote the implementation and supervision of mandatory standards. In the evaluation system, the standards should be refined to meet the existing building environment. The country has built a green building evaluation system from the design, construction and operation management of green buildings, but there are differences in climate, resources and environment conditions in different regions. There is an interactive relationship between urban climate and buildings. The design of green buildings has an impact on indoor climate and building energy use. The spatial planning of urban green buildings also has an impact on urban climate. In order to promote the healthy development of local green buildings, a complete evaluation system for green buildings should be established in combination with local actual conditions, and the system should be continuously improved in practice and development. At the same time, the certification of green buildings should be strictly checked, and the identification of green buildings should be carried out, and the evaluation content should be combined with practice.

3.4 Strengthen the financial sector's support for green buildings

Under the effective and reasonable macro-control of the real estate industry, the financial assistance to green buildings should reflect the prominent advantages and ensure that the financing availability of green buildings is better than that of non-green buildings. Encourage the financial sector to develop financial products for green buildings, optimize services, let more enterprises enter the green building industry, and establish more diversified financial services. At the same time, consumers who buy green buildings should be encouraged to buy green building products. Open up the market channel and bring the construction industry into the carbon emission trading system. Strengthen the promotion of green buildings. First, we will work with financial institutions to develop green financial products that are suitable for the development, construction, transformation, operation and maintenance of green buildings, promote the application of green building credit products and the securitization of green credit assets, and promote contract energy management and contract water-saving management credit financing. The second is to introduce green building industry guidance policies, strengthen financial and financial support, and explore the establishment of industrial funds with social capital to help industrial innovation and cluster development. The third is to guide the construction of green buildings, low-energy buildings and other buildings, integrate incentive funds, reasonably plan the incentive mechanism for green buildings, and actively mobilize the enthusiasm of all parties for green buildings by using measures such as plot ratio incentives.

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