

# Sustainable Construction Practices: Designing And Constructing Environmentally Friendly Buildings

Aridip Jana, Priyanka Patil

Dept of MBA – Project and Construction Management,  
MIT ADT, MIT college of Management

**Abstract-** Sustainable construction practices are becoming increasingly important in the design and construction of environmentally friendly buildings. These practices involve using materials and methods that minimize the impact on the environment and promote social and economic sustainability. This paper discusses the various sustainable construction practices used in designing and constructing environmentally friendly buildings and their benefits.

**Keywords-** Sustainable, Materials, Environment, Energy, Etc.

## I. INTRODUCTION

The construction industry is one of the major contributors to the environmental degradation and depletion of natural resources. However, in recent years, there has been a growing trend towards sustainable construction practices, which aim to reduce the impact of buildings on the environment and promote social and economic sustainability. Sustainable construction practices involve using materials and methods that are environmentally friendly and promote social and economic sustainability. The aim of this paper is to discuss the various sustainable construction practices used in designing and constructing environmentally friendly buildings and their benefits.

## II. SUSTAINABLE CONSTRUCTION PRACTICES

### 1- Green Building Materials:

Sustainable construction practices involve using materials that are environmentally friendly and sustainable. These materials include recycled content, natural materials, and renewable resources such as wood, bamboo, and straw. The use of these materials reduces the carbon footprint of the building and promotes sustainable living.

### 2. Energy Efficiency:

Energy efficiency is an important aspect of sustainable construction practices. This involves designing buildings that are energy-efficient and use renewable sources of energy such as solar, wind, and geothermal. This not only

reduces the carbon footprint of the building but also helps in reducing the energy bills for the occupants.

### 3. Water Conservation:

Water conservation is an important aspect of sustainable construction practices. This involves designing buildings that use water-efficient fixtures and systems, such as low-flow toilets, showerheads, and faucets. This helps in reducing the amount of water used in the building and promotes water conservation.

### 4. Indoor Air Quality:

Sustainable construction practices also involve designing buildings that have good indoor air quality. This involves using materials that do not emit harmful chemicals, such as volatile organic compounds (VOCs), and designing buildings that have good ventilation systems.

## III. LITERATURE REVIEW

Sustainable construction practices involve designing and constructing buildings that minimize their impact on the environment while promoting social and economic sustainability. The importance of sustainable construction practices has increased in recent years due to the negative impact of traditional construction practices on the environment. This literature review aims to examine the current state of research on sustainable construction practices and their impact on the environment.

### Materials And Methods

A systematic review of the literature was conducted by searching electronic databases such as Google Scholar, Science direct, and web of Science. The search terms used were "sustainable construction practices," "green building materials," "energy-efficient buildings," "water conservation in buildings," "indoor air quality," "social sustainability in construction," and "economic sustainability in construction." Articles published between 2016 and 2021 were included in the review.

**Results:**

The literature review revealed that sustainable construction practices are an important aspect of the construction industry. The use of sustainable building materials such as bamboo, straw, and recycled content has been found to reduce the environmental impact of buildings. The use of energy-efficient building systems such as solar panels, geothermal systems, and smart building systems has been found to reduce energy consumption and promote sustainability.

Water conservation practices such as low-flow toilets and faucets have been found to reduce the amount of water used in buildings, while improving indoor air quality by using materials that do not emit harmful chemicals such as volatile organic compounds (VOCs) has been found to promote healthy living.

Social sustainability in construction has been found to be an important aspect of sustainable construction practices. This includes providing safe and healthy working conditions for construction workers and promoting the use of sustainable building practices in the local community. Economic sustainability in construction involves reducing the operational costs of buildings by using energy-efficient systems and reducing the amount of waste generated during construction.

**IV. FUTURE SCOPE OF WORK****in Sustainable construction practices: Designing and constructing environmentally friendly buildings:**

Sustainable construction practices are an essential part of the future of construction. The increasing demand for environmentally friendly buildings is expected to lead to the development of new materials and techniques that will help in the design and construction of more sustainable buildings. The future scope of work in sustainable construction practices is vast, and here are some potential areas of focus:

**1- Developing new materials:**

The development of new materials that are environmentally friendly and sustainable is an important area of focus for the future of sustainable construction practices. Researchers are working on developing new materials that are recyclable, low carbon, and have a low environmental impact.

**2- Enhancing energy efficiency:**

Improving the energy efficiency of buildings is another important area of focus. The use of renewable energy sources such as solar, wind, and geothermal is expected to increase in the future. New technologies such as smart windows and energy-efficient HVAC systems are also expected to be developed.

**3- Incorporating nature into building design:**

Incorporating nature into building design is another trend that is expected to gain traction in the future. This involves designing buildings that incorporate green roofs, living walls, and other features that promote sustainability and biodiversity.

**4- Zero-carbon buildings:**

Zero-carbon buildings are buildings that produce zero net carbon emissions over their lifetime. The development of zero-carbon buildings is expected to increase in the future as a way to reduce the impact of buildings on the environment.

**V. CONCLUSION**

- In conclusion, sustainable construction practices are an essential part of the future of construction. The development of new materials, enhancing energy efficiency, building automation, incorporating nature into building design, life cycle assessment, and the development of zero-carbon buildings are some of the potential areas of focus for the future of sustainable construction practices.
- The literature review highlights the importance of sustainable construction practices in promoting environmental, social, and economic sustainability.
- Sustainable building materials, energy-efficient systems, water conservation practices, and indoor air quality have been found to reduce the environmental impact of buildings while promoting healthy living.
- Social sustainability in construction and economic sustainability in construction are also important aspects of sustainable construction practices.
- Further research is needed to investigate the long-term effects of sustainable construction practices on the environment and society.

**REFERENCES**

- [1] <https://doi.org/10.1016/j.jclepro.2019.05.216>
- [2] <https://www.sciencedirect.com/science/article/abs/pii/S0197397510000676>
- [3] <https://www.nap.edu/read/25708/chapter/10>

- [4] [https://www.researchgate.net/publication/340103090\\_Sustainable\\_construction\\_practices\\_in\\_the\\_execution\\_of\\_infrastructure\\_projects\\_The\\_extent\\_of\\_implementation](https://www.researchgate.net/publication/340103090_Sustainable_construction_practices_in_the_execution_of_infrastructure_projects_The_extent_of_implementation)
- [5] <https://www.forconstructionpros.com/business/article/12068798/five-techniques-for-sustainable-building-construction>