

# Review Paper On Sustainability In Green Building

Ms Priya saha<sup>1</sup>, Prof. Tushar Bhambre<sup>2</sup>  
<sup>1,2</sup>Dept of Project and Construction Management  
<sup>1,2</sup>MITCOM, MIT ADT University,  
 Pune, Maharashtra

**Abstract-** *Global warming and climate change are among the numerous difficulties and issues the globe is now facing. Many scientific research found that several sectors have significant roles in creating this illness. Particularly, the building sector is responsible for the greatest portion of these global difficulties. Without a doubt, the use of improper technology, equipment, and materials in construction has put the environment and human health in danger today. What is the best strategy to address these issues in the construction business, then, is a crucial topic. The use of certain technology and materials in the building sector during the last few decades has been linked to environmental difficulties, according to engineers and technologists.*

*Experts advised that thinking about "sustainable" or "green" design for buildings is the best method to combat the aforementioned dangers. So, the major goal of sustainable building is to replace harmful technology and materials with innocuous ones. In order to have a beneficial impact on people, the environment, and society, one of the key goals of this study is to investigate sustainable technologies, standards, and materials that enable buildings to use less energy and resources. Consequently, "sustainable" structures may use essential resources like electricity, water, and materials more effectively than traditional structures while also being more environmentally and humanely friendly. According to the evaluation, the study also aimed to discuss the advantages of implementing sustainability in buildings from several angles.*

**Keywords-** sustainable building, green materials, green technologies energy efficiency, renewable.

## I. INTRODUCTION

Sustainability is a challenging topic since it is both extensive and specific. Due to the fact that it typically has to do with ensuring the existence of both human species, it is crucial to all elements and nearly every other living thing on the world. One of the major goals of humans for improving life has made us the ideal model for all of their endeavors: eco-friendly, sustainable, and green building. Because of this, the primary objective of modern architecture is thoughtfully to move towards a greener building. (Mahdavinejad,2014).

It is becoming clear that unless significant changes are made to how people think and act, civilization will not survive at the rate at which the requirements of this planet are being met by the limited and scarce resources available on the globe.

Moreover, green buildings are designed to be aesthetically pleasing and to put as little stress as possible on the existing infrastructure in the area. the infrastructure that exists in the area.

Our homes, places of employment, and places of recreation shield us from the extremes of nature, but they also have a huge impact on our health and the environment.

A new area known as "green construction" is gaining popularity as the environmental effect of buildings becomes increasingly obvious. The technique of developing and utilizing healthier and more resource-efficient construction, operation, maintenance, restoration, and demolition models is known as green or sustainable building.

This research seeks to examine the present state of green building development through a survey of relevant literature in order to pinpoint issues and potential future directions for the field, to suggest appropriate solutions, and to provide a vision for green buildings' sustainable growth. Green construction is a crucial component of this growth path since it promotes greater ecological development. More focus needs to be given to the sustainable development of green construction if we want the economic and ecological civilization to co-exist. This is crucial for the nation's ability to establish sustainability and build for the future, in addition to meeting the demands of today's society.

## Objective

1] To develop buildings which use the natural resources to the minimal at the time of construction as well as operation. Green buildings emphasize on the resource usage efficiency and also press upon the three R's - Reduce, Reuse and Recycle.

2] Maximizes the use of efficient construction materials and practices; boosts the use of natural sources and sinks in the building's surroundings; minimizes the energy usage to run

itself; uses highly proficient equipment for the indoor area; uses highly proficient methods for water and waste management. The indoor equipment includes lighting, air conditioning and all other needed equipment.

3] To ensure minimum negative impact on the environment by the construction and operation of a building, the factors which are to be kept in mind are - to preserve the external environment to the building location; to improve the internal area for the residents of the building; and also preserve the areas which are not close to the building.

4] Saving Energy: - Energy saving through green building concept occurs in two ways. First is reduction in the amount of energy that is consumed in lighting, air conditioning and other building operations. Second is the usage of energy sources which do not produce any greenhouse gases and are renewable in nature. Green Buildings emphasize more on natural lighting and concepts of temperature control and efficient design to further reduce the carbon footprint as well as reduce cost of operation.

5] Saving water: - Green Buildings use various methods to reduce water usage, treat and reuse waste water and filter water from sourced from precipitation. The target is to be able to achieve zero water table negative impact from the green building.

6] Reducing Waste: - Waste reduction is one of the most important issues that are to be dealt with. In the US alone, the waste from construction and demolition of buildings accounts for sixty percent of the total non-industrial waste. Green Building concept emphasizes on improving the design of the product, re-using and recycling materials. It results in tremendous waste reduction and also helps to reduce the environmental impact of the building.

7] Improving Health and Productivity: - Hygiene and proper conditions inside the building also help in boosting human productivity. Hence various businesses concentrate on this aspect. Green Building concept provides for cleanliness and sound working conditions for employees and other inhabitants.

## II. REVIEW OF LITERATURE

In this connection the following literature has been reviewed.

### **Urban Planning and Architecture Design for Sustainable Development, UPADSD 14- 16 October 2015**

**Amany Ragheba, Hisham El-Shimy, Ghada Ragheb**

- The Principles of Green Architecture are: Water features and their management; natural building design; passive solar design; green building materials; living Architecture. These principles are applied in a sustainable fashion to achieve an eco- friendly building.

- Any architect has the ability to change an entire building process by specifying materials with low carbon dioxide emissions.

- Green building standards are available for almost every type of building on a global basis and these standards are well developed and are regularly being updated; they cover all phases of a building's life cycle from design through demolition.

- Buildings that have been designed according to sustainability standards need to be operated and maintained according to these same standards.

- Buildings that were built prior to enacting these sustainability standards can also be upgraded to meet the standards that have subsequently been put in place.

- Green buildings must have a number of common components: these include a focus on energy efficiency and, in some cases, renewable energy; the efficient use of water; the use of environmentally desirable building materials and specifications; a minimization of the waste and toxic chemicals generated in the building's construction and operations; good indoor air quality; and an eye on so-called "smart" growth and sustainable development.

- Green architecture produces environmental, social and economic benefits. Environmentally, green architecture helps reduce pollution, conserve natural resources and prevent environmental degradation. Economically, it reduces the amount of money that the building's operators have to spend on water and energy and improves the productivity of those using the facility. And, socially, green buildings are meant to be beautiful and cause only minimal strain on the local infrastructure.

- Traditional building materials are to be adapted to meet code-required standards for health and safety in contemporary buildings. Not only are they cost effective and environmentally friendly, but, when used correctly, these natural alternatives match the strength and durability of many mainstream construction materials.

- New building technologies, and in particular ICT automation and new materials, are to constantly be introduced to enhance the sustainable building process with the goal of reducing the impact of the building on the surrounding environment by using resources more efficiently (e.g., energy, water); enhancing and protecting the health and well-being of the occupants; and reducing any negative impacts.

## **RESEARCH ON THE SUSTAINABILITY IN GREEN BUILDING.**

**YILIN WANG**

This paper Show the rapid development of architecture, green building Have emerged as a sustainable development. this paper is Base on the research on the green building, analyzing the current development of green building with effective solution for existing problems and future direction for the development. proposes ideas for a green building planning for sustainable development of green building from completed design. green building design should be based on the protection of nature, more natural energy consumption and less pollution.

## **SUSTAINABILITY STUDY OF GREEN BUILDING IN INDIA – THROUGH PESTLE AND SWOT ANALYSIS.**

**PRIYANKA NAYAK**

Sustainable building has an evolved from exploring more sustainable activities to make building self – sustaining. This paper through a comprehensive survey and analysis to examine the future of green building through business model. this paper also uses ideas for some action at the individual and institutional level to enhance the construction of green building. benefits of green building depend sustainability on the occupant’s behaviour and attitudes.

## **SUSTAINABLE BUILDING MATERIALS FOR GREEN BUILDING CONSTRUCTION CONSERVATION AND REFURBISHING.**

**USMAN AMINU UMAR.**

This paper Give brief description on material use in green building. the design of building is such that the selection and use of eco-friendly material with related or better features than traditional building material. They should be easy applications, it’s should be reuse, recycle sustainable production of products or use of green resources. the material is a good alternative to meet the objective of green building. The selection of construction material such that which have

minimum environmental burdens is useful in the sustainable of the nation. this paper is purpose that to highlight how sustainable building material can contribute to lessen the impact of environmental degradation, and generate healthy building which can sustainable to the nation as well as our environment.

## **GREEN BUILDING AND SUSTAINBLE CONSTRUCTION.**

**MR. PRITHVIRAJ DILIP MANE**

The issues of sustainable practices have an emerging phenomenon in India. the increasing concern of harmful effects of construction related activity. the increasing concern of harmful gases related to construction work the government of India has already taken proactive measurement to promote the green building concept for the better environment as well as social protection. this paper also Tell us that the green building that are encouraging industry players to implement sustainable in their project that attract the buyers by publicizing green. small and medium developers still rely on traditional construction due to have lack of knowledge, capital and experience that resulting willingness to implementation sustainable green building practices in their project.

## **Research on the Application of Green Building in Building Design.**

**Zhang Shichen**

The real and the main implementation of the green concept in the construction industry is a social platform, at least a systematic industry problem. Not receiving the support of the national policies and the systematic promotion measures of the government, it gets extremely difficult to achieve the green goal of the construction industry, especially for the realization of the green construction procedure. Only through and by joint efforts, from the laws and regulations, policies, management, standards, supervision and technical research and other ways, all-around cooperation, can be used to achieve good green effect.

## **Scope of work**

Often referred to as Green Architecture, Sustainable Architecture lessens the negative environmental impact of development and construction of buildings through moderation as well as ensuring optimal use of materials, energy, and development space.

The materials and resources used are non-toxic and sustainable. The design integrates energy efficiency and water efficiency features. Energy sources used in the building should be renewable energy. Water conservation should be included as part of the sustainable design.

### Need

The related concepts of sustainable development and sustainability are the integral to green building. Effective green building can lead to

1. Reduced environmental impacts by, for example, reducing storm water runoff and the heating effect.
2. Reduced operating costs by increasing productivity and using less energy and water.
3. Improved public and occupant health due to improved indoor air quality.

### Advantages of Floating structure

- Reduction of natural resource consumption.
- Reduction of operating costs.
- Health, comfort and safety for all residents
- Energy optimization and reduction of energy consumption
- 5. Increased productivity of the occupants
- Better indoor air quality (IAQ has a tremendous impact on human health)
- Green Building encourages companies to benefit from the Green corporate image and to leave a very positive impression on customers, employees, business partners and shareholders.
- Choosing a green building for a home is not just an option but a lifelong commitment to uphold the virtues of natural, sustainable living...a conscious decision to arrest resource depletion and protect nature for our future generations.

### III. CONCLUSIONS

Water features and their management, natural building design, passive solar design, green building materials, and living architecture are all examples of green architecture principles. To create an eco-friendly building, these concepts are implemented sustainably.

By requesting materials with minimal carbon dioxide emissions, each architect has the power to completely alter the way a building is constructed.

Buildings that have been designed in accordance with sustainability standards must be operated and maintained in accordance with these standards as well.

Green building standards are available for almost every type of building on a global basis. These standards are well developed and are routinely updated; they cover all phases of a building's life cycle from design through demolition.

Buildings that were constructed before these sustainability criteria were passed can also be modified to comply with the newer requirements.

These include a focus on energy efficiency and, in some cases, renewable energy; the efficient use of water; the use of environmentally preferable building materials and specifications; a minimization of the waste and toxic chemicals generated in the building's construction and operations; good indoor air quality; and an eye on so-called "smart" growth and sustainable development. Green buildings also need to have a number of other features in common.

In order to improve the sustainable building process, new building technologies, particularly ICT automation and new materials, are constantly being introduced. The aim is to lessen the impact of the building on the environment by using resources (such as energy and water) more efficiently, to improve and protect the health and well-being of the occupants, and to lessen any negative impacts.

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