



# International Journal of Multidisciplinary Research in Science, Engineering and Technology

*(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)*



**Impact Factor: 8.206**

**Volume 9, Special Issue 1, April 2026**



# Green Building Concept for Environmental Sustainability and Energy Saving in India

Dr. S.Jyothi<sup>1</sup>, Dr. Ch. Srinivas<sup>2</sup>

Librarian, Govt. Degree College, Alair, Yadadri, Bhongiri District, Telangana, India <sup>1</sup>

Scientist, TGPCB, Hyderabad, India<sup>2</sup>

**ABSTRACT:** Green buildings play a crucial role in achieving environmental sustainability and energy efficiency, particularly in a developing country like India, where rapid urbanization has led to increased energy demand and environmental concerns. This paper explores the concept of green buildings, their impact on sustainability, and their contribution to energy conservation. It highlights key policies, standards, and case studies of successful green buildings in India, demonstrating how eco-friendly construction practices can help reduce carbon footprints while promoting economic growth.

## I. INTRODUCTION

India is experiencing significant urban expansion, leading to increased energy consumption and environmental degradation. The construction sector contributes nearly 40% of global energy-related CO<sub>2</sub> emissions. Green buildings offer a sustainable alternative by utilizing eco-friendly materials, energy-efficient technologies, and renewable energy sources. The paper aims to analyze the benefits, challenges, and future potential of green buildings in India.

## II. GREEN BUILDING CONCEPT

A **green building** is designed to reduce environmental impact through sustainable practices in energy use, water conservation, material selection, and indoor air quality management. The key principles of green buildings include:

- **Energy Efficiency:** Use of solar panels, LED lighting, and smart energy systems.
- **Water Conservation:** Rainwater harvesting, water recycling, and low-flow plumbing fixtures.
- **Eco-Friendly Materials:** Use of recycled and locally sourced materials.
- **Waste Management:** Recycling and reusing construction waste.
- **Indoor Environmental Quality:** Natural ventilation and non-toxic materials for better air quality.

Certifications such as **LEED (Leadership in Energy and Environmental Design)** and **GRIHA (Green Rating for Integrated Habitat Assessment)** guide sustainable building practices in India.

### Green Building Initiatives in India

India has adopted several green building initiatives to promote sustainability:

1. **National Mission on Sustainable Habitat (NMSH)** – Encourages energy efficiency in buildings.
2. **Energy Conservation Building Code (ECBC)** – Mandates energy-efficient building design.
3. **Smart Cities Mission** – Promotes green infrastructure in urban development.
4. **Indian Green Building Council (IGBC)** – Provides green building ratings and certification programs.

Several government policies incentivize green construction through tax benefits and subsidies.

### Case Studies of Green Buildings in India

#### 1.1. Infosys Green Campus, Bengaluru

- Achieved **Platinum LEED certification**.
- 40% energy savings using smart lighting and cooling systems.
- Utilized **solar power and rainwater harvesting**.



### 1.2. Suzlon One Earth, Pune

- 100% renewable energy-powered corporate campus.
- Advanced **waste management and water recycling systems**.
- **Passive cooling techniques** for reducing air conditioning needs.

### 1.3. Indira Paryavaran Bhawan, New Delhi

- First **Net Zero Energy Building (NZEB)** in India.
- Solar rooftop panels provide **100% energy needs**.
- 55% reduction in water use through **recycling and conservation**.

## 2. Benefits of Green Buildings

- **Energy Savings:** Reduction of energy consumption by 30-50%.
- **Carbon Footprint Reduction:** Lower greenhouse gas emissions.
- **Water Conservation:** 40-50% savings through efficient usage.
- **Health Benefits:** Improved indoor air quality for better productivity.
- **Economic Benefits:** Lower operational costs and higher property values.

## 3. Challenges in Implementing Green Buildings in India

- **High Initial Costs:** Higher investment in sustainable technology.
- **Lack of Awareness:** Limited knowledge about green construction benefits.
- **Regulatory Barriers:** Need for stricter enforcement of green building codes.
- **Technology Gaps:** Insufficient access to advanced green building materials.

## 4. Future Scope and Recommendations

To accelerate green building adoption in India:

- Strengthen **government incentives** and policy enforcement.
- Promote **public-private partnerships** for sustainable projects.
- Increase **awareness and training programs** for builders and architects.
- Encourage **innovation in sustainable materials and smart energy systems**.

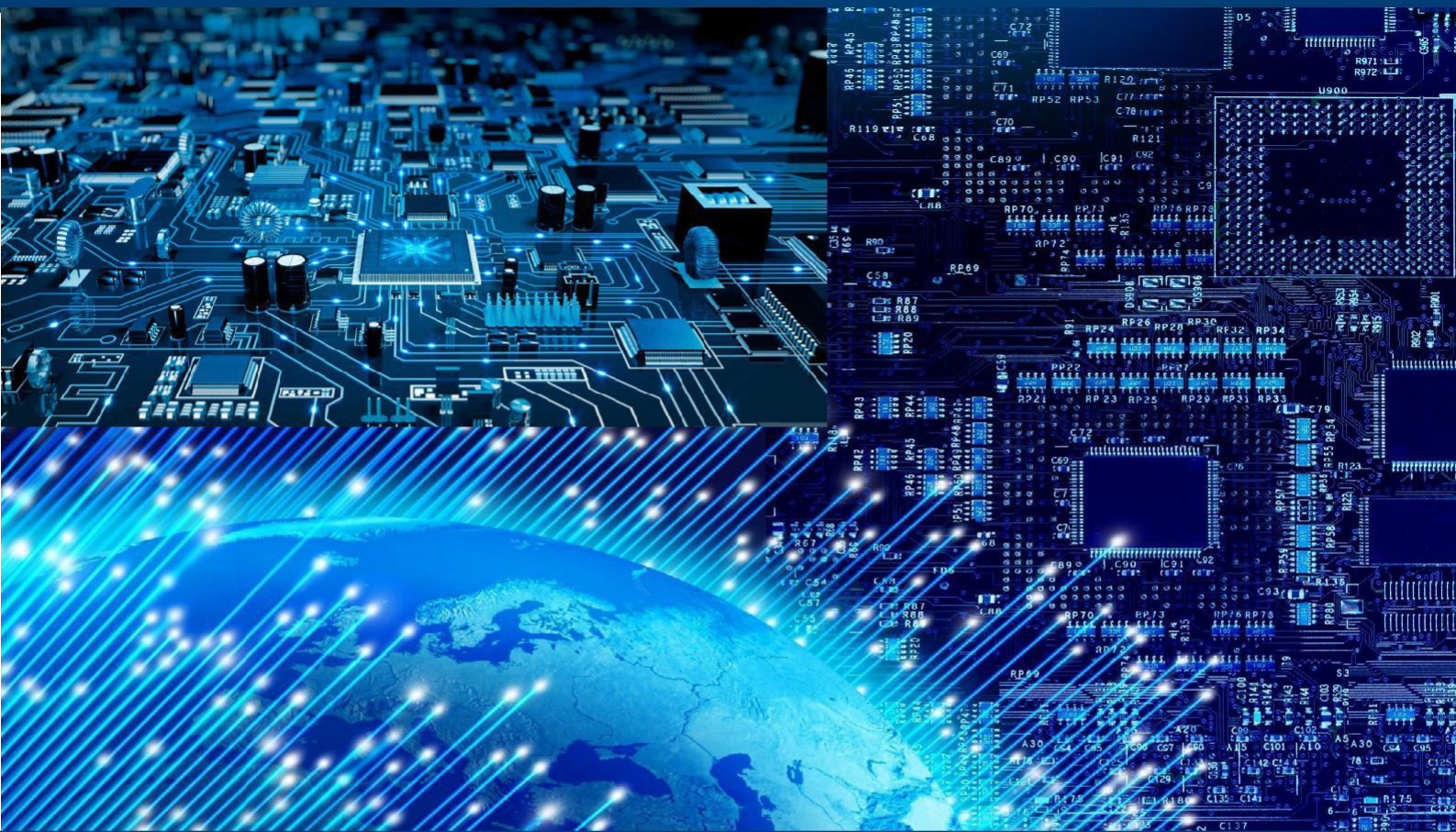
With continuous efforts, India can lead in sustainable urban development, aligning with **global climate goals** such as the **Paris Agreement** and **UN Sustainable Development Goals (SDGs)**.

## III. CONCLUSION

Green buildings are a crucial solution for environmental sustainability and energy conservation in India. By integrating smart design, renewable energy, and eco-friendly materials, they help reduce resource consumption while improving living standards. With proper policy support and technological advancements, India can transition toward a more sustainable built environment, ensuring long-term environmental and economic benefits.

## REFERENCES

1. Bureau of Energy Efficiency (BEE), India
2. Indian Green Building Council (IGBC) Reports
3. LEED & GRIHA Certification Guidelines
4. Ministry of New and Renewable Energy (MNRE), India



INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | [ijmrset@gmail.com](mailto:ijmrset@gmail.com) |

[www.ijmrset.com](http://www.ijmrset.com)