

Factors and Impact of Green Building Rating Program

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ABSTRACT

A green building rating system is a tool that evaluates the performance of a building and its impact on environment. It comprises a predefined set of criteria relating to the design, construction, and operations of green building. The purpose of this research is to expand knowledge about the usefulness of green building rating. This green building rating program originally began as an assessment of LEED (leadership in energy and efficient design). This research revealed that while there is growing environmental concern among specialists in the energy design. In this paper will study some journals about the green building from different areas. Also will find out the scope of green building in future.

KEYWORDS: LEED, green building.

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I. 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. Green building refers to both a structure and the application of processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition.

II. GREEN BUILDING RATING SYSTEM

A green building rating system is a tool that evaluates the performance of a building and its

impact on the environment. It comprises a predefined set of criteria relating to the design, construction, and operations of green buildings. Green building has four main elements or components on which it is designed: materials, energy, water and health to make green building more sustainable.

Following are the components of a Green Building to make it sustainable:

- Water Management in Green Building.
- Health Components of Green Building.
- Materials for Green Building.
- Energy Systems in Green Buildings.

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III. ASPECTS OF GREEN BUILDING

There are numerous tips and ideas for building green that you can incorporate into your build without much difficulty. There are also six aspects to building green that the NAHB's National Standard references as being vital to a holistic approach towards a healthier, more comfortable and more energy efficient structure. These are:

- Energy Efficiency
- Lot Preparation and Design
- Water Efficiency/Conservation
- Occupancy Comfort and Indoor Environmental Quality
- Operation, Maintenance and Education
- Resource Efficiency

By carefully addressing these areas you will conserve resources and save money as well. To build truly green means making efficient use of building supplies, utilizing renewable materials as

often as possible and promoting conservation of energy and resources.

Green materials and practices must function at least as good as traditional materials and practices and must have a reasonable payback period in order to be adopted wholeheartedly by the building community. Go even greener and save money by installing solar power on your log home. Utilize both passive and active solar approaches for maximum efficiency and faster payback.

IV. LITERATURE REVIEW

Literature review aimed to study the factors and impact of green building

The paper Rating system awareness of Green Buildings Applications written by Dr. Dina Ahmed Elmeligy, discussed Many official green building programs, communities and organizations launched several rating systems to help the sustainable process assessment; all of these rating systems are built in a way to adapt the idea of sustainability in architecture which seeks to minimize the negative environmental impact of buildings by enhancing efficiency in the use of materials, energy, and space. Hence ,this paper aims at clarifying and analyzing worldwide Green building rating systems such as; LEED (Leadership in Energy and Environmental Design) in U.S.A, BREEM (Building Research Establishment's Environmental Assessment Method) in UK. GBCA (The Green Building Council of Australia) in Australia, GRIHA (Green Rating for integrated Habitat assessment) in India and GPR (The Egyptian Green Building Council) in Egypt, By understanding their basic features and methodology to spread global awareness of importance of these organizations which have significant role in the process of assessing the sustainability .

The paper, A review on green building assessment tools: rating, calculation and decision-making discussed by M.chehrzad, S.M.Pooshideh, A.Hosseini & J.Majrouhi Sardroud, Based on these factors, many criteria have been proposed for different assessment tools. In this paper, we aim to make a review on three major tools embodied in every building sustainable assessment tools: rating tools, calculation tools and decision making tools. Almost every sustainable assessment tool practices these three aiding tools to generate more accurate and more realistic results.

The paper, Comparative review of five sustainable rating systems – written by Binh K. Nguyena*, Hasim Altana, The paper presents the comparative review of five prominent sustainable rating systems namely BREEAM, LEED, CASBEE, GREEN STAR and HK-BEAM. The review process adopts a system of criteria which encompasses all features of sustainable rating tools. The main goal of the study is to consider all aspects of the systems in order to find out the best one(s). The study provides a deep insight into sustainable rating tools and can be a recommendation and reference for users when choosing between rating systems.

The Paper Green Building: Concepts And Awareness Written By Modh Yasir Laeeq, Dr.Syed Khursheed Ahmad, Khubaib Altamash, this study investigated the extent of adoption of green building concepts in commercial buildings and the key challenges arising from their adoption with the aim of determining appropriate strategies for implementing them. The study was conducted through a survey method and used questionnaires, interviews, observations for data collection. In this paper a study is conducted which determine the main concepts involve in the construction of green buildings moreover the strategies are also discussed which can help to create awareness in between people regarding the benefits of green building and could be a step towards green building practice for the future world.

The paper, Green Buildings: Status Of Construction In India written by Rachna Dhingra And Pujya Gupta, Over the past few years, LEED and green building have dramatically increased in India. India ranks third among the Top Ten Countries for LEED, and in 2016, nearly 650 projects in India earned LEED certification. Emerging economies such as India are engines of green. In order to improve living standards of all and reduce the impact on our planet one solution is to go for green buildings in the country. Hence, this research paper is considered as an attempt to check the status of green buildings growth in India. Further, it will help in creating awareness amongst the masses about the concepts of green buildings and motivate people to adopt these concepts. This will lead in development of a sustainable world.

This paper, Towards the implementation of the Green Building concept in agricultural buildings written by M. Samer, Green building Vs Non green building .In order to make the construction of green buildings cost-effective, the agricultural wastes, e.g. plant residues, should be used as

green building materials. This study focuses on defining green buildings and elaborating their interaction with the environment, energy, and indoor air quality and ventilation.

The paper, Management of Sustainability in Construction Works written by Sneha. S1 & Aarthi. R2 The main section of the study begins by giving out the questionnaire to the subjects that are chosen on random selection from the construction firms in Kerala. The frequency and percentage analysis we carried out by SPSS version 20. The research results are expected to make clear that weather the awareness of sustainable development is present among construction industries, the level of the implementation of sustainable development factors in construction is satisfactory or not and professionals believe that the government has a major role to develop sustainable building in Kerala.

The paper, A Conceptual Review of Green Buildings in Energy Saving Kambam written by Gireeshma1, K.Leleedhar Rao2, Being one of the biggest consumers of energy and also one of the largest producers of greenhouse gases, buildings are considered as a field, where tremendous opportunities exists for energy saving through some changes at designing stage. Energy consumption in buildings account for 40% of total energy consumption in the world and it accounts for 18% of global emission today, which is equivalent to 9 billion tons of C emission annually according to National Building Code (NBC). This highlights an immediate requirement to implement sustainability in every new construction, which helps to create a sustainable environment and a healthy ecosystem. Green buildings (GB) follow the principle of optimum usage of water, energy and non-renewable sources and also generate less waste and provide healthier environment for residents. The objective of the paper is to familiarize the importance of a green building for a better future and further to incorporate the changes in an existing building to become a Green Building.

This paper, Overview of Green Building Rating Systems and their Relationship(s) with Wood, This study examines the world's major green building rating and certification systems in order to evaluate their relationships with wood and to gain a better understanding of what opportunities may be available for promoting wood as a green building product.

The paper Study on the relative importance of green building attributes in Philippine urban setting using analytical hierarchy process written by Diocel Harold M. AQUINO, Christian R. OROZCO, Alexandra Lauren C. SY, and Hershey Kathlyn S. YAP ,The different green building attributes were identified and evaluated for relative importance using analytical hierarchy process. Research done in three buildings Respondents come from four distinct groups: engineers, architects, urban planners and end users. This study finds its niche in the development of a locally calibrated green building rating system for the Philippines.

The Paper Impact Of Green Building Rating Systems On The Sustainability And Efficacy Of Green Buildings Case Analysis Of Green Building Index, Written By Malaysia -Shraddha Pandey, Green building construction can be largely driven by green building rating systems. The Green Building Index (GBI) is a first-generation rating tool for energy efficient buildings in Malaysia. Whether GBI is an efficient framework that can lead Malaysia towards its goal of creating more green buildings and ensuring a greener future for its buildings can be understood by analyzing the response of the building industry towards it.

To assess its impact, the criteria laid out in the rating system were sorted into short-term and long-term impact criteria, depending on whether a given criterion helps keep a building green for its expected lifetime. In other words, the criteria that affect the energy and resource efficiency in buildings for a shorter duration have been listed as short-term impact criteria, and those that would continuously affect it for the expected lifetime of the building have been listed as long-term impact criteria.

The paper, Sustainable Development and Green Buildings written by Odrzivi razvoj I zelena gradnja, The materials used in a project are considered at a common starting point and no consideration is given to the life cycle performance of the material. Statements concerning sustainability require validation, and Life Cycle Analysis (LCA) is a tool that can provide such validity. This paper presents how beneficial it can be, when included, in the bigger scheme of green building rating systems and introduces an integrated design concept for green buildings.

The paper, Sustainability Evaluation of Green Building Certification Systems written by Martin Yuce, The primary goal of this study is to identify a

comprehensive set of criteria for the measurement of building sustainability, and therefore to facilitate the comparison of existing rating methods. The collection and analysis of the criteria, identified through a comprehensive literature review, has led to the establishment of two additional categories besides the 3 pillars of sustainability. The comparative analyses presented in this thesis reveal strengths and weaknesses of the chosen green building certification systems - LEED, BREEAM, and DGNB.

V. CONCLUSION

Many believe that the goal of green building is to become obsolete. In other words, green building should become so much of a standard practice that

LEED and other rating systems are no longer necessary—green building will have become mainstream. As we have pointed out here, this will require more than just a development of green technologies and lower costs for these technologies. We insist that by identifying social and psychological barriers, we can influence changes in social structures, rewards, and incentives. Incremental changes like those proposed here can bring green building practices into the mainstream of business such that they are taken into consideration within every decision in the building process .I understood the factors and impact of green building rating programs.

REFERENCES

- [1] A Comparative Analysis Of Rating Systems In Green Buildingsharad R. Khese, M.N.Hedao, B.A.Konnur.
- [2] A Comparison Of Indoor Environmental Satisfaction Between Two Green Buildings And A Conventional Building In China, Zhonghua Gou, Stephen Siu-Yu Lau, Zhidong Zhang.
- [3] A Conceptual Review Of Green Buildings In Energy Saving Kambam Gireeshma1, K. Leleedhar Rao2.
- [4] A Matrix In Life Cycle Perspective For Selecting Sustainable Materials For Buildings In Sri Lanka Shabbir Gheewala.
- [5] A Rating System For Integrating Building Performance Tools In Developing Countriesilvia Gobbi*, Valentina Puglisi, Andrea Ciaramella.
- [6] A Review Of The Effectiveness Of Crime Prevention By Design Approaches Towards Sustainable Development Massoomah Hedayati Marzbali.
- [7] Advancing Green Building Rating Systems Using Life-Cycle Assessment,Sami G. Al-Ghamdi.
- [8] Analyzing The Perceived Benefits Of Leed-Certified And Energy Star- Certified Buildings In The Realm Of Local Economic Development Suzanne M. Leland, Dustin C. Read, Michael Wittry.
- [9] Areview On Green Building Assessment Tools:Rating, Calculation And Decision-Making M.Chehrzad, S.M.Pooshideh, A.Hosseini & J.Majrouhi Sardroud.

- [10] Assessment Of Energy Credits In Leed-Certified Buildings Based On Certification Levels And Project Ownership By Asli Pelin Gurgun.
- [11] Comparative Review Of Five Sustainable Rating Systems -Binh K. Nguyena*, Hasim Altana.
- [12] Comparative Review Of Five Sustainable Rating Systems-Binh K. Nguyen, Hasim Altan.
- [13] Design Of A Sustainable Building: A Conceptual Framework For Implementing Sustainability In The Building Sector.
- [14] Evaluation Of Leed Requirements For Site Properties In Developing Country-Specific Certification-Ruveyda Komurlu.....David Arditi.
- [15] Factors Explaining The Adoption And Impact Of Leed-Based Green Building Policies At The Municipal Level -Julie Cidell.
- [16] Green Building: Concepts And Awareness Modh Yasir Laeeq, Dr.Syed Khurshed Ahmad, Khubaib Altamash.
- [17] Green Building Design & Products For Sustainable Construction.
- [18] Green Building Environmental Awareness, And Organizational Image- Mahbub Rashid.
- [19] Green Building Rating Systems And Their Application In The Mexican Context-Hernandez-Moreno S., Mejia-Lopez M., Mendiola-German I., Sanchez-Vertiz-Ruiz R. L. & Hernandez-Moreno J. A.
- [20] Green Building: Status Of Construction In India-Rachna Dhingra And Puja Gupta.
- [21] Green Building Toward Construction Sustainability: Energy Efficiency With Material And Design Aspects-Hussein Mohammed Abualrejal, Zulkifli Mohamed Udin, Shahimi Mohtar.
- [22] Impact Of Green Building Concept On Sustainability Of Office Buildings- A Case Study D. Kumara, Maya Naik, Ramakrishnaiah C R.
- [23] Impact Of Green Building Rating Systems On The Sustainability And Efficacy Of Green Buildings Case Analysis Of Green Building Index, Malaysia -Shraddha Pandey.
- [24] Indoor Environmental Satisfaction In Two Leed Offices And Its Implications In Green Interior Design (Zhonghua Goua Stephen Siu-Yu Laua Jie Shenb).
- [25] Influence Of Indoor Environmental Quality On Work Productivity In Green Office Buildings: A Review, Masoud Esfandiari*, A, Suzaini Mohamed Zaidb, Muhammad Azzam Ismaila, Ardalanaflakia.
- [26] Influence Of Factors Unrelated To Environmental Quality On Occupant Satisfaction In Leed And Non-Leed Certified Buildings (Stefano Schiavona, Sergio Altamonte)
- [27] Life-Cycle Thinking And The Leed Rating System: Global Perspective On Building Energy Use And Environmental Impacts- Sami G. Al-Ghamdi.
- [28] Making Buildings Better Products And Support For Energy Efficient Homes And Buildings.
- [29] Management Of Sustainability In Construction Works Sneha. S1 & Aarthi. R2
- [30] Management Of Sustainability In Construction Works Sneha. S1 & Aarthi. R20
- [31] Occupational Safety And Health In Green Buildings: Leed Pt. Pilot Credit Analysis, S. Abbaszadeh, L. Zagreus, D. Lehrer And C. Huizenga.
- [32] Occupant Satisfaction With Indoor Environmental Quality In Green Buildings, S. Abbaszadeh, L. Zagreus1, D. Lehrer And C. Huizenga.
- [33] Overview Of Green Building Rating Systems And Their Relationship(S) With Wood.
- [34] Pedagogy For Green Building: Indias.K. Gupta1, Mustakeem R. Khan2, Nishant Nathani3 And Pragnya Prakash4.
- [35] Performance Or Marketing Benefits? The Case Of Leed Certification Daniel C. Matisoff.
- [36] Rating System Awareness Of Green Buildings Applications -Dr. Dina Ahmed Elmeligy.
- [37] Research Trend Of Sustainability In Construction Journals-Akgul, G. And Girithi, F .H.
- [38] Study On The Relative Importance Of Green Building Attributes In Philippine Urban Setting Using Analytical Hierarchy Process Diocel Harold M. Aquino, Christian R. Orozco, Alexandra Lauren C. Sy, And Hershey Kathlyn S. Yap
- [39] Sustainability Evaluation Of Green Building Certification System-Martin Yuce
- [40] Sustainability Evaluation Of Green Building Certification Systems- Martin Yuce
- [41] Sustainable Development And Green Buildings-Odrzivi Razvoj I Zelena Gradnja
- [42] Sustainability And The Project Procurement Lifecycle
- [43] Sustainability Strategies In The Construction Industry: Implications On Green Growth In Nigeria Pf Tunji-Olayeni1, To Mosaku1oo Oyeyipo2 And Ao Afolabi1
- [44] Sustainable Building Design Nengmou Wang, Hojjat Adeli.
- [45] Sustainable Construction Green Building Design And Delivery By Charles J. Kibert
- [46] Sustainable Construction Trends In Journal Papers.
- [47] The Framework For Sustainable Development On The Government Estate
- [48] The Role Of Leed Certification In Consumer Major Purchase Decisions: A Case Study Of The Chattanooga Volkswagen Manufacturing Facility-Amy E. Katcher-Dunne.
- [49] Towards The Implementation Of The Green Building Concept In Agricultural Buildings M. Samer.