

**INVESTIGATING THE GREEN TECHNOLOGY FUNCTION IN CONSTRUCTION
PERSPECTIVE**

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ABSTRACT: A green building, which is also known as a sustainable building is designed to meet some objectives such as occupant health; using energy, water, and other resources more efficiently; and reducing the overall impact to the environment. It is an opportunity to use the resources efficiently while creating healthier buildings that improve human health, build a better environment, and provide cost savings. All the development projects lead to over-consumption of natural resources. The government should support the green construction in each part of the country, and put the rules or policy that can be understood easier. To promote the green construction in the firms that apply the green construction should be given the incentives with various kinds to continue their green development.

Keywords: Green building, Human health.

INTRODUCTION

Green Building, also known as Sustainable Building, is the practice of creating structures and using processes that are environmentally responsible and resource efficient. It encompasses factors such as site selection, design, construction, operation, maintenance, renovation, and deconstruction. Using green building materials and products promotes conservation of dwindling nonrenewable resources internationally. In addition, integrating green building materials into building projects can help reduce the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials.

Green Building refers to a structure and using a process that is environmentally responsible and resource efficient throughout a building's lifecycle. Since buildings consume nearly 50% of World's Total Energy, Green Buildings, on the other hand, consume minimum amount of energy with the use of energy efficient materials. Hence, location of green buildings in the close proximity would create a green zone and providing much healthier environment with minimum heat island effect. In India, there are 2 primary rating systems for green building: GRIHA (Green Rating for Integrated Habitat Assessment); LEED (Leadership in Energy and Environmental Design).

The LEED Green Building Rating System developed and managed by the USGBC, is the most widely used rating system nationally and internationally. Buildings are given ratings of platinum, gold, and silver or "certified", based on green building attributes. The Indian Green Building Council (IGBC) founded by the collaboration between the Confederation of Indian Industry (CII) and the private manufacturer Godrej, has taken steps to promote the green building concept in India. LEED-India rates buildings on environmental performance and energy efficiency during design, construction and operation stages.

Green Building when compared to a conventional building seems same externally and in building use but differs in the operational savings and concerns for human comfort and indoor environment. Green Buildings enjoy the benefits of saving 40-50% energy by reducing CO₂ emissions into the atmosphere. It also saves about 20-30% water by using rain harvesting or grey water reuse techniques. It also reduces VMT (Vehicles Miles Travelled) by choosing the location near by public transport and conveniences which helps in

reduction of gasoline consumption. But on the other hand, green buildings face many barriers like the high initial investment required for construction, Split incentives, whereby, the benefits of investing in a green building project is enjoyed by the people who actually use the building and not by the person investing on its construction cost. The financial institutions face major hurdles of low financial returns, credit risks, uncertainty and difficulty in evaluating the added financial value of green buildings. Since green buildings save approximately 50% of the energy, so the annual power consumption is also reduced significantly thus saving the electricity bill. Green buildings are also cost effective in terms of CER issued by the Executive Board of the CDM of United Nations Framework Convention on Climate Change against 1 ton each of the CO₂ emissions saved. Sale of each CER would help earn a company 12 Euros each.

CII - Sohrabji Godrej Green Business Centre, Hyderabad is considered to be the first centre of excellence for green buildings, energy, environment, water, renewable energy and climate change activities in India.

The country has a number of policy initiatives to mainstream energy efficiency and green buildings as control and regulatory instruments. These include:

- Energy Conservation Building Code 2007: This is the nation's first building energy code and aims to have a major impact on energy-efficiency in buildings
- The Ministry of New and Renewable Energy has initiated several programs focusing on the utilization of renewable energy sources in buildings.
- Sustainable Habitat Mission under the National Action Plan on Climate Change: This include missions on enhanced energy efficiency, sustainable habitat, conserving water, creating a "Green India", establishing a strategic knowledge platform for climate change.
- Energy Labelling of Appliances: In a move to manage energy demands, BEE has made star rating for energy efficiency mandatory for a host of electrical appliances.

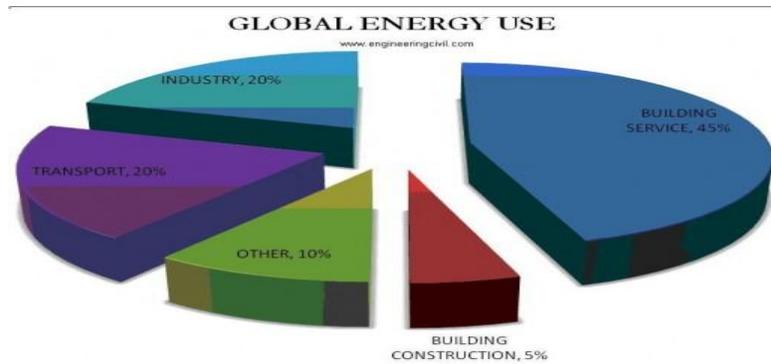
By the end of 2014, a total of around 2015 projects had been certified under the LEED. To the degree that green buildings are simply "higher performing buildings", we need to design and build better buildings that can readily be accomplished by the existing industries. However, if one considers the innovation of rating and certifying buildings against energy and environmental design criteria, as in the LEED green building rating system, then we can apply a classical theory of diffusion of innovation which encompasses substitution of new ways of doing things for old ways, to forecast market demand.

GREEN BUILDING FEATURES

Eco-Friendly-by least disturbance to eco system

- Energy efficient-through the natural lighting ventilation and solar passive designs
- Efficient use of water-through recycling and water harvesting
- Use of renewable energy-through photo voltaic systems and solar system etc.
- Non toxic material in door environment
- Use of recycle/recyclable materials
- Efficient waste utilization and disposal

WHY IT IS NECESSARY TO MAKE THE BUILDINGS GREEN?



Construction Industry Contributes to nearly 50% of Energy Consumption

PRINCIPLES OF GREEN BUILDING

- Sustainable Site Design
- Water Quality and Conservation
- Energy and Environment
- Indoor Environmental Quality
- Materials and Resources

INDIAN GREEN BUILDING COUNCIL



The Indian Green Building Council (IGBC) was formed in the year 2001 by Confederation of Indian Industry (CII). The aim of the council is to bring green building movement in India and facilitate India to become one of the global leaders in green buildings by 2015.

IGBC RATING SYSTEM

IGBC has developed green building rating programmes to cover commercial, residential, factory buildings, etc. Each rating system divided into different levels of certification is as follows:

1. Certified to recognize best practice
2. Gold to recognize national excellence
3. Platinum to recognize global leadership

GREEN BUILDING PROJECT IN INDIA

Some of the important Green Building Projects in India are as follows:

- Suzlon Energy Limited-Pune
- Biodiversity Conservation India-Bangalore
- Olympia Technology Park-Chennai
- Rain tree Hotels-Chennai
- Rajiv Gandhi International Airport-Hyderabad
- ABN Amro Bank, Chennai
- Palais Royale at Worli, Mumbai
- Punjab Forest Complex, Mohali
- MNIT, Allahabad

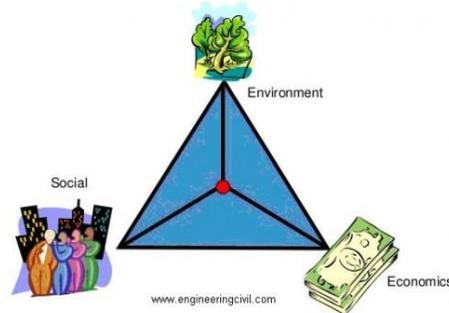
DIFFERENT FROM OTHER BUILDINGS

The design, maintain and construction of buildings have tremendous effect on our environment and natural resources. Green Building is different from the other buildings because it use a minimum amount of nonrenewable energy, produce minimal pollution, increases the comfort, health and safety of the people who work in them. It also minimize the waste in construction by recovering materials and reusing or recycling them

INCREASING GREEN BUILDINGS IN INDIA

Today more than 2015 green buildings (as on April2014) are being constructed all over India. Of which 147 green buildings are certified and fully functional.

BENEFITS OF GREEN BUILDING



Buildings have a large effect on the environment, human health and the economy. The successful adoption of GREEN BUILDING developed can maximize both the economic and environmental performance of the buildings.

ENVIRONMENTAL BENEFITS

Protect bio diversity and eco systems, improve air and water quality, reduce waste streams, conserve natural resources.

ECONOMIC BENEFITS

Reduce operating cost, create, expand, and shape markets for green product and services, improve occupant productivity.

SOCIAL BENEFITS

Enhance occupant comfort and health, heighten aesthetic qualities, minimize strain on local infrastructure, Improve overall quality life.

NATURAL RESOURCES

- According to surveys conducted in 2014, 107.3 million acres of total land area is developed, which represents an increase of 24 percent land covering green buildings over the past 3 years.
- In terms of energy, buildings accounted for 39.4 percent of total energy consumption and 67.9 percent of total electricity consumption.
- Reduce operating costs Create, expand, and shape markets for green product and services Improve occupant productivity.

CONCLUSIONS

The green building concepts helps to maintain the pollution free environment. Green building is a financially, health wise, and most important environmentally responsible idea that more people need to adopt. Many building materials and renewable energy source exists to lessen one's impact upon the environment. Through educating, making environmentally products more readily accessible and reliable, and by providing government incentives it is possible to encourage more people to adopt green building and all of the benefits that come along with it.

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