

Green Library: An Overview of National and International Scenario

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ABSTRACT

The green library is a new concept and it is gaining popularity among the library professionals. The paper highlights the conditions of environment, and efforts of leading organizations towards an eco-friendly earth, green library standards, role of a librarian, why green library?, elements of green library, green library initiatives in India and International . The papers also discuss role of initiatives like IGBC (Indian Green Building Council) and LEED (Leadership in Energy and Environmental Design). It is also an overview of role of green librarian to make green library. This paper discuss the importance of green library in ongoing era, and green library initiatives in India like Anna Centenary Library , Karnataka university library Dharwad, Madras University Library, Mumbai university library ,as well as also discusses green library initiatives an International level like Thomas Golisano Library, Blair Library, USA, Fayetteville (AR) Public Library and The National Library Singapore .

Keywords: Green Library, Sustainable Library, Green Library Standard, Green Library Initiatives, LEED, BREEAM, IGBC, GRIHA.

1. INTRODUCTION:

In today's age of information technology, the creation of green libraries is gaining momentum. The concept of the Green Library emerged in the 1990s, but since 2003, the Green Library has gained momentum. Traditional libraries, educational libraries, public libraries are far behind the green transformation movement. Libraries have to face specific challenges for the green building movement, including extreme temperatures, humidity, sunlight, termites, fungi and rats, and of course special care from books by some dishonest readers. In today situation weight of books and stacks and movement of many readers on the floor make it more complicated. Expandability for future growth in terms of books and readers and technology further complicate building structure and design.

2. REVIEW OF LITERATURE:

For this study we have referred some literature related to Green library, Green Library Standard, Green Library Initiatives National and International. There are very few numbers of Literature have been found and gone thought literature which was relevant. Some preferred literature reviewed for the present study. Like Vasanthi (2019), Bhattacharya A (2017), Raysh Thomas (2016), Mahawariya (2019), Leena Shah (2015), Meher P (2017) , Ramyia Krishnan Pangail (2015) All referred papers documents acknowledged in references.

3. OBJECTIVES:

- To study the meaning and importance of green libraries.
- To study the about Green Library initiatives in National and International.
- To study the standards for Green Libraries National and International

- To know the challenges for libraries to go Green library

4. 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 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.

5. GREEN LIBRARY:

A green library may be a library that uses latest and cutting edge technology in designing a library building and providing services to its users in ecofriendly environment. Concept “Green Libraries” emerged in the early 1990s.

“The consideration of the role of humanity in climate change and the notion of sustainable development are core concerns of society, and consequently of libraries.” (<https://www.ifla.org/g/environment-sustainability-and-libraries/ifla-green-library-award/>)

According to New World Encyclopedia, “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.” In other words, Green libraries are a part of larger green building movement and these are also known as sustainable libraries, which not only help current generation in adequate utilization but also preserve libraries and its materials for future generation.

(https://www.newworldencyclopedia.org/entry/green_library)

Definition: According to Online Dictionary of Library and Information Science (ODLIS) (https://products.abc-clio.com/ODLIS/odlis_s.aspx#sustainablelib) defined green/sustainable library as ‘A library designed to minimize negative impact on the natural environment and maximize indoor 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 disposal (recycling, etc.)’.

Oxford English Dictionary (2008)

The term “green” is defined as “pertaining to, or supporting environmentalism.” 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”

Libraries are not far behind in green environment movement. The libraries have specific challenges to overall green building movement. Books need special care from extreme temperature, moisture, sunlight, termites, fungus, and rodent’s and of course few dishonest readers too. Weight of books and stacks and movement of many readers on the floor make it more complicated. Expandability for future growth in terms of books and readers and technology further complicate building structure and design.

It involves following **steps for a good green library:**

- **Site Selection:** - Besides population, reach ability location, parking and local conditions like storms, erosion, moisture and dust, etc. are also to be considered before finalizing site. India has geographically varied conditions from vast deserts to high hill tops, planes and very vast coastal areas so one norm cannot fit throughout the country. A proper site selection is very necessary for a green library as compared to other types of buildings.
- **Water Conservations:** - Use of roof water harvesting, green toilets, water recycling, etc. can save lot of water for proper landscaping and greenery in and outside the library building.
- **Energy Conservation:** - It is most important aspect in green revolution. Use of wind and sun can manage temperature and light in place of electricity. It saves lot of natural resources like coal and emission of harmful gases like Co2 which will be helpful in reducing global warming. It is economic to the institution in electricity bills.

- **Building Material:** - Use or recycle of waste products will reduce damage to natural environment. Less use of wood will save many trees. Use of locally available material will save transport cost and fuel. It also includes use of biodegradable materials, nonuse of plastics and other such products. Many modern building technologies have emerged which are more ecofriendly and should be used in new library buildings.
- **Indoor Air Quality:** - Lack of ventilation at public places can cause many harmful effects such as bacterial infections, etc. The air should be recycled and should not be stagnant. Least use of air conditioners will reduce emission of harmful gases responsible for holes in ozone layer and intern global warming.

6. WHY GREEN LIBRARY?

- Not required high budget
- Low energy wastage
- Low maintenance
- User friendly and healthy environment
- Higher usability of resources
- Natural day light
- Comfort zone for both staff and user
- Role in conserving environment
- Providing environment friendly and
- Sustainable library services to the users

7. ELEMENTS FOR GREEN LIBRARY:

- Support of administration
- Both daylight and artificial light
- Use of renewable material like wood and bamboo
- Green roof
- Natural ventilation
- Quality of indoor environment
- Raised floor system

8. GREEN LIBRARIES STANDARDS:

GREEN LIBRARIES STANDARDS	
INTERNATIONAL	NATIONAL
<p>LEED: 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, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design.</p> <p>BREEAM: BREEAM is the leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and enables a building's environmental performance to be measured. Environmentally friendly features include the use of low carbon technology for heating and cooling, low energy lighting and water conservation</p>	<p>GRIHA: GRIHA has been adapted by the government of India as the National rating system. Keeping in view of the Indian agro-climatic conditions and in particular the preponderance of non-AC buildings, GRIHA has been developed as a rating system which is suitable for all kinds of buildings in different climatic zones of the country. There are about 1722 IGBC certified projects buildings, 507 certified professionals and also 42 evaluators.</p> <p>IGBC: Indian Green building Council (IGBC) is established in the year 2001 to promote and rate Green Buildings in India. 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". There are about 4289</p>

systems. Eden Prairie Library, Eden Prairie- First in US to create natural gas fuel cell to create power and heat on-site. It is made of recycled materials, low VOC materials and efficient lighting arrangements. Conertainer-Batu, East Jawa, Indonesia- is an amalgam of two words: container and entertainer, which reflects its goal of providing a better quality of living. Enfield Town Library, Britain- Floor-to-ceiling windows bring in plenty of light while providing views to the library's new green. This is built around BREEAM rating.	registered buildings, 1125 IGBC certified projects buildings and also 2662 IGBC aggregated professionals
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9. GREEN LIBRARY INITIATIVES: INTERNATIONAL

Name of Library	Location	Initiative
Thomas Golisano Library	United States	This is the first academic library building to achieve a LEED Silver certification and uses various methods to make it 40 percent more energy efficient than the New York State Energy Code recommendations. Library shelves limit daylight from side windows, so the design compensated by using a large atrium to provide natural daylight to both levels of the building. Use of white paint and solar shades reflect the direct rays of the sun and bounce light to specific areas. The internal lights respond to outside conditions.
Blair Library, USA	USA	It is one of the first public libraries in the USA to register with the U.S Green Building Council (USGBC). The library opened in October 2004 and was completed in 2006. The 88,000 square foot facility features a cistern to catch rainwater for irrigation a membrane roof, cork flooring, recycled content furnishings, waterless urinals low VOC finishes and fabrics etc. It received LEED Silver NC certification.
Spanish Peaks Library,UK	UK	Geothermal system for heating and cooling, flooring made of recycled rubber. It is the recipient of Stephen H Richard award in 2010
The National Library, Singapore	Singapore	The Singapore National Library has been called the greenest building on the planet. Designed by Ken Yeang, it opened in July 2005. It is designed using light shelves that allow the light to filter into the library, without having any harsh effects. It is the first green library for kids.
Fayetteville (AR) Public Library	US	Opened in 2004, it was the first building in Arkansas to register with the U.S Green Building Council and achieved the silver LEED designation in 2006. The library's green roof saves about £ 4,000 a year in energy savings. The building's reading spaces and circulation desks were situated to take advantage of the natural sunlight without overworking the building's air conditioners, reducing energy costs by 25% and the overall building's energy consumption by 30%. Sunlight streams through 75% of the building's public spaces.

Amsterdam Public Library	Netherlands	It is the most sustainable building in Amsterdam based on BREEAM method. The library building uses a ground source heat system together with highly efficient boilers. It also makes use of free cooling from the cold air outside whenever possible. The building is equipped with abundant solar panels, it has double glazing, and sustainable materials have been used.
Beitou's green library	Taiwan	East Asia's most eco-friendly building. The library's large windows help cut electricity use in two ways. An abundance of natural light means less interior lighting is needed. Also, the windows are often opened wide for ventilation, thus reducing the need for fans and air-conditioning. One part of the roof is covered by photovoltaic cells that convert sunlight into electricity. The library conserves water by capturing rainfall. The sloping roof gathers rainwater, which is then stored and used to flush the library's toilets

10. : GREEN LIBRARY INITIATIVES : INDIA

Name of Library	Location	Initiative
Anna Centenary Library	Chennai	It is an established state library of the Government of Tamil Nadu. It is located at Kotturpuram, Chennai. In the building is designed in such a way that the reading area receives good daylight. The western end is flanked by the service areas to prevent solar radiation. The seven-story atrium allows in abundant natural light. The library building received the LEED NC Gold rating from IGBC becoming the first library building in Asia to reach this. This project has achieved 43 LEED points, highest amongst any government buildings in Tamil Nadu thus far.
Karnataka University Library	Dharwad, Karnataka	Karnataka University Library launched a project on Green Library. The concept is to provide a congenial natural environment for the study. This system is a blend of tradition and modern system with all amenities. No books shelves, chairs or tables but benches are installed under the trees so that students can sit and read the books taken from the university library. Keeping this in vogue the Green Library has been established in the center of the campus and providing all facilities to students for study. The facilities include sitting, supply of drinking water, Wi-Fi connectivity and other facilities etc.
Perma Karpo Library	Ladakh	Designed by Arup for a small village in Ladakh (in the Indian Himalayas), is the perfect example of how good design, science and local knowledge have worked together to create a building that is as sustainable as it is beautiful. Amongst the technologies and design solutions used on site:

		ventilated Trombe Walls, wool insulation, a mud roof, timber paneling and even solar panels on the roof. The materials are locally sourced, and the experience and design solutions are worked out with the people on site to ensure that the knowledge remains in place.
Delhi University Library	Delhi	The great height, vast open areas, thick walls, windows all through the eastern wall are some green gestures that are in built in this heritage structure as well as nurtured even today by the present library leadership
NIT, SILCHAR	SILCHAR	The initiatives for Greening the library taken by NIT, Silchar is probably the first of its kind in the entire North East Region of India. The New Library Building under construction is designed according to LEED certification system of U.S which can be the role model for developing green libraries in Barak Valley
MADRAS UNIVERSITY LIBRARY	MADRAS	It is a symmetrical mixture of Indian and British architectural style. Wide corridor and large windows with sunshades outside enable to accelerate fresh air, preventing direct sunlight and allowing entry of adequate natural lights.

11. THE ROLE OF GREEN LIBRARIAN:

- The Librarian constantly willing to work under the Eco-library system and identify those people who are willing to work in this environment.
- He can promote green library tools, techniques to encourage others.
- A Librarian can encourage other librarians towards green library by discussion, seminar, and conferences.
- The green librarian's role is most dynamic he is also called as eco librarian because he has to handle the budgets to support the organizations.
- Use wooden furniture and material because these are bio degradable materials.
- Paper Insulation is also an ultimate trick to make environment friendly building. It is made from newspaper and cardboard which are recyclable. Also it protects wall from fire and insects.
- Library can use wool brick instead of burnt brick. Solar tiles or panel can be used for roof.
- More and more use of bamboo by replacing steel and rooftop planting can be a good idea.

12. GREEN LIBRARIES CHALLENGES:

Notwithstanding the green library movement and sustainable practices are realized across the world, still there are some challenges to be dealt with:

- Though cost of constructing green building has become affordable to other entities, libraries will face issues in meeting green goals as they are subject to stringent budget cuts especially when reengineering or reconstructing library structures one cannot forget the cost associated with it.
- Library buildings are most neglected part especially in colleges. At most places librarians are helpless as he has to work in an allotted space even when new buildings are being proposed or are under constructions. Architects too do not bother for well-constructed green library dings.
- Green practices in sustainable manner require considerable degree of expertise or competency from general management to ordinary level of maintenance throughout library functions. It is likely to expect lack of awareness in green technology and among the employees who have been recruited with traditional knowledge and skills.
- Attitudinal barriers play significant role in slowing down the sustainable practices in libraries. There are possibilities to convince the administration who would otherwise object the idea executing green library practices due to their unawareness. A well laid plan for green library building will remove resistance to change.

13. CONCLUSION:

The Green Library needs to be used in the educational library to make the day-to-day work of the librarian very efficient. . The use of the Green Library creates library money, staff time, and an attraction for readers to the library.

In the age of knowledge technology, librarians should play a pivotal role in making green libraries. They should also participate in the library movement. Today, some national and international organizations are helping to create green libraries, in which the government should play a pivotal role in promoting green libraries and making efforts to make all libraries green libraries.

In the age of information, the duty of a librarian should not be limited to providing information to the readers but should play a pivotal role in saving our natural environment and building a modern green building.

International Level Green Library



Thomas Golisano Library

National Level Green Library



Anna Centenary Library



Blair Library, USA



Perma Karpo Library



The National Library, Singapore



NIT, SILCHAR Library

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