Research on sustainable development of construction industry

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Abstract. In recent years, with the emergence of ecological environment crisis, the topic of sustainable development has attracted people's attention, and it is also the common goal. With the rapid development of the construction industry, there are many problems to be solved because of the lack of social responsibility. For example, frequent engineering quality and safety accidents, huge resource consumption, inadequate utilization of construction waste, and so on. These actions of construction enterprises not only harm the interests of stakeholder, but also seriously disrupt the order of the construction market. With the improvement of social transparency and the enhancement of citizens' awareness of safeguarding their rights, the voice of society requiring construction enterprises to fulfill their social responsibilities is rising day by day. From the view of social responsibility, this paper puts forward some suggestions on promoting the sustainable development of construction industry in the aspects of organizational governance, the environment protection, labor practice and so on.

1. Introduction

With the rapid development of economy and society in recent years, the living standard of the people has been gradually improved, and the concept of architecture is also changing. It is necessary to improve the construction quality and reduce the energy consumption of building operation, so green, low carbon, energy saving and other requirements have become an important part of the sustainable development of the construction industry. At the same time, on the way forward for sustainable development, construction enterprises are also facing a profound green revolution. The green and energy-saving design of buildings is very important to deal with global climate change. It can be said that the construction industry is the whole society energy conservation and emission reduction, building green production and green lifestyle key areas.

Sustainable building is the concrete manifestation of the construction industry to fulfill its social responsibility. Sustainable building can save resources, reduce pollution and improve living environment to the greatest extent, which is beneficial to people's health and safety. Sustainable building has important significance and far-reaching influence on dealing with climate change, saving energy and reducing emissions, improving people's livelihood, developing new industries, establishing new urbanization model and promoting sustainable economic development. Guided by the idea of sustainable development, sustainable building seeks for the harmonious integration and complementary functions of human, nature and architecture. On the basis of the harmony between human and nature, it uses natural conditions and artificial means to create an environment conducive to human health and comfortable activities.
2. Definition
In 1987, the World commission on environment and development, in its report our common future, for the first time fully elaborated the concept of "sustainable development", which is "meeting the needs of the present without compromising the ability of future generations to meet their own needs." On the one hand, sustainable development makes it clear that enterprises can exploit and use resources, while limiting such demand. Because the development of enterprises will inevitably lead to the consumption of resources, but this consumption should be controlled within a reasonable range. On the other hand, we should take into account that future generations have the same right to enjoy resources as we do, which we cannot deny and must be protected. However, resources are limited, and we must take into account the development needs of future generations while considering ourselves.

Buildings are one of the main sources of greenhouse gas emissions and have a significant impact on climate change. Sustainable buildings meet the requirements of low energy consumption, low greenhouse gas emissions and other low-carbon development, and meet the theme of energy conservation, emission reduction and environmental protection. Sustainable building, or sustainable design, is a method of building that aims to reduce harmful impacts on the environment and health. Sustainable buildings offer numerous health benefits, such as improved indoor air quality, temperature regulation, optimal residential comfort, reduced local infrastructure burden and higher overall quality of life.

What is sustainable construction? Sustainable construction refers to the building that can save resources (energy saving, land saving, water saving and material saving), protect the environment and reduce pollution to the maximum extent during the whole life of the building, so as to provide people with healthy, suitable and efficient space to use and live in harmony with nature. Sustainable construction, also known as green building, is a structure designed, constructed, maintained, operated or reused in an ecological and resource-efficient way.

Actively fulfilling social responsibility is an inevitable choice for construction enterprises to achieve sustainable development. As a kind of social and economic organization, only when enterprises are recognized and accepted by the society, can they keep vigorous vitality and keep growing in the continuous exchange of resources with the society. And actively fulfilling social responsibility is conducive to building enterprises to obtain extensive social recognition and acceptance, and constantly expand the space for development. Based on ISO 26000, social responsibility means "responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that contributes to sustainable development". Sustainable construction design is a design concept or trend. "Sustainable construction" means that the building itself is highly adaptable and can be used for a long time in the future, even if the original function is no longer applicable, but can be reused through appropriate transformation. Many old buildings in Europe have been successfully renovated. In addition, it is environmentally friendly and the overall energy consumption of the building is low." Sustainable construction is already a trend in the building industry, as environmentally friendly and low energy consumption will be the norm in the future.

3. Methods
ISO 26000 provides a general guide of sustainable development practices for all organizations (see Figure 1). ISO 26000 has seven core subjects. According to the characteristics of the construction industry, this paper discusses how to promote the sustainable development of the construction industry from the influence of close subjects.
4. Principles to follow

4.1. Revalue and research
Construction enterprises need to renew their ideas and re-recognize and rethink architectural design from the perspective of sustainable development. The function of new environmental protection building materials must be combined with the overall design of the building to maximize the benefits. If only using advanced materials but unreasonable overall design of the building, or the use of building materials and the design of the building itself has the phenomenon of function offset, then the best building materials are useless.

Construction enterprises should attach importance to research ability and enhance sustainability in production and operation. In addition to the traditional environment-friendly building materials, the concept of intelligent building materials has also emerged. Intelligent building materials refer to composite materials or combinations of materials that are manufactured by using bionics and can automatically adjust their own performance parameters to adapt to environmental changes. Modern bionics can greatly enhance the humidity regulation function of materials, including concrete, cement and other materials previously considered as non-environmental building materials. In addition to adjusting humidity, intelligent materials can also play a role in reducing electromagnetic radiation, antibacterial sterilization, adsorption of toxic gases, and regulating room temperature. Some intelligent materials are recyclable resources, which on the other hand reflects the design concept of sustainable development of buildings.

4.2. Reuse and renew
Reuse refers to the recycle of all available old equipment, old materials, old furniture, etc. For example, personal housing in Freiburg, Germany, with the exception of solar panels, almost all components are recycled old components. Renew mainly refers to the renovation and reuse of old things. The greening system attached to the building is closely related to energy conservation. The greening system should not only be used for decoration and beautification, but also bring vitality to the lifeless building as much as possible. In addition to large areas of constructed wetland green belt, such as lawns and trees, which are specially arranged to coordinate with the overall water circulation of the building, scattered three-dimensional green belt should also be reasonably arranged in places that do not affect daily use, such as rooftops and internal joints of the building, so as to play the role of heat insulation and cooling. Roof greening is a kind of green way that saves water, energy and land, but it needs to be specially designed for specific roof load bearing force and building characteristics to meet the requirements of lightweight, easy to carry, simple installation and stable. In addition, if solar energy storage devices have been installed on the roof, then wall climbing plants that may affect the work of the electric panels can not be used. Without a solar roof, if the roof of the building is pitched at an angle to the ground, it is safer and more practical to let vines cover the whole roof naturally than to place pots of grass directly on the roof.
4.3. Recycle and rediscover
Recycle means that enterprises should actively recycle and recycle the pollutants generated in the construction process to minimize the damage to the environment. Rediscover refers to the transformation of non-green products into green products through scientific and technological redevelopment, that is, sustainable buildings, so as to solve the contradiction between environment and production.

Enterprises should recycle all kinds of resources, especially those in short supply, rare resources or substances that cannot be naturally degraded, for recycling or further use after processing and refining in a certain way. Especially the recycling of water resources. Establish a water supply and drainage system of different quality and grades, namely, separate drinking water and water use, and establish a water environment system, including the reclaimed water system and rainwater collection system, which can be reused after the treatment of miscellaneous drainage and rainwater and other non-drinking water. Reuse of waste. "There is no useless waste, only misplaced resources". In order to achieve the goal of low consumption and low emission of sustainable buildings, waste classification and recycling and secondary utilization within a small scope are also very important measures.

4.4. Reduce and reserve
Reduce means that enterprises should reduce the consumption of resources, environmental damage and adverse effects on human health. Reserve means that enterprises should vigorously advocate environmental protection and devote themselves to environmental governance, and face the public and all staff with sustainable corporate image. Enterprises should use new technologies, new processes and new methods to prevent and control the pollutants generated in the construction process, and not only "control", but also pay attention to "prevention". Sustainable buildings can be considered to be oriented at an angle of 30-60 degrees from the dominant wind direction in summer to avoid the sharp drop in indoor temperature caused by the direct attack of winter wind.

5. Suggestions
5.1. Organizational governance
Building enterprises set up sustainable development values. Leaders and management must pay enough attention to them, because their value orientation plays a guiding and dominant role in the overall business direction of the enterprise. Integrate the idea of sustainable development into all aspects of enterprise activities, take green values as the primary thought to guide enterprise production and operation, and gradually form the overall atmosphere of economic, social and ecological unity from top to bottom. To environmental protection and ecological balance as a prerequisite for building enterprise development, and not just the pursuit of maximum profit, the reasonable control of the relationship between the input and output, under the condition of feasible technology, reasonable economy, actively promote recycling, reduction of the priority principle, promote the sustainable development of resources, environment, and building. Enterprises should establish sustainable development rules and regulations that emphasize the awareness of environmental responsibility, guide employees to work with a high sense of social responsibility, and further strengthen the consolidation of sustainable development concept from the rules and regulations.

5.2. The environment protection
In the process of production, construction enterprises consume a lot of resources and discharge a lot of pollutants, such as sewage, waste gas, construction waste, seriously damaging the natural environment. Construction enterprises bear unshirkable responsibility for the natural environment, establish a scientific and reasonable control system for the utilization of resources and energy, actively develop and utilize alternative resources, and improve the recycling and recycling level of waste from contracted projects. To formulate relevant systems for contracting projects to reduce pollution and reduce emissions, to reduce or control the generation, discharge or waste of any type of pollutants or
wastes, and to ensure that the amount of pollutants, chemicals and other hazardous substances discharged, and the procedures and standards for treatment and destruction meet or exceed the applicable laws and regulations.

The greening of sustainable buildings should use local species, in addition to these species are more comfortable with the region's natural conditions, reduce the cost of investment and so on economic considerations, and more importantly, the local species is harmless to environment system itself, while artificial introduced species may cause species invasion and the collapse of the ecological system to a certain extent, it is totally against the concept of sustainable architecture. The green system of sustainable buildings should also ensure a certain diversity of species while giving priority to local species. Diverse species can protect the living environment of the most basic organisms in the biological chain, guarantee the energy base of advanced organisms, and promote the healthy development of the ecosystem.

5.3. Labour practice
Construction enterprises should actively carry out professional training activities, implement the reward and punishment mechanism, strengthen the awareness of energy conservation and environmental protection of construction staff, and promote the construction work under the concept of sustainable development. In the process of implementing the building sustainable development plan, the staff should also pay attention to the rational use of renewable energy technology, and enhance the energy saving and environmental protection effect in the application of building facilities by giving full consideration to the solar water heater, collector and photo-voltaic building. Strengthen construction staff own information, specialization, technology. Improving the overall skills of employees is the basic premise to strengthen the sustainable development ability of the enterprise and also the basis to conform to the future development trend of the enterprise. It is not only necessary to train employees from the aspects of ideas, concepts and values, but also to strengthen the training of employees' innovation ability, eliminate some backward technological skills, and enhance the use of advanced equipment skills.

6. Conclusion
In today's society, the corporate responsibility movement is more and more attention, the construction enterprises should apply social responsibility, voluntarily undertake enterprises, consumers and the environment responsibility of each stakeholders form enterprise's profit target, the customer's green demand and ecological environment benefits between these three organic combination, to achieve a win-win good condition of sustainable development; At the same time, the construction of sustainable buildings is not only a material expression of improving economic performance of construction enterprises, but also a concrete embodiment of enterprises under the guidance of social responsibility. This paper puts forward some suggestions how construction industry sustainable development. Architecture, which is highly concerned by the world, not only refreshes the innovation strength of human science and technology and the manufacturing capacity of modern industry. It also inspires people to think, when architecture and advanced manufacturing, big data and artificial intelligence are deeply integrated and the hard core strength is constantly improving, bringing about the transformation and infinite possibilities of "intelligent living", how to make the construction industry sustainable development and make architecture become a booster for creating a better life?

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