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Developing Green Buildings to Promote Green Transformation of the Construction Industry

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Abstract

Green building, sustainable development and climate change are important topics in the construction and urban development industry today. Prioritizing and promoting green building development will ensure that the urbanization process not only benefits current people but also future generations and the natural environment. Green transformation of the construction industry based on green building development factors to reduce energy consumption, reduce greenhouse gas emissions at all stages, stages, and elements that make up construction works is a specific contribution. Of the construction industry for the goal of prosperous, sustainable and carbon-neutral economic development according to the Government's committed roadmap. However, the development of green buildings in recent times is facing many difficulties and obstacles. In addition to the impacts of the covid pandemic, the slow

development of the real estate market and the decline in global consumer demand, green building project investors also face difficulties in accessing and ensuring ensure increased investment capital for projects and works to meet green standards; lack of qualified technical human resources in project planning, design, construction, and operation management of green buildings. In addition, there are currently no regulations requiring labeling, assessment and certification of green, energy-saving building material products for use in construction projects. The article focuses on basic contents: theory of green buildings, the need to develop green buildings in the construction industry, the current status of green building development in Vietnam and from there offer solutions for development. Developing green buildings to promote green transformation of the construction industry in Vietnam in the coming time.

Keywords: Green Building, Green Transformation, Construction Industry

1. Introduction

Facing global challenges of population growth, the depletion of fossil energy sources, the adverse impacts of climate change, the increase in waste and environmental pollution caused by industrial production activities, Industry, agriculture, construction, transportation, consumption, etc. In particular, the construction sector consumes about 37 to 40% of total energy consumption and emits about 30% of total greenhouse gases. The Party, State, and Government of Vietnam have many guidelines, policies, legal documents, programs, and plans to promote the economical and efficient use of energy and resources and protect the environment. Environment, reducing greenhouse gas emissions in socio-economic activities, including the construction sector. Resolution No. 24-NQ/TW dated June 3, 2013 of the 7th Conference of the Central Executive Committee, Session XI on proactively responding to climate change, strengthening resource management and environmental protection proposed set the task of "Promoting growth model transformation associated with restructuring the economy towards green growth and sustainable development". Resolution No. 29/NQ-TW dated November 17, 2022 of the 6th Conference of the Central Executive Committee, Session XIII on continuing to promote industrialization and modernization of the country until 2030, with a vision to 2045 has also been issued. Sets out goals, tasks and perspectives on promoting industrialization and modernization of the country associated with transforming the economy towards green and sustainable.

To realize the goals of Resolution No. 24, Resolution No. 29 and the Government's commitments at COP 26 on net zero emissions by 2050, sectors and fields of the economy must simultaneously transform green., including the construction industry. Green building development is one of the important solutions for the construction industry to transform green.

2. Research overview

Green transformation concept, green building

According to the general definition, green transition is a comprehensive transition to a green, low-emission economy, based on modern science and technology and high labor productivity, aiming at prosperity and prosperity. Lasting.

The construction industry is an integrated economic sector. In recent years, the industry has made important contributions to the growth of the economy. However, activities in the construction industry also have an impact on resources, affect the environment, emit greenhouse gases and increase energy demand.

Therefore, green transformation of the construction industry is based on the factor of green building development to reduce energy consumption, reduce greenhouse gas emissions at all stages, stages, and factors that make up construction works. The construction industry's specific contribution to the goal of prosperous, sustainable and carbon-neutral economic development according to the Government's commitment roadmap.

In Decree No. 15/2021/ND-CP dated March 3, 2021 of the Government detailing a number of contents of construction investment projects, green buildings are construction works that are designed and built. And operate to meet criteria and standards on energy efficiency and resource saving; Ensuring comfort and quality of living environment inside the building and protecting the environment outside the building, this is the first time green buildings are present in Vietnamese legal documents.

The need to develop green buildings promotes green transformation

To have a green building, all stages from planning, investment project planning, design, selection of materials, equipment, construction, and project operation management are involved in different roles. And different stages of the project. At the planning, investment project, and design stages, if green principles and solutions are included in this stage, it will increase efficiency right from the investment preparation, investment implementation, and investment stages. Operational phase of the project.

Choosing planning solutions, optimal design options, choosing appropriate materials and equipment, and saving energy and resources will ensure the project has an appropriate investment level and avoid waste. In initial investment, reducing operating costs and increasing comfort, ensuring the health of building users.

For businesses and establishments producing construction materials and equipment in buildings that meet green criteria for materials, products and equipment, having many green buildings will also stimulate demand and increase production output, contributing to the development of green production and green consumption.

Products, equipment, and construction materials that meet green criteria when labeled and certified as green, environmentally friendly, energy saving, and low emission will also be more favorable when exported to other countries. The market requires certification of origin, environmental responsibility and emission levels of products.

For project managers and users, when managing and using

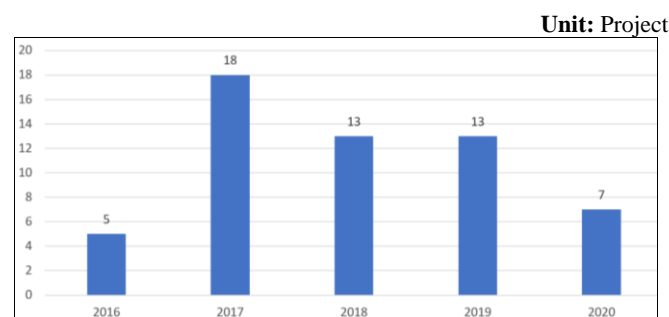
green buildings, it will also require awareness and skills to manage, operate, and use the equipment and utilities of the facility. Program and will also be more aware of the responsibility to protect the environment, reduce waste, and change behavior to live greener.

At the urban, provincial, and city levels, when there are many green building projects and green urban areas, it will also increase the green level of the urban area, province, and city and contribute to reducing emission levels., increasing the urban and local environmental protection index.

3. Current status of green building development in Vietnam

Vietnam does not have mandatory regulations applicable to green buildings, the development of green buildings is carried out in a voluntary and encouraged form. After more than 15 years of development, the number of green buildings in Vietnam currently reaches over 300 projects with a total area of about 7.2 million m² of construction floor. Ho Chi Minh City ranks first in the country in the number of green buildings with 67 projects and ranks 2nd in green building certified construction floor area with a total certified floor area of 1,264 million m². Types of green buildings have expanded from office buildings and agency headquarters to hotels, shopping centers, schools, industrial factories, etc.

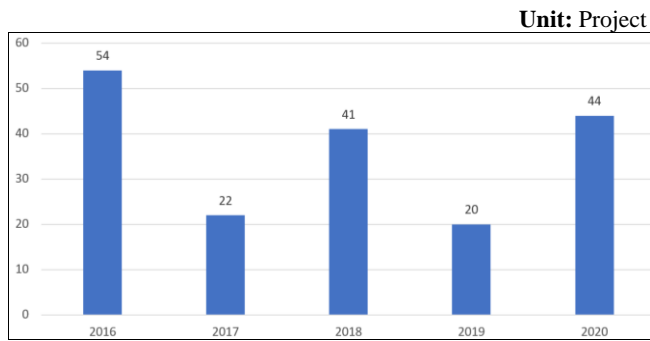
Green building development will simultaneously promote green architectural and interior design solutions, promote the development of products, electromechanical equipment, green building materials, and reduce water and resource consumption for construction. Construction and operation of projects, reducing greenhouse gas emissions contribute to promoting green transformation of the construction industry.



Source: Vgbc.vn, 2020^[8]

Fig 1: Number of projects registered for LOTUS certification

Green buildings have been developed around the world since the 1990s and have gradually become a movement, a trend in construction investment and operation management of projects in over 100 countries and territories. In Vietnam, green buildings first appeared in the years 2005-2010. According to statistics from the Ministry of Construction by the end of the second quarter of 2023, Vietnam has nearly 300 green buildings evaluated and certified by the systems. Systems and standards of Lotus (VGBC), Edge (IFC-WB), LEED (US Green Building Council), Green Mark (Singapore) with a total construction floor area of about 7 million m². Vietnam currently ranks 28th in the world in the number of LEED certified green buildings.



Source: Vgbc.vn, 2020^[8]

Fig 2: Number of projects registered for LEED in Vietnam

Currently, with encouragement from departments and needs of customers, businesses

Vietnam's real estate industry has been gradually implementing environmental impact management to develop green and sustainable projects such as standard assessment of material use, energy and environmental management at projects, Training to raise awareness of environmental management and supervision, research and implementation of green building projects, application of information technology to management and business areas, and research and implementation of clean energy use. This has helped businesses develop energy use norms and energy saving practices, and implement environmental impact assessments for all implemented projects. The process of developing green products is gradually focused by businesses right from the first stages. For example, during the design phase, green and sustainable elements are given special attention by Novaland Group, as part of the requirements for consulting units. Novaland places top priority on respecting the current status and natural terrain, and design solutions must ensure the preservation and enhancement of the existing natural beauty of the area. Typically, in the Azerai Can Tho Resort Project, the Group set a priority goal right from the master plan design stage, which is to arrange works interspersed with existing old trees in the dunes and fields. While preserving the riverside wetland ecosystem. Or with the Swan Park City project, CFLD Group has planned a "green belt" system including parks, lakes, and natural ecosystems, creating a harmonious space, bringing a sustainable living experience. For city residents. Some of the urban areas Gamuda Garden, The Phoenix Garden, Ecopark are designed with creativity and many unique features with ideal and harmonious living spaces in open nature, with lakes, trees, and environment. Clean school. Developers have carefully researched and analyzed wind direction, light direction and environmental characteristics, developed to limit energy use, while making the most of natural energy sources. Greenery and water elements are always emphasized in all detailed design items. It is surrounded by a system of parks and squares, with main streets separated by tree-covered walkways.

Besides creating a green living environment, project developers have also taken steps began implementing a series of sustainable purchasing actions such as: choosing green, environmentally friendly materials such as imitation stone tiles to replace natural stone, using industrial flooring to replace natural wood floors, applying electric vehicle systems powered by solar energy in hotel and resort projects. Some large enterprises have also made further strides in evaluating and selecting suppliers that meet

environmental standards such as Novaland, VinGroup, and FLC. Accordingly, to cooperate with businesses, such as Vingroup, suppliers need to meet many criteria of quality, capacity, comply with legal regulations and have an environmentally friendly production process., as well as other sustainability standards such as labor issues, human rights, social impact and environmental assurance^[7].

Therefore, large enterprises in this field have been somewhat proactive in the issue of raw materials. Construction materials are gradually converted to environmentally friendly materials, domestically available construction materials (bricks and stones, technological equipment, technological pipes...) are used to replace conventional materials. Import. Some solutions use lightweight brick materials, unburnt bricks, lightweight wall panels, etc. to replace traditional fired bricks, contributing to reducing energy consumption intensity; or choose to use artificial wood made from recycled wood chips, rice husks, sawdust... to replace natural wood. Some types of waste are also considered for reuse as input materials, to save resources and minimize impact on the environment. In addition, many businesses have also established research departments to evaluate the potential for applying initiatives to use new materials that are friendly to the environment and people, bringing sustainable values to the community. Residential.

In the resort sector, large project developers have made great strides by investing heavily in wastewater treatment, designing systems to filter seawater into fresh water, and building rainwater reservoirs. Thereby, ensuring the necessary amount of water in business activities without causing too much damage to underground water sources or causing negative harm to the living environment. In addition, real estate businesses are also looking for ways to improve energy issues in the direction of improving efficiency, limiting material loss and saving. Along with the application of new technologies during the construction and operation of project systems, solutions using LED lights to replace fluorescent and compact fluorescent lights are widely used, and solar battery applications are used. Solar panels are deployed more commonly, not only making real estate projects more environmentally friendly, but also reducing the cost of maintaining business operations, creating a competitive advantage in the market for businesses. Karma. For example, Novaland Group has built a 500 kwp solar battery station at the Azerai Can Tho project and a garden lighting system combined with a battery charging post at the Lakeview City project^[5].

Although the number is still very small compared to other countries in the region and the world (Singapore currently has 37% of green buildings), these are positive signs showing the proactive adaptation of green buildings. Project developer. Experts believe that green, environmentally friendly construction in Vietnam will develop more in the future.

4. Solutions for green building development, promoting green transformation of the construction industry

Firstly, regarding institutions and policies: It is necessary to focus on researching, integrating and integrating green issues in the process of building and promulgating mechanisms, policies, strategies, planning and plans of the Government. Industry to meet green and sustainable development goals. Focus on research to build a legal

framework for types of buildings and urban areas such as self-balancing energy projects, zero net emission projects, green urban areas, low emission urban areas, and neutral urban areas. Carbon.

Second, Regarding technical and economic regulations, standards, and norms: The system of technical and economic regulations, standards, and norms needs to be regularly reviewed, supplemented, edited, and newly promulgated to integrate Combine, adjust, and supplement regulations, requirements, and technical norms to guide, promote, and support projects and construction works designed, constructed, and operated to meet standards. Certification for efficient use of energy, resources, green construction, low emissions, and carbon neutrality.

Third, Integrate green building development with relevant national and industry-level strategies, plans, and master plans, such as: Project "Investment to build at least 1 million social housing apartments for low-income subjects, industrial park workers in the period 2021 - 2030"; National urban and rural system planning to 2030, vision to 2050; Vietnam construction materials development strategy for the period 2021 - 2030, orientation to 2050.

Fourth, train human resources, increase awareness and technical expertise for relevant subjects to meet the requirements of management, research, design consulting, construction, and evaluation., certification, management and operation of projects, works, and green building materials products.

Fifth, coordinate with relevant ministries, branches, agencies and organizations to research, develop, promulgate or submit to competent authorities for promulgation policies and incentive mechanisms for the development of green projects and buildings. Construction industry such as procedural incentives, green credit, architectural norms, planning, honors, and brand promotion.

Sixth, Strengthen communication work, raise awareness about developing green buildings, reducing emissions, and being carbon neutral both at state management agencies in building mechanisms, policies, and initiatives. Investors, businesses producing materials and equipment, consulting units, construction contractors and project users.

5. Conclusion

There are more and more ideas for developing green housing projects in this day and age. This not only creates harmony with the environment, urban landscape and better living space, but can also give businesses and real estate project developers advantages in the market. The article mentioned some practical ways that Vietnamese businesses are currently applying such as solar energy, water filtration technology, space design, and use of renewable materials. The article also shows the obstacles in the thinking of a large number of businesses in the industry when limiting the implementation of green strategies such as high costs and difficult designs. Based on these problems, the article has consulted on some effective solutions for the process of expanding the scale of businesses developing green products in the construction industry.

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