

Research on the Problems and Countermeasures of Sustainable Development of Green Building Economy in China



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Abstract During the 13th Five Year Plan period, China's economic development has entered a new stage. "Green," "low carbon," and "ecology" in the construction field have become the global development trend. Based on the development status of green building economy in China, this paper expounds the meaning of green building economy and analyzes the necessity of its development. Then, combined with the current situation of China and developed countries, this paper summarizes and analyzes the shortcomings of green building economic development in China. Finally, through the method of investigation and literature review, it gives the opinions of sustainable development of green building economy. This paper has practical significance.

Keywords Green building · Economy · Sustainable development

1 Introduction

In recent years, China's construction industry has achieved rapid development. While people pursue the maximization of economic interests, environmental protection is gradually included in the category of considering the merits and demerits of buildings [1]. The practice of green building in China has also been steadily promoted (as shown in Fig. 1). As can be seen from the figure, the green building area in China was only 40 million square meters in 2011, and it has reached 1 billion square meters in 2017. According to the data comparison, the growth rate of green building area in China is obvious, and it has increased steadily year by year and has made gratifying achievements. However, because the development of green building in China is

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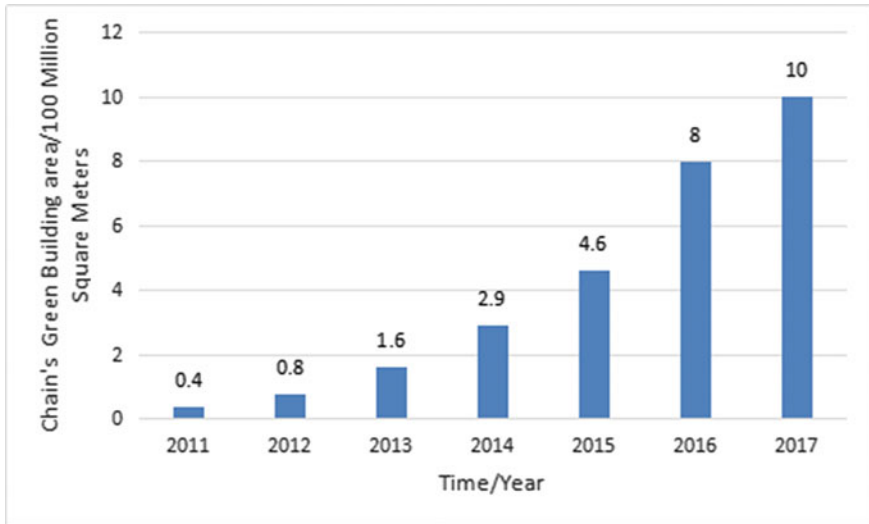


Fig. 1 Development of green buildings in China from 2011 to 2017

15 years later than that of developed countries, there are still many deficiencies. How to promote sustainable development of green building economy is still a difficult problem we need to explore [2].

2 The Meaning of Green Building Economy

The concept of green building was first proposed by American architect Paul in the 1960s. It rose in China in the 1990s and has made rapid development during the Eleventh Five Year Plan period [3]. Generally speaking, green building is to use environmental protection materials and equipment in various activities of construction, pay attention to the innovation of construction production technology, minimize the damage to the ecological environment, and save natural resources and energy to the greatest extent. In the process of planning, design, construction, operation, demolition or reuse, it puts forward high standards for architectural designers, managers, and construction operators requirements. It improves the quality of architecture, optimizes people's living environment and working environment as a whole, and realizes the harmonious coexistence of human and nature [4], which is an important embodiment of sustainable development in China.

Green building economy is an innovative concept of sustainable development. It is a building economy with comprehensive development and promotion of green building construction as the core [5].

3 The Necessity of Green Building Economic Development

With the continuous progress of society, the process of green and sustainable urbanization has become an inevitable trend. The development of green building economy promotes the development and utilization of new energy and the recycling of resources, which plays an extremely good role in promoting the process of urbanization [6].

The development of green building economy combined with ecological knowledge aims to create a comfortable living environment with energy saving and emission reduction, green and low carbon, create a good shopping experience for consumers, and improve people's quality of life. With the development of green building economy, resource saving and comfortable living are complementary to each other, showing the concept of people-oriented and sustainable development. It is an important measure to promote the harmonious coexistence between human and nature in China.

4 The Deficiency of Green Building Economic Development

4.1 Insufficient Government Support

The economic concept of green building economy was put forward relatively late in China. At present, there are some deficiencies in the government's cognition and people's recognition is not high. Based on this, China's green building economy in the rules and regulations, policies, legal system, and other aspects is not perfect, lack of good development space, in China is still in the concept and idea of the primary stage, compared with developed countries there is a big gap [7]. At the management level, due to the lack of government attention, there is no specific and perfect law to implement the protection of green building economy, resulting in a "cliff type" situation. The enthusiasm of enterprises is difficult to mobilize because of the lack of incentive measures, and there is no resultant force within the industry.

4.2 Less Practical Operation Experience in the Industry

There are many people in our country who think that green building must have high cost, first-class ventilation, lighting and heating technology at the same time [8]. Therefore, in the pursuit of the interests of the supremacy of the present, the application of green building in China is still relatively narrow, promotion is also concentrated in the city. Due to the lack of practical application, there is a lack of advanced technology for guidance, which leads to a vicious circle in which theory cannot be combined with practice. Enterprises cry for lack of capital and technical

support, but high-end comprehensive talents will not rush to this industry. However, green building is a broad concept, such as some buildings with folk characteristics and perfect combination with nature, because it has the characteristics of low cost, energy saving and environmental protection, and embracing nature, it is also regarded as green building.

4.3 The Concept of Sustainable Development of Enterprises is Insufficient

Due to the lack of basic constraints of relevant laws and regulations, many enterprises in China's construction industry simply pursue economic interests. Green buildings are more like empty slogans of some enterprises, and the concept of sustainable development has not been implemented in daily work [9]. The relevant national level of publicity is not very good, incentive measures are not perfect, the concept of sustainable development of enterprises has not been implemented, resulting in the construction industry "bean curd residue" project, construction waste pollution of soil and water.

4.4 The Evaluation Mechanism of Green Economy is not Perfect

China's green building is still in the primary stage of development, and the excessive momentum of enterprises has led to some drawbacks in the green building economy. For example, some real estate developers have single green space area, but consumers have not satisfied with the green building in the later use process. The evaluation mechanism of green building economy in China cannot adapt to the current social development. So far, the mechanism is not perfect and cannot play an effective role in evaluation. Therefore, it is difficult to ensure the accuracy, consistency, and scientificity of the evaluation process [10].

5 Countermeasures for Economic Development of Green Building

5.1 Increase Policy and Legal Support

Green building economic market is an indispensable part of China's socialist market economy, and China's market economy has not yet formed a perfect system and

mechanism. From the perspective of economic interests, some construction enterprises may ignore environmental protection. At this time, it is necessary for the government to improve the understanding of green building economy, pay attention to the development of long-term economic interests, formulate corresponding incentive measures, improve the enthusiasm of enterprises for innovation, increase the media publicity, and escort the development of green building economy with capital as the source power [11]. On the other hand, the government formulates corresponding laws and regulations to prevent accidents in advance and prepare for the rainy days. If the enterprises cause pollution, they should be severely punished, so as to form an atmosphere in which laws must be followed and law enforcement must be strict in the whole society.

5.2 Improve the Green Building Economic Evaluation Mechanism

The development of green building economy in China has been for a period of time, but it has not yet formed a perfect, scientific, and advanced evaluation mechanism matching with China's national conditions, which makes the promotion of green building economy lack of extensive foundation, which is also one of the important reasons why China's green building economy lags behind the western countries [12]. On the one hand, the government should develop a set of evaluation system, and then upgrade and optimize it based on China's national conditions, so as to provide a professional basis for the development of China's construction economy. On the other hand, enterprises should scientifically carry out their work according to the evaluation system, so as to make a virtuous circle of energy conservation and environmental protection, actively contribute to sustainable development, and refuse to focus on immediate economic interests and pick up small and lose big ones [13].

5.3 Cultivate Professional Talents

The development of green building economy is inseparable from the support of high-tech. The state should strengthen the training of talents, accumulate more practical operation experience through a large number of experiments and tests, and give play to the core value of green building economy. We will increase financial support and attract a large number of comprehensive talents who are proficient in the fields of architecture, law and ecology to enter the green building economy industry. Innovative technology is the key to eternal development. Enterprises should encourage employees to innovate, actively organize staff training, give full play to the industry's technical strength, reward advanced employees, and form an enterprise culture that encourages innovation [14].

5.4 Learn Foreign Advanced Experience and Technology

At present, it is necessary to enhance the exchange of advanced experience and technology with foreign countries. The development of green building economy in China lags behind that of developed countries and lacks practical operation experience. It belongs to the development mode of learning from others' experience and exploring by ourselves. In this regard, the government should strengthen cooperation and exchange, introduce technology, learn from the advanced experience and technology of developed countries, promote the healthy, stable and long-term development of green building economy in China, steadily build the environment of green building, and finally realize win-win cooperation and mutual benefit [7]. Through learning and exchange, the concept of development will be deeply rooted in the hearts of the people, and people's attention will be raised. The social foundation will be more solid, and the development of the industry will be longer.

6 Conclusion

Green building economy is the necessary trend of construction industry development, which plays a key role in promoting sustainable development and harmonious development between man and nature [15]. Compared with other countries, the development of green building economy in China is relatively late, and it is still in the primary stage in planning, design, construction, and so on. In the actual process, the effect is not obvious, and there are still many deficiencies, which need further research and exploration. With the progress of technology policy, the development of green building economy in China will be better and better, which is a coordinated project participated by the government and the people.

References

1. Wang, Z.Y., Qiu, F., Yang, W.S.: Solar water heating: From theory, application marketing and research. *Renew. Sustain. Energy Rev.* **01**(41), 68–84 (2015)
2. Teng, J.Y., Xu, C., Ai, X.J.: Driving structure modeling and driving strategies of green building sustainable development. *J. Civil Eng. Manage.* **36**(06), 124–137 (2019) (in Chinese)
3. Wang, Q.Q.: Review on development and standards for green buildings in China. *Archit. Technol.* **49**(04),340–345(2018)(in Chinese)
4. Huang, L., Wang, J.T.: Review on research progress of green buildings operation management. *Constr. Econ.* **36**(11),25–28(2015)(in Chinese)
5. Huang,Q.R.: The main factors analysis on life cycle cost of green building. *Constr. Manage. Modernization*(04),49–51(2008)(in Chinese)
6. Luo, J., Guo, Y.F., Huang, Y.: Analysis of green building industry chain and its social and economic effects.*Eng. Econ.* **27**(07),63–65(2017)(in Chinese)
7. Lu, B.B.: Analysis of the restricting factors in construction industry's promoting and developing green buildings. *Eng. Econ.* (02),81–85(2015)(in Chinese)

8. Xue, F., Shen, L., Qian, J.: Influential factors of green residential building's incremental cost. *J. Civil Eng. Manage.* **36**(01),194–200(2019)(in Chinese)
9. Han, Y.Y., Shen, L.Y., He, B.: Analysis of the restraining factors in promoting the development of green building based on ISM: a case study of Chongqing. *Constr. Econ.* **38**(02),26–30(2017)(in Chinese)
10. Wang, F., Chen, L.Q.: The analysis of problems and countermeasure in green building economic evaluation. *Shanxi Archit.* **41**(09),225–227(2015)(in Chinese)
11. Wang, X.L., Du, Z.F.: Study on the development countermeasures of green building under the low-carbon concept. *Constr. Econ.* **35**(06),80–82(2014)(in Chinese)
12. Ke, S.L.: Research on improvement and perfection of evaluation standard for green construction of building. *Eng. Econ.* **27**(03),69–73(2017)(in Chinese)
13. Wang, X.W., Zheng, X.X.: Research on the evaluation of green core competitiveness of construction enterprises. *Eng. Econ.* **27**(07),57–62(2017)(in Chinese)
14. Guo, H.D., Zhang, Y.X., Zhang, H.Y.: Mechanism construction and optimization for coordinated development of green building supply chain under the leadership of core enterprises. *Constr. Econ.* **40**(11),79–83(2019)(in Chinese)
15. Ye, Z.D.: Study on the macroeconomic impacts of green buildings. *Urban Dev. Stud.* **10**, 97–103 (2012). (in Chinese)