

ANLYSIS AND STUDY OF EXISTING SUSTAINABLE BUILDING

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Abstract - Development is gradually converting the bio-diverse habitat in to a concrete jungle which consists of an impervious cover to landscape resulting in to a lack of woodland habitat and conservation of the most precious element on the earth "WATER". The vast canvas of built environment necessitates greener color into it picture.

Sustainable development is a development that "meets the needs of the present without compromising the ability of future generations" Sustainable construction tries to incorporate the general sustainable development concepts into conventional construction practices

One of ways to achieve sustainable construction is the **Sustainable Building Design**, which is the core area of attention for greener built environment. Green Building

Designs have environmental considerations as a basic scrutinizing criteria which attempts to integrate and achieve concepts of energy efficiency, water conservation and recharge, solid waste management, exploration of renewable energy resources, use of ecofriendly materials and to minimize the negative impact on the nature, plant and animal species, non-renewable material conservation and preserve sources and processes that prevail in nature. Several Green Building Rating Systems have been developed to objectively evaluate energy and environmental performance that spans the broad spectrum of sustainability.

In developing country like India where population increase squares the value every year, which had made her a potential global market leading to rapid urbanization and increased standard of living resulting into an upswing in construction activities. In an already hours of power cut off and load shedding situation this results into an extra burden on the conventional forms of energy used traditionally by burning fossil fuels which endanger the earth by Green House Gas Emissions and an adverse effect on the environment. Keeping the collective goal of energy conservation and environmental protection, eco-friendly buildings emerges to be the only solution for not compromising the development.

Key Words:

1. INTRODUCTION

The buildings in which we live, work, and play protect us from nature's extremes. Yet they also affect our health and environment in countless ways. The design, construction operation, maintenance and removal of building takes

enormous amount energy water and materials generates large quantities of waste air and water pollution.

As the environmental impact of building becomes more apparent, a concept called Sustainable building is gaining momentum. Green or sustainable building is the practice of creating healthier and more resources efficient model of construction, renovation, operation, maintenance and demolition research and experience increasingly demonstrate that when buildings are designed and operated with their lifecycles impacts in mind, they can provide great environmental, economic and social benefits.

Worth noticing is that most of us talk about energy consumption and pollution because of industry and transport when at least 40% of the total energy produced is consumed by buildings

1.1 Objective

- Uses less water
- Use of recycled and eco-friendly building materials
- Conserves natural resources
- Generates less water
- Provides healthier spaces for occupants, as compared to a conventional building Indoor air quality.

2. LITERATURE REVIEW

Suresh Kumar Soni and Mukesh Pandey and V.N.Bartaria[2015] -As per IGBC "A Sustainable building uses less energy, water and natural resources, creates less waste and is healthier for the people living inside compared to a standard building." Sustainable building design aspects are site planning, building envelope design, building HVAC design, indoor environmental quality (thermal, visual comfort, and air quality), use of ecological sustainable, high recycled and renewable materials. World shortage of power, water and environmental factors are the factors, encouraging building industry's focus on Sustainable building .Buildings annually consume more than 20% of the electricity used in India. It reduces operating cost, enhances marketability and increases productivity. Building design has economic, social, environmental and renewable elements that benefit to all stakeholder owner, general public, and business community. The paper discusses main building control strategies to achieve required thermal comfort level with aiming to conserve energy.

T S Sigi Kumar and N K Mohammed Sajid and Rijo Jacob Thomas and K A SHAFI[2018] - Sustainable Building, also known as Sustainable construction or sustainable building, is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from siting to design, construction, operation, maintenance, renovation, and deconstruction. It often emphasizes taking advantage of renewable resources, e.g., using sunlight through passive solar, active solar, and photovoltaic techniques and using plants and trees through Sustainable roofs, rain gardens, and for reduction of rainwater run-off. This paper deals with the studies of glazed windows which are capable of transmitting maximum day light with minimum heat radiation. Two criteria had been considered in case of glazings ie light transmittance and heat gain; however one factor have to be compromised for the other. An experimental setup has been developed to study the light and heat transmission characteristics of glazing. Experimental study shows that the double glazed window is good in terms of visibility and mitigation of thermal transmittance.

Mrs. C.Jayalakshmi and Dr. R.Sarangapani [2017] -A Sustainable Library is designed to minimize negative impact on the natural environment and maximize in door environmental quality by means of careful site selection ,use of natural construction materials and biodegradable products conservation of resources (Water, energy, paper) and responsible waste proposal (recycling etc).Sustainable Library is a part of Sustainable building movement. There are several reasons why library would want to build Sustainable or incorporate Sustainable features into their buildings by using Smart Technology. First, the cost of constructing Sustainable buildings has become affordable. Second, most reading available energy resources to finite resources.

3. RATINGS OF SUSTAINABLE BUILDING

The Rating System Worldwide:

- 1) BREEM (building research establishment environment assessment method)
- 2) ASBEE (comprehensive assessment system for building environment efficiency)
- 3) GB Tool
- 4) Sustainable Globes U.S.
- 5) LEED (leadership in energy and environment design)
- 6) HVS (hospitality valuation services)ECOTEL.

4. METHODOLOGY

Study Of Literature Review
Analysis of Concept
Analysis of Case Study

Study of Design of Sustainable Building
Design a Sustainable Building
Result and Discussion
Conclusion and References

5. RESULT AND GRAPHICAL REPRESENTATION

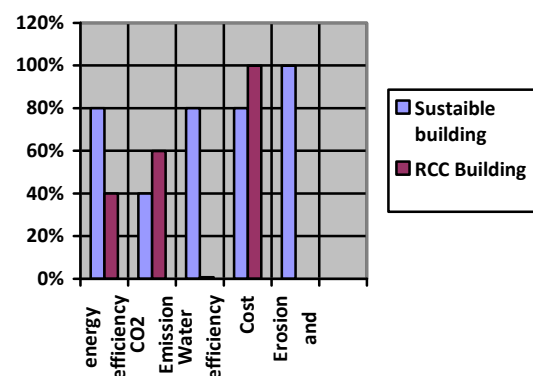
We analyse sustainable building by several parameter

Required data -

- 1) Average annual rainfall - 473mm
- 2) Average annual temperature - 24.1 C
- 3) Average wind velocity - 2.8m/s
- 4) Latitude North - 17.57
- 5) Longitude east - 74.03

Formulas Calculation -

- 1) Water efficiency - $\frac{\text{Water usage}}{\text{Water demand}} \times 100$
- 2) Energy efficiency - $\frac{\text{Mechanical energy produced}}{\text{Total energy supplied}} \times 100$
- 3) Erosion and sedimentation control - $\frac{\text{Depth of excavation}}{\text{Ground floor built up area}}$



6. CONCLUSIONS

- Sustainable building is financially healthy and most importantly environmentally responsible idea.
- Sustainable building should become so much of standard practice that LEED and other rating systems are no longer necessary- Sustainable building will become mainstream.
- There is minimal of harmful impact upon the environment.

ADVANTAGES OF SUSTAINABLE BUILDING

- Reducing hazardous substances
- Reducing CO2 emissions
- Improving competitiveness of eco-industry
- Preserving natural resources
- Promoting the uptake of Sustainable products
- Redeeming the money

DISADVANTAGES OF SUSTAINABLE BUILDING

- Initial cost
- Funding for projects from banks hard to get
- Location factor
- Availability of materials
- Time scale
- Implications on air quality due to use of some recycled materials

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BIOGRAPHIES



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