

# Strategies to follow for making a Building Green

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**Abstract:** The complete influence of the developed atmosphere on the habitat wellbeing and natural atmosphere is reduced with the help of Green buildings. The concept and idea of green building architecture has been gaining significance in majority of countries. The green buildings ensure the minimization of waste at every stage starting from construction till the result of lower operation cost with the help of technology experts. The architecture efficiently uses the water energy and other resources. The design protects the health of occupants and in the commercial buildings it ameliorates the productivity of employees. Its design reduces the waste production pollution and the degradation of the environment. There are number of factors involved to make a building green. It incorporates sustainable and reusable construction materials which are made from the renewable sources. The green buildings produce healthy environment for living of the occupants by minimizing the product emissions. Native plants are used in the landscape of green buildings that may survive extra without providing much water. A specific criteria s required to design green buildings which involves the indoor are quality, resource efficiency water conservation energy efficiency and affordably. This paper will discuss the various strategies to follow, that makes the building green.

**Keywords:** Green Building; Sustainable Building; Energy Efficient;

## I. INTRODUCTION

The Green buildings are also called as sustainable buildings or green construction cite to the structure as well as the application of construction processes which are efficient for the resources and are also environmentally friendly. These types of buildings require the detailed concern of the contractors, architects and engineers. These buildings relate with the classical building designs, which used to have concern with the economy, durability, utility and comfort. As the today's world exhausts the natural resources, for this reason the green buildings have become the right choice to save our earth from desolation. The Elements of green building include the usage of recycled materials, energy systems, water management and health components. The green buildings are eco-friendly; however, their advantages include, low maintenance and operation cost, energy efficient, water efficient, enhanced indoor environment quality, better health, and material efficient. The momentous benefit is offered to the environment is purely offered by the green Architecture constructions. It influences the climate and overall ecosystem by reduced water and energy sources usage. Green buildings also preserve the natural resources which defend the biodiversity and enhance the air quality. This paper will enlighten the strategies, which are followed for buildings to make them of Green.

## II. MATERIALS & METHODS

### A. Materials utilized in the erection of Green Buildings

Number of items are used in the manufacture of green buildings. Earthen ingredients like cob, adobe and rammed earth. For good quality strength and consistency chopped straw, grass and other fibrous materials are added to earth. Today structures built with cob and adobe can be seen in some of the remote areas. Engineered wood is one of the most famous material used in the world for buildings. The wastage of raw timber can be utilized to make the underlying parts like walls, doors, boards etc. in the form of engineered wood. This timber contains various layers of wood, its middle tiers are made of timber scraps, wood fibers and softwoods etc.

Bamboo is used multipurpose and it is one of the most robust tools used in the construction. The trees of bamboo grow rapidly irrespective of climatic circumstances, that makes the thing economical. This One is used to build frames and supports for walls and floors. This provides good appearance to the structures.

SIPs, the underlying protected sections consist of two sheets that are oriented fiber boards or flake board with a form layer inside them. It is available in large sizes used for the walls of buildings. However, these provide good protection. Shielded Concrete Structures, these contain two layers of insulation with some space between them. The space contains some arrangement for holding the reinforcement bars, after placing the concreted poured inside the empty space. These are light weight, low dense and fire resistant and these also have good sound and thermal insulation properties. Fiber Cement, its boards are made of cement, wood fibers and sand. It can be convenient choice for the exterior siding because of its durability and fire resistance properties, these are also in cheap prices. Other materials such as, Cordwood, Straw Bale, Earth Bags, Steel, natural fiber, fiber glass, Cork, cellulose, Natural Clay, Stone and fiber cement etc. are also used as good materials in the construction of green buildings.

### B. Features of Green Buildings

Nearly zero disruption to the site conditions land scape.  
Efficient water usage and recycling.  
Recycled materials can be used.  
Eco-friendly equipment.

Efficient usage of the energy.

Improved quality of indoor air for human comfort and safety.

### ***C. Strategies that makes a building green***

Sustainable materials can be incorporated in the erection of green buildings, such as reprocessed contents or the supplies made from renewable sources.

Minimal pollutants in the indoor environment to make it healthy for the occupants

Features the landscape which can decrease the water usage by native plants that can survive with minimum water.

Buildings should be ecologically accountable and resource-effective through its life cycle and its objectives should be to expand and complement the classical building design concerns of the financial system, reliability, durability, utility and comfort.

### ***D. Material and product selection***

One important strategy is represented by the green building is the choice of items and products for its construction. The materials should offer particular benefits to the building owners and tenants such as • Low maintenance and replacement costs over the whole life of building

- Energy conservation
- Better occupants' productivity and health
- Better design flexibility.

## **III. ADVANTAGES OF GREEN BUILDINGS**

Green Construction include the usage of processes and materials that are efficient for resource and environmentally responsible alongside the life cycle of the constructions. The green buildings are now gaining popularity because of their advantages over the normally constructed buildings. The advantages may range from the social, economic and environmental. Following are some of the advantages of utilizing Green Building Technology.

### ***A. Energy Efficient***

The dependency of buildings on energy is reduced to much extend as possible by the building designers, by using the non-renewable energy sources such as coal. People install the planetary photovoltaic panels and make use of the energy from sun and window openings to get maximum natural light, which will reduce the usage of artificial lights. These methods of ensuring natural energy resources that will its usage efficient. The energy efficiency plays a significant role not only for the user but the entire environment because the non-renewable power sources are expensive and make the natural environment polluted as well.

### ***B. Operation Cost and Maintenance***

Efficient use of resources such as water and energy are incorporated in the construction of green buildings. Green buildings reduce the use of power of lighting systems by using more amount of day light through the building openings. This technique will allow users to save much of their tap water and energy bills. Operation and preservation expenses can account as much as 80 percent of the life cycle cost of the building that will reduce costs significantly and increase the earning of building owners, who collect the rent from building occupants. The construction cost might be slight expensive, but the running cost will be reduced sufficiently for the long term.

### ***C. Indoor environment quality***

The quality of indoor environment depends on the inside conditions of building and how it affects the building occupants.

The inside conditions include the ergonomics, lighting, air quality and thermal conditions. The good quality of indoor environment protects the health of occupants and lessens strain and their life quality. The green buildings can enhance the enclosed ecosystem excellence by establishing workable windows and allow more sunlight and reduce the use of materials that emit dangerous elements for wellbeing.

### ***D. Water Efficacy***

The efficacy of water includes the usage of water supplies in a manner that save the water and ensure that the upcoming peers will enjoy supply of reliable and clean water. These buildings also use alternative options of water such as rainwater and reduce the water waste by installing proper plumbing fixtures that are efficient and reduce strain on shared water resources by the systems which purify water and enable recycling.

### ***E. Improved Health***

Many good health benefits are enjoyed by the green building occupants due to the improved protection for the materials used in the construction of buildings. Likewise the eco-responsive construction avoids the usage of artificial by-products that are initiate to discharge toxins such as carcinogens, which cause inhalation problems and increase the prospects of harmful disease.

### **F. Substantial Material Efficacy**

The effectiveness of materials used in green building construction includes the usage of physical process and resources in a manner that allow for least use of low quality. In buildings there is no need to compromise on the quality of materials. The processes generate waste as minimum as possible. The construction companies of green buildings use materials that are long long-lasting and reprocess some products. They construct green constructions in a manner that allow fewer materials and employ processes that use less quantity of water, raw materials and reduced energy. All these will help to achieve substantial productivity.

### **G. Improved Ecosystem**

The reduced practice of dynamism sources that can contaminate the atmosphere such as coal. These structures promote to keep atmosphere clean and healthy. Furthermore, it reduces the carbon dioxide levels which are emitted into the atmosphere and reduce the rate of atmosphere change.

### **H. Reduced pressure on regional assets**

As the inhabitants of the world is increasing day by day, because of this increment the local shared resources such as energy and water come under considerable pressure. Through the use of technologies and efficient processes that will increase the efficiency of water and energy, therefore, the green buildings can reduce the strain on local resources.

## IV. CONCLUSION

The buildings which are intended to lessen the influence of built environment on natural environment and human health are known as Green buildings. The green buildings are designed by using the energy efficiently, such as water and other resources and protect the health of occupants and improve the productivity of employees in official buildings, however, reduce the waste and pollution which may create environment. The concept of these type of green buildings is achieving interest in many countries, these ensure the waste is minimized, which results into low cost of building maintenance as well as construction. The advantages of green buildings depict that creatures can effectively meet their present and future needs without depleting the resources and threatening the ecosystem which make it difficult for upcoming peers to live easily. Green buildings use distinctive erection techniques that can ensure that the reserves are used effectively and steadfastly, without negotiating the user's wellbeing, comfort as well as environment quality.

## REFERENCES

- [1] T1 - GREEN BUILDING TOWARD CONSTRUCTION SUSTAINABILITY: ENERGY EFFICIENCY WITH MATERIAL AND DESIGN ASPECTS
- [2] VL - 12
- [3] JO - Journal of Technology and Operations Management
- [4] ER - J. U. Duncombe, "Infrared navigation—Part I: An assessment of feasibility," *IEEE Trans. Electron Devices*, vol. ED-11, pp. 34-39, Jan. 1959.
- [5] C. Y. Lin, M. Wu, J. A. Bloom, I. J. Cox, and M. Miller, "Rotation, scale, and translation resilient public watermarking for images," *IEEE Trans. Image Process.*, vol. 10, no. 5, pp. 767-782, May 2001.
- [6] CHEN Lu, TANG Xue-shan, LI Yong (Architecture and Urban Planning College, Beijing University of Technology, Beijing 100022, China; Landscape Architecture College of Beijing Forestry University, Beijing 100083, China; Beijing Forestry Design Institute, Beijing 100029, China);The Ideal Landscaping Living Mode for Human Beings[J];Journal of Beijing University of Technology;2007-05
- [7] 2 LU Sheng (Landscape Architecture School of Beijing Forestry University,Beijing 100083,China);The Sustainable Design and Landscape Architecture[J];Journal of Beijing University of Agriculture;2009-02
- [8] 3 YU Lu,YU Yu(Art Department,Chongqing Three Gorges College,Chongqing 404000,China);The Design of the Surroundings in the Information Age—On the Application of the Concept of Durable Development in Design[J];Journal of Chongqing University(Social Sciences Edition);2005-06