



Green Library

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ABSTRACT

A Green Library also known as a sustainable library, is a library built with environmental concerns in mind. Green libraries are a part of the larger green building movement. Green libraries are being built all over the world 'Go Green' has become a buzz word in the 21st century. Recently libraries too have imbibed this phenomenon enormously. Green Library Movement, which comprises of librarians, libraries, cities, towns, college and university campuses committed to greening libraries and reducing their environmental impact. Constructing a green library building using performance standards like Leadership in Energy and Environment Design (LEED) and Indian Green Building Council (IGBC) is a way some libraries both abroad and in India are choosing to become green and sustainable. Environmental challenges like energy depletion and climate change will influence the type of information resources and programs libraries will provide to their communities. The present paper focuses on the concept of 'Go Green Library' in general and 'Green Libraries' in particular. The attempt is also made to give information on different standards being followed, existing green libraries, practices and initiatives globally and locally.

Keywords : Go-Green, Green Libraries, LEED, IGBC, GRIHA Libraries, Library users, Surveys, Public libraries.

I. INTRODUCTION

'Go Green' or green library and 'Sustainability' are not the new concepts; they are the effort to save our mother earth. Recently due to the serious issues of global warming, depletion of natural resources and pollution in every walk of life, it has led to attention from the world wide community. Go Green is nothing but it's a set of practices to lead more environment friendly and ecologically responsible decisions and lifestyles which will protect our environment and its natural resources for current and future generations. Sustainability on

the other hand can be defined as the capacity to meet the needs of the present without compromising the ability of future generations to meet their own needs. It has economic, social and environmental aspect. The Role of green library in this worldwide phenomenon is enormous. Libraries are considered to be the place for lifelong learning, and provide users with the knowledge. Librarians can act as role model for sustainability by providing suitable and relevant information related to green issues and concerns by its collection and designing various programmes with the users. There is no better place to model best practices for sustainable designing for reduced energy consumption and as an educator for a

whole range of new ideas than the library. Libraries apart from disseminating the idea of Green library and sustainability can lead by an example by modifying or designing new buildings to meet this ever increasing necessity for society.

II. MEANING OF GREEN LIBRARY

A green library is designed to minimize negative impact on the natural environment and maximize indoor environmental quality by means of careful site selection, use of natural solar and wind power energy, construction materials and biodegradable products, conservation of resources (water, energy, paper), and responsible waste disposal (recycling, etc.).

III. DEFINITION OF GREEN LIBRARY

The online Dictionary of Library and Information Science defines Green Libraries as: A Library designed to minimize negative impact on the natural environment and maximize indoor environment quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources (water, energy, paper, responsible waste, disposal, Recycling etc). In new constructing and library Renovation, sustainability is increasingly achieved through LEED (leadership in energy and environment Design) certification a Rating system developed and administered by the U.S. Green building council (USGBC).

Throughout this article the terms “green” and “sustainable” are used and need to be defined. In the Oxford English Dictionary (1989) the term “green” is defined as “pertaining to or supporting environmentalism” (p. 811). The term “sustainable” relates to “forms of human economic activity and culture that do not lead to environmental degradation, esp. avoiding the long-term depletion of natural resources” (Oxford English, 2008).

IV. OBJECTIVES

The objectives of this paper are:

1. To understand the meaning and importance of green libraries
2. To list the different standards being followed for green libraries
3. To gain insight into Eco-Friendly Libraries both abroad and in India
4. To find out solutions to convert existing libraries into green libraries.

V. RESEARCH METHODOLOGY

This research paper work can be characterized as a theoretical concept. The methodological framework used in this article is based on previous research related to systems of innovation. The approach of the research is exploratory in nature, which constitutes a secondary source. Literature review includes green building and green library techniques from United States of America (USA), Japan, and India etc. The Literature survey was done using online Computerized search engines like Google, Google scholar and same related journal etc. The research is based on secondary data, which includes compilation of research articles. This Research paper is more of informative and suggestive in nature, many more studies and work need to be done by the individuals, institutions and organizations working for green libraries.

VI. PURPOSE OF PROMOTING GREEN LIBRARY

The purpose of this green library concept paper is to introduce the planning and architectural design features, and the post-occupancy evaluation (POE) of the Public Library in Karnataka Public Library System. This paper also proposes possible solutions in response to the public’s suggestions for improvements.

There are some major impotence of Green Library, they are

7.1. Green library does not require any high budget allocation. It is now possible for libraries to build green buildings on conventional budgets.

7.2. Green libraries make use of finite energy resources which is readily available and also fit into the library budgets. Here technology does not become a barrier.

7.3. The Maintenance of green libraries is also as natural ventilation, aeration creates a good environment .There is no necessity for artificial creation and in turn use of extra energy for maintenance.

7.4. As Green libraries play a paramount role towards the welfare of mankind, this could be used as a part of the marketing strategy of the library as a

socially responsible body which can have a big impact on the library's image.

VII. COMPONENTS OF GREEN LIBRARY

There are some major components in green library they are:

- 8.1. Site Location
- 8.2. Water Conservation
- 8.3. Energy Efficiency
- 8.4. Material and Resources
- 8.5. Indoor air quality
- 8.6. Innovation and design process
- 8.7. Environment friendly or Eco friendly
- 8.8. Innovative and creative
- 8.9. Resource saving
- 8.10. Comfortable and health
- 8.11. Full of humanistic concern.

8.1. Site Location:

This is the most important element in the green library. Selection of the site has a large impact on how ecologically friendly the library will be .LEED has given lots of guidelines for site selection process .The Library should be located in a heavily populated area and people should be able to reach the building via public transportation. There should be simple environmental parking lots with natural

shading /Green Roofs to reduce the heat effect. Walking and biking are the green

Ways to travel so library can prepare attractive and comfortable walking and biking paths to get into the library.

8.2. Water Conservation

Libraries should plan efficient water conservation strategies like to capture and conserve rain water to be used in irrigation of landscape around the buildings. Urinals can be planned in such a way where waterless urinals may be used.

8.3. Energy Efficiency

According to LEED energy efficiency is the heaviest weighted of all the categories .With the advent of new technologies in the 21st century, it is quite possible to generate energy from the natural

resources. Energy conservation can do through passive and active strategy. Passive strategies could be based on sun and wind energy. Active strategies include using more advanced technology driven strategies converting solar energy into energy resources and sensors readjust lighting.

8.4. Building Materials

The Building materials should be selected based on

- a.) The material should contribute to a less waste as possible like post-industrial and postconsumer recycled materials.

- b.) The material selected should not cause much damage to the natural environment. It should be possible to reuse and recycle.

8.5. Indoor air quality

Most Modern Buildings are temperature controlled and air-tight. The lack of ventilation make buildings expensive to cool, it also trap harmful toxins which can do serious damage to people's respiratory system. Green buildings need to be designed in a way in which the air gets recycled and does not stay stagnant. A green library is not just about caring the

external environment but also safeguarding the health and well-being of those who work in it.

VIII. ELEMENTS OF GREEN LIBRARIES

The main goal of green building is to develop and use sustainable energy efficient resources in construction, maintenance and overall life of the structure. Libraries considering green design will often look at the leadership in energy and environment designing (LEED) rating system. Brown identified the following green designing elements, which can be incorporated into libraries.

- 9.1. Community collaborating makes sure that community assets are efficiently used and helps to maintain public support.
- 9.2. Daylight pair daylight with artificial lighting and reduce energy costs.
- 9.3. Green materials use renewable materials like wood, bam boo.
- 9.4. Green roofs
- 9.5. Raised floor systems
- 9.6. Energy efficiency
- 9.7. Natural Ventilation
- 9.8. Green power and renewable energy
- 9.9. Indoor environment quality.

IX. SOME MODELS OF GREEN LIBRARY BUILDINGS



Fig -1. Some Models of Green library buildings - wooden architecture integrating the library into the surrounding ecological environment at ground base.

X. WHY? AND HOW ARE LIBRARIES BECOMING GREEN?

There are several reasons why libraries should build green or incorporate green features into their buildings;

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- 11.2. Green libraries make use of finite energy resources which is readily available and also fit into the library budgets. Here technology does not become a barrier.
- 11.3. The Maintenance of green libraries is also as natural ventilation, aeration creates a good environment. There is no necessity for artificial creation and in turn use of extra energy for maintenance.
- 11.4. As Green libraries play a paramount role towards the welfare of mankind, this could be used as a part of the marketing strategy of the library as a socially responsible body which can have a big impact on the library's image.

XI. IMPLEMENTATION OF GREEN LIBRARY OR SOLUTIONS FOR THE EXISTING LIBRARIES TO GO GREEN

The existing libraries can also implement eco-friendly measures in their day-to-day routines like:

- 12.1. Management of waste by using most modern waste segregation and recycling practices like waste can be turned into compost which can be used to increase the green cover in the surrounding area like Orchid Ecotel in Mumbai is the best example of waste management.
- 12.2. Use of CFL or LED lights instead of tube lights with proper maintenance can minimize expenses.
- 12.3. Rain water harvesting pits can be created to store water and then it can be used for gardening.
- 12.4. Use of Maximum Natural light and wind can save electricity.

12.5. Digitization and Scanning of rare books etc. can be done to save paper.

12.6. Use of e-books and journals to save paper and place.

12.7. Eco friendly pesticides can be used at the time of pest-control.

12.8. Use of eco-friendly paints on the wall to reflect more light

12.9. Eco friendly material can be used for stacking purpose.

12.10. Turning off lights and Fans in the library when not required.

12.11. Using network printer instead of personal printers.

12.12. Installing a new server and running multiple servers on one server box.

12.13. Re-fill toner cartridges instead of buying new.

12.14. Putting computers in sleep mode when in not use.

12.15. Use one side paper to taking Xerox or rough and paper clipping etc.

In India the pace of green movement in general and in libraries is slow. Statutory Bodies like UGC, AICTE etc. can play a major role by making it mandatory for colleges to incorporate green features in their buildings and libraries. Government and Universities too should make all the efforts to transform whenever possible libraries into green libraries.

XII. REASON OF MAKING GREEN LIBRARY (WHY?)

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XIII. WHAT ARE GREEN LIBRARIES?

When librarians talk about green libraries what usually comes to mind are green library buildings. At the event architects, city planners, and librarians shared the latest developments and cutting-edge solutions being adopted in green library buildings (Library Journal, 2007). Green buildings are measured according to a rating system like the LEED (Leadership in Energy and Environmental Design) certification system, which was developed by the U.S. Green Building Council. Since the introduction of LEED in 2000, it has become the U.S. national standard for commercial and institutional buildings (U.S. Green, 2008). LEED is considered a performance standard, which means it allows a building owner or planner to choose how to meet certain benchmark numbers without prescribing specific measures. It is a point based system in which projects earn LEED points for meeting green building criteria. The six credit categories for new building construction are sustainable sites, water efficiency, and energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design (U.S. Green). There are currently six types of building certification under LEED including LEED for New Construction (LEED-NC), LEED for Commercial Interiors (LEED-CI), LEED for Core and Shell (LEED-CS), LEED for Existing Buildings (LEED-EB), LEED for Neighborhood Development (LEED-ND), and LEED for Homes (LEED-H) (Yudelson, 2007). The LEED

rating system is progressive with four levels of certification: Certified, Silver, Gold and Platinum. Each certification level has 32 categories of environmental design and energy concerns for a maximum point value of 69. Buildings must score a minimum number of points

above “standard building” performance levels to qualify for certification (Yudelson, 2007). For example, a basic LEED-NC certified building must score at least 26 points in the six credit categories. To certify for a Silver rating, a building would require

33 points, for Gold 39 points, and for Platinum rating a minimum of 52 points (Yudelson, 2007). Platinum certification is difficult to achieve. In 2006 there were fewer than 20 Platinum LEED-NC projects. The Barrington Area Library set a goal of being the first public library in Illinois to receive Platinum certification (Barrington, 2008). Unfortunately due to the economic downturn on November 4, 2008, Barrington Area citizens voted against the \$34.3 million bond issue to fund the Library Improvement Plan (Doyle, 2008). Currently in the US there are only two LEED-certified Platinum library buildings: the William J. Clinton Presidential Library Antonelli: The Green Library Movement: An Overview and Beyond in Little Rock, Arkansas, and the Lake View Terrace Branch Library, part of the Los Angeles Public Library District. The Clinton Presidential Library originally received Silver Certification under the USGBC’s LEED-NC program. In 2007, the Library achieved LEED-EB Platinum certification by adding additional green cleaning and recycling programs, climate- neutral and energy efficiency strategies, water wise landscaping

and a green roof (Pilloton, 2007). The Platinum certified Lake View Terrace Branch Library opened in 2003. Some of the Library’s green features include: natural day lighting, shading to filter direct sunlight, solar panels, sensors that control indoor lighting for improved energy efficiency, and bamboo wood flooring. The Library is located close to electric car charging stations and mass transit. It also offers a

bike rack and a horse-hitching post (Los Angeles Public, 2005). The push to build green libraries continues to grow. In 2008 Massachusetts cities were offered \$5 million to build or renovate green libraries. The State Board of Library Commissioners plans to award construction grants to 31 Massachusetts cities and towns. The selected

libraries must follow LEED design standards to qualify for the grant money (Crimaldi, 2008). Chicago, Illinois, is clearly the leader in green library building. Chicago prides itself on being one of the first cities to incorporate environmentally friendly practices into public buildings. The city has even created its own building standard known as The Chicago Standard, which is based on selected points from the LEED Green Building Rating System. Beginning in 2002 the city of Chicago decided to use green building technologies in the construction of municipal buildings such as libraries and police stations. The first green library, Budlong Woods Library, opened in spring 2003, followed by the West Englewood Library in the summer 2003, and the Oriole Park Library in spring 2004 (City of Chicago, 2004). By December 2007 seven Chicago branch libraries had received certification with more planned.

XIV. GREEN LIBRARY PROGRAM IN INDIA

Anna centenary library located in Kotturpuram Chennai is the largest library in South Asia and one of the most sustainable. The cavernous space built on 8 acres of land can accommodate well over a thousand readers at a time and 1.5 million books. The designed by C.R. Narayana Rao makes the most of the outdoor light with lots of windows to the northeast, skylight and an outdoor amphitheater on the roof. Inside LED lights illuminate a huge indoor auditorium, cafeteria and many reading and research area. The library was build from the ground up with conservation in mind. Special care was taken to select sustainable materials more than 60% are locally sourced and recyclable. Natural lighting is

key player in the design, as are large windows facing the north and east to provide the best light without introducing heat. The south utilizes shading and vegetation to create heat buffer zones. Waste water is reused on the grounds and naturally educational materials are placed throughout the space to raise awareness of how the building works.

Anna centenary library have some Sections, they are:

- Own Book Reading Section
- Children's Section
- Periodicals Section
- Tamil Books Section
- English Book Section.

The average number of persons who visited the library between January and October 2011 is around 26,500, compared to the monthly average of 20,000 in 2010

The Librarians all around the country are climbing aboard the green library band wagon by offering green library programs. On May 24, 2007, James LaRue, author of the 1991 article "Green Librarianship" and Director of the Philip S. Miller Library in Castle Rock, Colorado hosted the free public seminar "Building Green trends and opportunities in Douglas County." A panel of local facilities and energy managers were assembled to talk about green projects currently being developed in Douglas County, and to brainstorm on green projects they would like to create (LaRue, 2007). The METRO (Metropolitan New York Library Council) Green Librarianship Special Interest Group (SIG) held its first meeting on November 1, 2007. The well attended meeting was organized by Brita Services, Undergraduate Services Librarian at the New School, and Rita Ormsby, Information Services Librarian at Baruch College's Newman Library. The creation of the SIG came out of a Green Libraries discussion held at the August 2007 Library Camp at Baruch College (Metro Collaborate, 2008b). The SIG was developed for librarians and staff members interested in adopting best green practices such as recycling in libraries, and providing resources and information on green living and green working to

the wider library communities (Metro Collaborate, 2008a).

XV. CONCLUSION

The library is to serve its community. The Libraries must respond to this increasing focus on Green Movement and should act as role models for sustainability by providing suitable and relevant information related to green issues and concerns. Librarians should encourage and support the movement of green libraries and help communities to understand green and sustainable concepts. More and More eco-friendly solutions should be implemented to make our mother earth a better place to live in.

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