

# GR BUILDINGS AND THEIR IMPACT ON ENVIRONMENT

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**Abstract:** Green Building has an important impact on building design, so it should be emphasized. The application of green building design concept to housing design better improves the design effect. But the use of green building design concept is based need to follow certain principles, in order to better serve the construction industry. According to the related concepts in the development of green building design and combined with practice this paper briefly analyzes the application of green building concept in housing design.

**KEYWORDS:** Green Building, Sustainable Architecture, Eco-friendly Design, Environmental Impact, Energy Efficiency.

## INTRODUCTION

**Green building** is the practice of creating structures that are environmentally responsible and resources efficient throughout their entire life cycle from sitting to design. Green building is how we to apply the concept of green architectural design concept can make the construction industry achieve sustainable development and also make people's lives happier.

## CONCEPT OF GREEN BUILDING

The green building 'green' does not mean the general sense of vertical greening roof garden, instead it represents a concept or symbol that refers to a building that is harmless to the environment. It can make full use of environmental natural resources and is built without destroying the basic ecological balance of the environment. It can also be called sustainable developments of buildings, ecological building, natural buildings. Green building is a high -quality building in the whole life cycle, which saves resources, protects the environment, reduces pollution, provides people with healthy, applicable and efficient use of space, and maximizes the harmony between man and nature.

## CRITERIA FOR GREEN BUILDING DEVELOPMENT AND ENVIRONMENT

The green building requirements focus on creating environmentally responsible and resource -efficiency structures throughout their life cycle- design, construction, operations, and demolition.

## KEY REQUIREMENTS-

### 1. WATER EFFICIENCY-

We are going to face a global water crisis in the near future. According to U.S. Geological survey, Urbanization, high population growth rates, climate changes, lower precipitation Amounts, higher temperature are the most important reasons behind ground water depletion. Rainwater collection allows ground water accretion. Although rain water is non potable, it can be safely used for lawn irrigation, toilet

flushing and washing cars. In residential buildings, the majority of water between 50% and 80% falls into the grey water category and can be collected for reuse.



Image Source- Stretch Grow

1. REDUCING INDOOR WATER DEMAND
2. ALTERNATIVE WATER SOURCES
3. OUTDOOR WATER MANAGEMENT

## 2.ENERGY EFFICIENCY-



Image Source- Energy world

Energy efficiency in green buildings focuses on reducing the total energy demand and shifting towards clean, renewable sources. It is often the largest category in rating systems like LEED or IGBC, accounting for a significant portion of the total points.

1. Passive design (The “no cost “foundation)
2. Active systems (The efficiency boosters)
3. Renewable energy integration

## 3. SUSTAINABLE MATERIALS-



Image Source- Wikipedia

Sustainable materials in green buildings are chosen based on their entire life cycle- from how they are extracted and manufactured to how they are eventually disposed of. The goal is to reduce embodied carbon (the energy used to create and transport the materials) and minimize waste like- bamboo, recycled materials, wood, glass etc.

## BENEFITS OF GREEN BUILDINGS

The green buildings reduce certain negative impacts through more effective planning, design, construction, and operations based on the guidelines of green standards. Savings on energy costs and maintenance costs make green building especially attractive to owners. Moreover, it provides the users to good health conditions, comfort and an improved overall quality of life.

1. Conservation of scarce national resources.
2. Reduction in water consumption. Water is saved around 36% -40% as mentioned in NBC.
3. Limited waste generation due to recycling and reuse.
4. Increase in user productivity.
5. Enhancing and protecting the health and well-being of the occupants.
6. Reduction in energy consumption without sacrificing the comfort levels. Energy saving could range from 30-40%.

## IMPACT ON ENVIRONMENT

Green building significantly lower environmental footprints by addressing the major impact areas of traditional construction- which accounts for nearly 40% of global CO<sub>2</sub> emissions and 75% of electricity.

1. Climate and carbon emissions- operational carbon is reduced by 30-40% through energy efficient lighting (LEDs) .
2. Embodied carbon – Mitigated by choosing materials like bamboo, recycled steel, or mass timber which can lower global carbon emissions by 15-20% compared to traditional concrete and steel.
3. Water savings- systems like rainwater harvesting and greywater recycling can reduce potable water demand by up to 47%.
4. Waste diversion – Green buildings projects have already diverted over 80 million tons of waste from landfills.

## CASE STUDY- INDIRA PARYAVARAN BHAWAN, DELHI



Image Source- Indira Paryavaran

**LOCATION:** Jor bagh road, NEW DELHI.

**CERTIFICATIONS:** Achieved the highest green rating: GRIHA 5-star and LEED platinum.

**CORE CONCEPT:** The building produces as much as energy on site as it consumes annually. The features of solar energy is the largest rooftop solar systems on a multi-storey building in India.

**CASE-** The Indira Paryavaran Bhawan in New Delhi is a landmark project as India's first on-site net-zero energy building. It houses the ministry of environment, forest and climate change and serves as a global model for sustainable urban construction.

## CONCLUSION

If trees are cut off to clear up the plot for building construction, the same number of trees are to be planted elsewhere.

The real implementation of the green concept in the construction industry is a social problem, at least a systematic industry problem. Without the support of national policies and the systematic promotion measures of the government.

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