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TO STUDY THE PARAMETERS FOR THE GREEN BUILDING IN PUNE REGION: A Review

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Abstract: - The conception of Green Building came into practice to meet the demand of society without hampering the terrain. The building with zero net energy consumption, meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site. This study grounded on need of current script for eco-friendly construction. Grounded on literature review green structure parameters are linked. The weights of parameters have been calculated by multi-criteria decision-making styles. With the help of Computation average system ranking of green structure parameters has been carried out. Different Green building performance measurement methods developed in world to encourage green building movement. So, the aim of this work is to study and implement the parameters which increase the efficiency of green buildings. The parameters are selected from literature review. According to outgrowth of analysis, suggestions have been proposed for eco-friendly construction. In this paper we are trying to identify the parameters to be use to make a building as a green building i.e., Eco friendly building with the help of previous studies.

Key words: - Green Building, Sustainable building, Weights of Parameters, Eco friendly, Literature review

1.INTRODUCTION

A 'green' building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life. The goal of green building is to help to sustain the environment without disrupting the natural habitats around it, to promote a better planet earth, and a better place for us all to live to reduce trash, pollution and degradation of environment. To create a sound indoor environment for living and working purpose. Green rating certification is a powerful tool to access buildings for features which include energy and water efficiency with improved environment, conducive for human health. The green building assessment systems are playing very important role in developing awareness towards the sustainability. There are several benefits of green building to human being and natural environment. Some construction projects are adopted the green building concept, but till lots of construction project not aware about it, even they don't know the parameter required for it. This study is just a review about to know the parameter and multi criteria design for green building.

2. OBJECTIVES

Following are the objectives for this paper,

1] To study about the concept of green building and different parameters and consistency ratio for this sustainable building through literature survey.

2] To design the methodology and questioner for collection of data.

3. BACKGROUND

The emergence of more and more green buildings and the transformation of old buildings into green ones is definitely a positive sign. However, few things in this regard need a serious attention. These are:

1. The integrated approach.
2. The rate of green development.
3. The implementation of principles of _One Planet Living' (OPL). These 'principles are,
   - ✓ Zero carbon.
   - ✓ Zero waste.
   - ✓ Sustainable transport.

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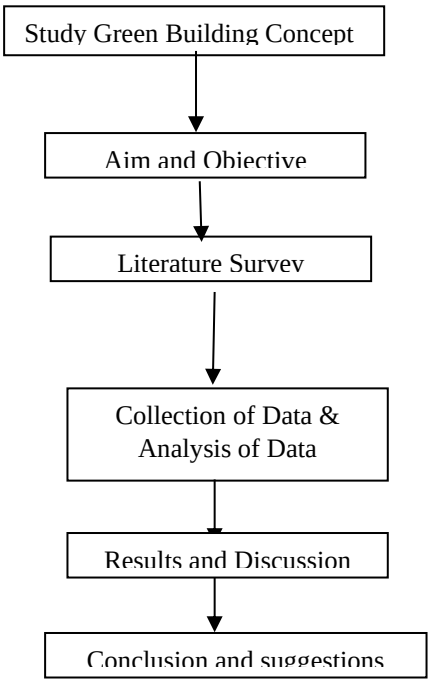
- ✓ Local and sustainable materials.
- ✓ Local and sustainable food.
- ✓ Sustainable water.
- ✓ Natural habitats and wild life.
- ✓ Culture and heritage.
- ✓ Equity and fair trade.
- ✓ Health and happiness.

4. METHODOLOGY

This study based on need of current scenario for eco-friendly construction. Based on literature review green building parameters are identified. The methods adopted for the work are literature review through various journals, books and papers, analytical approach and using formulas for estimation, cost calculation and valuation,



Flowchart No. 01 Flowchart of Work

5. LITERATURE REVIEW

As per Li et al. (2011), focused on to identify the controllable critical project management factors for delivering Green Mark certified projects to achieve higher Green Mark ratings. Nineteen controllable project management factors were first identified from related literature, and then a survey was carried out to collect data needed to perform the principal component analysis. The factor analysis revealed that the controllable project management factors could be grouped into five major components, namely, (1), human resource-oriented factors, (2), technical and innovation-oriented factors, (3), support from designers and senior management, (4), project manager's competence, and (5), coordination of designers and contractors. Finally, it was found that the coordination of designers and contractors and technical and innovation-oriented factors are the most critical success factors.

As per Alyami and Rezgui (2012), has given justification for developing an environmental assessment method. BREEAM, LEED, SB Tool, CASBEE were compared based on sustainability parameters. Author proposed 10 domains for development of environmental assessment method. Management, Indoor Environment Quality [IEQ], Sustainable Site, Energy, Water and waste management, Material, Economic aspect, Quality of services Pollution and

risk, Innovation. Conclusion of paper is Economic aspect and Quality of service should be considered in environment assessment methods. Renewable energy and Rainwater harvesting should be encouraged.

As per Pooja Choudhary1, Jagriti Gupta, Dr. Bharat Nagar (2018), Using sunlight through photovoltaic equipment, and sing plants and trees through vertical wall gardening, led lighting, and vermin compost, grass pavers and also aluminum paints.

As per Robichoud et al. (2011), focused on obstructions to deliver a green project within acceptable cost constraints. Authors mentioned that, specific modifications to conventional building practices to optimize the delivery of cost-efficient green building projects. After finding several obstructions to deliver a green project authors mentioned some guidelines. These guidelines should be adopted when pursing a green construction project: Begin with the end in mind, integrate the project team, design with the whole team approach, use bonuses and rewards in project contracting and provide training and communications throughout construction.

As per Nguyen and Altan (2011), presented the comparative review of the five prominent sustainable rating systems namely BREEAM, LEED, CASBEE, GREEN STAR, HKBEAM. The review process adopts a system of criteria which encompasses all features of sustainable rating tools. The main goal is to consider all aspects of the systems in order to find out the best one. The result of the study shows that, BREEAM and LEED with their strong bases, large investments and proven advantages also scored the highest importance with 75 points. CASBEE, GREEN STAR and HK-BEAM make up the lower group.

As per Arvind Chel, Geetanjali Kaushik(2018), Alexandria Engineering Journal (2018), Built geometry influencing microclimate in Chennai, after increased FSI. Established that the rules to govern urban planning and development have a significant role in ensuring a comfortable outdoor environment.

As per Shyam Agasthya H R and Karthik M(2018) Green design measures also reduce operating costs, enhance building marketability, increase worker productivity and reduce potential liability resulting from indoor air quality problems. It provides platform to convert existing buildings to green buildings by application of sustainable methods and changes in building.

As per Vinodh and Girubha (2012), focused on selection of sustainable concept for the contemporary manufacturing organizations. The classification of sustainable concept concerning to manufacturing firms can be material oriented, product design oriented and manufacturing process oriented. The selection process includes multiple criteria, therefore Multi-Criteria Decision-Making method namely PROMETHEE is used in the study to select the best sustainable concept considering the criteria from social, economic and natural perspectives. As the result implies there should be a change of material i.e. the selection of appropriate material for the attainment of sustainability, should satisfy mechanical, environmental and economic factors effectively.

6. ENERGY AND WATER MANAGEMENT IN INDIA

"Sustainable architecture is not only about improving energy efficiency of the building; it is also about natural resource conservation, use of local and reusable material, and using climate-friendly designs," says Chaitanya Kalia, Partner and National Leader, Climate Change and Sustainability Services (CCaSS), EY India

As Per Mr. Kiran Joseph Mr. Victor Jose Mr. Dinesh Kumar A N (2018) Green **Building Rating Systems In India**

LEED (Leadership in Energy and Environmental Design)

About 20 years ago, LEED was created to measure and define green building. LEED established a baseline—a universally agreed-upon, holistic system for reducing environmental impacts, saving resources, impacting human health, reducing carbon emissions and addressing climate change. Developed by the U.S. Green Building Council (USGBC), LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

GRIHA, (Green Rating for Integrated Habitat Assessment)

GRIHA is a rating tool that helps people assesses the performance of their building against certain nationally acceptable benchmarks. It evaluates the environmental performance of a building holistically over its entire life cycle, thereby providing a definitive standard for what constitutes a 'green building'. The rating system, based on accepted energy and environmental principles, will seek to strike a balance between the established practices and emerging concepts, both national and international.

IGBC , (Indian Green Building Council)

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The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII) was formed in the year 2001. The vision of the council is, "To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025". The council offers a wide array of services which include developing new green building rating programmes, certification services and green building training programmes. The council also organizes Green Building Congress, its annual flagship event on green buildings. The council is committee-based, member-driven and consensus-focused. All the stakeholders of construction industry comprising of architects, developers, product manufacturers, corporate, Government, academia and nodal agencies participate in the council activities through local chapters. The council also closely works with several State Governments, Central Government, World Green Building Council, bilateral multi-lateral agencies in promoting green building concepts in the country.

7. PARAMETERS FOR GREEN BUILDING

Following are the Main and sub criteria for green building to be consider by researcher

Sr. No.	Main Criteria
1	Sustainable Architecture and Design
2	Site Selection and Planning
3	Water Conservation
4	Energy Efficiency
5	Building Materials and Resources
6	Indoor Environmental Quality
7	Innovation and Development

Sr. No.	Sub-Criteria
1	Integrated Design Approach
2	Site Preservation
3	Passive Architecture
4	Rainwater Harvesting
5	Water Metering
6	On-site Renewable Energy
7	Preservation or Transplantation of Trees
8	Sustainable Building Materials
9	Use of Certified Green Building Materials,
10	Outdoor Light Pollution Reduction
11	Handling of Waste During Construction Materials
12	Basic Facilities for Construction Workforce
13	Wastewater Treatment and Reuse
14	Landscape Design
15	Wastewater Reuse, During Construction

8. CONCLUSION

Sustainability concept is mainly depending on three aspects named as Eco-friendly aspect, Economic aspect and social aspect. These three aspects need to be considered in current green building scenario. Green building is the revolutionary development practice centered upon the mission of creating buildings which apply an increased efficiency of resources such as energy, water and materials. Green rating in India is not mandatory yet taken up voluntarily mostly to derive benefits of government incentives. As per the various researcher, the parameters are available, but it's must be mandatory for effective Green building concept.

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