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"Challenges and Innovative Solutions of Life Safety in Ensuring Sustainability in Economic Sectors"

Prospects for Construction in Uzbekistan

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Abstract: *The growing detrimental influence of the construction industry on the environment instantly defines the urgency of this topic. Green construction technology is a viable path for solving this challenge. The article provides a quick summary of green construction, including its benefits, drawbacks, global standards for "green construction," and the factors impeding the development of construction in this field, as well as suggestions for overcoming them.*

Keywords: *green construction, ecology, technology, standard, energy.*

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Introduction

The construction industry contributes significantly to environmental pollution, accounting for 23% of air pollution, 40% of drinking water pollution, 50% of emissions, and 39% of energy and industrial carbon dioxide emissions[1]. In recent decades, the building sector has begun to pay more attention to environmental challenges. The concept of "green construction," for example, is a completely new approach to the design, construction, and operation of buildings and structures. Despite the fact that "green construction" is a relatively new concept, it is rapidly gaining popularity around the world. This is because new technology and human industrial activity have caused the planet's environment to deteriorate.

The expanding global pollution, global warming, and the need for cost-effective and efficient use of the planet's energy resources are all driving forces behind the development of "green construction technology" (gas, oil). The term "green construction" refers to the use of low-energy and energy-efficient materials during the construction and operation of a structure, i.e. throughout the building's whole service life from design to destruction.

The goal of "green construction" is to limit negative effects on the environment while also providing a comfortable environment for those who live in the building. To achieve these objectives, energy-efficient technology must be used to reduce the consumption of water, electricity, thermal resources, and waste in the usage of buildings, as well as to improve human health, productivity, and comfort.

Every year, the number of so-called "green buildings" increases around the world. For economically developed countries, the adoption of environmentally friendly materials and energy-saving technology in their construction has already become a serious trend. In the construction sector in the United States and Europe, the share of "green" buildings in the total number of new buildings has already reached 20%, and the number of such houses in industrialized countries is constantly increasing [2].

The world's and Russia's experience in developing "green construction" technology reveals that incorporating "green" standards and technologies into construction practice is a critical step toward a country's and the construction industry's long-term sustainability. This cutting-edge technology has a number of benefits and drawbacks, which are represented in the environmental, social, and economic aspects[3].

Advantages of "green" technologies:

Ecological - has a positive effect on the environment; reduces greenhouse gas emissions; conservation of natural resources is achieved through the active use of renewable energy sources; reduces air, water and soil pollution and waste during construction and operation of the building; It has a beneficial effect on the health of people who work and live in buildings built on the basis of "green" technologies; the new "green" building will develop the architectural solution of the building in accordance with environmental principles and innovative technologies and aesthetic advantages.

Social - improves the social conditions of the population living in different regions; creates conditions for maintaining human health by reducing the harmful effects of materials and technologies used in the construction process; creates optimal conditions in the rooms in terms of air quality, acoustic mode, insulation, heating and other operating parameters; minimizes harmful effects on the environment in the context of the growth of man-made impacts on the urban production environment.

It saves about 25% of economic resources, ie the amount of energy consumed, and reduces water consumption by 30%; improves financial and economic performance of business entities of different levels, increases production efficiency and profitability, competitiveness of enterprises and products; due to the high quality of practical control and management tools, the cost of maintaining buildings is reduced; reduces financial risks and costs in the construction and operation of buildings; recycling of construction waste for the population living and working in houses and buildings built on the basis of "green" technologies, reduces the cost of medical services to the population; additional investment in the regions will be attracted by promoting “green” construction and its importance for the sustainable development of the regions.

Disadvantages of "green" technology: Ecological - the lack of effective government incentive mechanisms to encourage "green" construction in order to improve the environmental situation in the regions; low ecological culture of the population.

Social - The development of “Green Construction” should be widely promoted and its clear advantages demonstrated:High demand for qualified personnel in the field of "green construction"; the need to increase the responsibility of construction complexes responsible for the introduction of "green" ideas into construction practice.

Economic - high value of the introduction of “Green” innovative technologies; Limited financial capacity of the population and construction companies in the implementation of "green" projects;insufficient state incentives from the state in the field of preferential lending and taxation of green construction projects; Insufficient development of certain areas of development of the "green economy" and the definition of indicators for their implementation.

From the above, it can be seen that the environmental, social and economic advantages of “green construction” technology outweigh their disadvantages. It should be noted that environmental factors predominate and play a special role here.

In modern conditions, the issues of environmental control are becoming more urgent, as a result of human activities, negative changes are taking place in the natural environment, resources are depleted, and flora and fauna are disappearing. These trends have led to the need to use resources wisely and create uniform standards in the construction of buildings and structures, taking into account the most optimal requirements. The criteria of environmental standards for the assessment

of a building include its requirements, energy and water consumption, environmental safety of materials used in construction, and many requirements for the creation of comfortable and convenient conditions for the population. Based on these criteria, the object is evaluated based on the number of points earned[4].

Since the 1990s, the first international standards for “green construction” have emerged, which regulate the environmental safety of buildings, energy efficiency, and the use of “green technologies” in urban planning, which are now actively used in developed countries around the world.Currently, the most systematic and important standards in the world are: BREEAM (Building Research Establishment Environmental Assessment Method - approved in the UK in 1990), LEED (The Leadership in Energy and Environmental Design - USA, 1998), SB-Tool (Canada, 2007), DGNB (Deutsch Gesellschaft fur Nachhaltiges Bauen - Germany, 2009), Green Star (Australia, 2003). The essence of these standards is to assign a certain energy efficiency class to a building based on the results of expert assessments against a number of specific criteria.In many developed countries, the quality of the facility is required to meet the requirements of the above environmental standards. Uzbekistan pays great attention to the construction of "green" buildings, as today the buildings consume half of the total energy consumption, which is 17 million tons of oil equivalent per year. Due to the obsolescence of engineering communications, poor insulation and a number of other problems, energy consumption in comparable buildings remains 2-2, 5 times higher than similar figures in other foreign countries[5].

According to experts, the implementation of measures to introduce "green" buildings in Uzbekistan will save 8 million tons of oil equivalent per year. This means that the country is losing $ 1.865 billion annually in additional revenue compared to the saved natural gas export potential, and $ 250.3 million in additional revenue due to greenhouse gas emissions. Due to the lack of “greening” of buildings, total losses exceed $ 2 billion annually. The introduction of "green" buildings will not only save mineral resources, reduce greenhouse gas emissions, but also create an additional 120,000 jobs by 2050. There will be an opportunity to gain additional benefits through the organization and expansion of production of materials, equipment and the development of relevant industries.There will be an opportunity to gain additional benefits through the organization and expansion of production of materials, equipment and the development of relevant industries. The first experiments on construction in accordance with environmental standards began in recent years (for comparison, the construction of buildings in the United States using environmentally friendly and energy-saving technologies has been carried out since the 70s of the twentieth century).

The framework of norms and rules governing "green construction" has begun to form in Uzbekistan [6].Requirements of national standards, construction and sanitary norms, rules and methodological documents in the development of norms and rules of "green construction" in the design and construction of residential and public buildings, as well as rating of LEED (USA), BREEAM (UK) and other foreign countries the basic rules of the systems are taken into account.

The first steps towards green construction are being taken in Uzbekistan. Gold Step Invest Construction Company is constructing seven of more than 20 buildings in Tashkent's IT Park in accordance with the requirements of the international green building standard BREEAM. Upon successful completion of all construction works, these buildings will be the first green buildings in Uzbekistan[7].

However, the widespread use and successful development of "green construction" technology in Uzbekistan would pave the way for the construction of new modern buildings that are energy efficient and environmentally friendly. However, there are a number of factors that hinder the active introduction of this technology, ie:

- lack of normative and legal documents regulating this area.To radically change the situation, there is a need to adopt new bills on environmental issues and green construction, accelerate the development and improvement of standards for green construction, and strictly monitor their

implementation by the state;

- Lack of a system of vocational training in "green construction" technology and a lack of qualified specialists in this field. Today it is necessary to train and create the necessary conditions for specialists who know the environment, energy-saving technologies, environmentally friendly waste management, rational use of water, use of environmental certification systems and have a high level of advanced foreign experience;
- lack of public awareness and information about the importance and relevance of the use of "Green construction" technology in the public.Therefore, popularize the construction of “Green Buildings” by forming in the public mind a worldview aimed at saving energy resources and understanding the need to protect the environment for future generations.

Green construction, which is expected to become a promising area of development in the country in the future, should become an important part of innovative changes in the real estate market and increase the flow of investment.In this regard, the participation and assistance of the state in attracting foreign investors for the construction of green buildings, preferential lending for projects, simplification of the insurance system, tax reduction, reduction of real estate prices and other incentives are needed.

In addition, the development of modern thermal insulation materials and building structures used in the construction of "green dwellings" and the organization of secondary processing of used building materials and industrial waste are important tasks.

Thus, the application of innovative "green" technology in construction in the construction and operation of buildings, requiring a high level of direct interaction of designers, constructors, architects, construction companies, manufacturers and customers, as well as foreign companies, preservation of ecology and natural resources, creation of a comfortable and convenient environment for people and ensuring sustainable development of society.

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