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Green Buildings: A Sustainable Approach to Reduce Environmental Impact and Improve Occupant Health

Ujjawal Ratan

BBA 5th Semester, NIMS Institute of Business Studies, NIMS University, Jaipur, India

ABSTRACT: The building sector is certainly one in every of the most important clients of power and herbal sources, and a giant contributor to greenhouse fuel emissions. Green homes, furthermore called sustainable homes, provide a choice to lessen the environmental impact of houses even as enhancing occupant fitness and productivity. This paper reviews the concept of green houses, their blessings, and the diverse score structures and certification programs used to assess their sustainability. We moreover check the demanding conditions and boundaries to the adoption of inexperienced homes and suggest techniques to conquer them.

I. INTRODUCTION

The constructed surroundings has a good sized impact on the herbal surroundings, human fitness, and the monetary device. Buildings consume large portions of energy, water, and natural property, and generate massive quantities of waste and pollution. Green houses offer a way to reduce the environmental impact of houses even as improving occupant health and productivity.

A green building, also known as a sustainable building, is a structure designed, constructed and operated to minimize its environmental impact and maximize its occupants' health and productivity. Green buildings use resources efficiently, reduce waste and pollution, and promote a healthy indoor environment.

Green buildings offer a unique opportunity to combine environmental sustainability, economic benefits and social responsibility, creating a healthier and more productive built environment.

II. LITERATURE REVIEW

Green homes are designed, constructed, and operated to restrict their environmental impact even as supplying a healthful and powerful indoor surroundings. The benefits of inexperienced homes embody:

1. Energy performance: Green houses use strength-green systems and renewable strength property to lessen strength intake.
2. Water conservation: Green houses use water-inexperienced home device and structures to lessen water intake.
3. Waste good buy: Green houses use recycling applications and waste good deal strategies to lessen waste.
4. Improved indoor air top notch: Green houses use herbal air drift, air filtration structures, and non-toxic substances to enhance indoor air wonderful.
5. Increased productivity: Green houses provide a wholesome and powerful indoor environment, which can beautify occupant productivity and nicely-being. Benefits of Green Building

1. Energy Efficiency: Green buildings reduce energy consumption through optimized design, insulation, and renewable energy systems (Kats, 2003).
2. Improved Indoor Air Quality: Green buildings promote healthier indoor environments through natural ventilation, air filtration, and non-toxic materials (Mendell & Heath, 2005).

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3. Increased Productivity: Green buildings boost occupant productivity and satisfaction through improved lighting, temperature control, and acoustic comfort (Kaplan, 1995).
4. Environmental Benefits: Green buildings reduce greenhouse gas emissions, conserve water, and minimize waste (USGBC, 2019).

Green Building Design and Construction
1. Sustainable Materials: Green buildings incorporate recycled, recyclable, and locally sourced materials (Guggemos & Horvath, 2003).
2. Energy-Efficient Systems: Green buildings optimize energy performance through HVAC, lighting, and renewable energy systems (Deru & Torcellini, 2007).
3. Water Conservation: Green buildings implement low-flow fixtures, greywater reuse, and rainwater harvesting (Texas Water Development Board, 2019).

Green Building Certifications and Ratings
1. LEED (Leadership in Energy and Environmental Design): A widely recognized green building certification program (USGBC, 2019).
2. Green Globes: A certification program emphasizing energy efficiency, water conservation, and indoor air quality (Green Globes, 2020).
Rating Systems and Certification Programs:

Several score structures and certification applications are used to assess the sustainability of inexperienced homes. Some of the most drastically used rating systems encompass:

1.Leadership in Energy and Environmental Design (LEED)
2.Green Globes
3.Energy Star
4.Passive House

III. CHALLENGES AND BARRIERS

Despite the advantages of inexperienced homes, there are numerous disturbing conditions and obstacles to their adoption. Some of the maximum big demanding situations embody:
1. Higher in advance expenses: Green houses regularly require better earlier prices, which may be a barrier to adoption.
2. Lack of popularity: Many building proprietors and occupants are not aware about the blessings of green homes. Limited availability of green constructing substances: The availability of green building substances may be restrained in a few .
3. Regulatory Barriers: Inadequate or inconsistent building codes and zoning regulations.

IV. OVERCOMING BARRIERS

1. Education and Training: Providing workshops, training programs, and online resources.
2. Policy and Regulatory Support: Encouraging governments to develop and implement green building policies.
3. Financial Incentives: Offering tax credits, grants, and low-interest loans for green building projects.
4. Material Innovation: Developing affordable and sustainable materials.
5. Collaboration and Partnerships: Fostering partnerships among stakeholders to share knowledge and resources.

V. CONCLUSION

Green buildings offer a sustainable method to reduce the environmental effect of homes while enhancing occupant fitness and productiveness. While there are challenges and barriers to the adoption of green houses, the benefits of inexperienced homes purpose them to an attractive desire for building proprietors and occupants.

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Strategies to overcome the worrying conditions and obstacles to green houses embody educating constructing owners and occupants approximately the advantages of inexperienced homes, supplying incentives for green constructing adoption, and developing the supply of green building substances.

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| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

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