

Green Libraries - Road Map to Sustainable Development - A Case Study

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ABSTRACT

The increasing threats of climate change and global warming are bringing rapid changes in the library system in its design and operating standards. Worldwide, countries are adopting green protocols in the fight against global warming. This paper analyses various national and international standards and national efforts in India to implement Green library standards in various academic institutions. The paper also attempts to provide comparative methods of green library practices of different libraries in India. Innovative recommendations for the implementation of green library are given in the findings of the study.

KEYWORDS: Green Libraries, Energy efficiency, Sustainable Development, Climate Change, International Conventions.

1. INTRODUCTION

“The impacts of 1.5° C. warmer world while less than in a 2°Celsius warmer world would require complimentary adaptation and development action at local and national scale” (IPCC Report on climate change 2018)(9).

Climate change and global warming has been rapidly changing the way with which generations of people are living with. Various governments, to prevent the climatic catastrophe are initiating significant policy changes (12). India is highly vulnerable to climate change. India’s traditional methods of energy usage are one of the reasons for carbon emission. Reducing the carbon footprint is an immediate responsibility of all the countries in the world. India has already committed to reduce the carbon emission by signing the Kyoto Protocol and the Paris Agreement. India is one of the countries, which is facing drastic climatic fury, especially in the last decade. Several examples of climatic catastrophe has happened in India like Uttarkhand Flash Floods 2013, Mumbai Floods 2005, Chennai floods 2018, Kerala floods 2018 and 2019 to name a few (10). Libraries are no exemption from devastating effects of climate change. Several libraries were destroyed during these climatic events. Increasingly librarians and administrations are being concerned of the sustainable construction of library buildings. Besides this, due to the increasing demand for long working hours many libraries need to open 24x7 thereby drastically increasing the energy needs. Various libraries like IIT Roorkee, National Law University Jodhpur are installing solar panels to reduce the usage of traditional power resources (13). Further many parts of the country experiences severe heat waves due to which Air

conditioning system needs to be installed in library, resulting in increased power consumption. Being at the center of the community services library can do many things to adapt to the changing scenario. Old and new libraries are now exploring the ways to install eco friendly and energy efficient systems to manage their libraries. “Go Green” is the emerging slogan for the libraries. This paper is discussing the various ways of adopting green technologies in libraries and the important green library initiatives happening in India.

2. RESEARCH METHODOLOGY

The current study uses the data collected from various library websites from India where green library initiatives are being undertaken. A comparative chart of these libraries and their green initiatives are given in table 2.

3. LIMITATIONS

In India green library initiatives are in the nascent stage. Awareness about green library standards is seldom found with many librarians. Besides this, the huge cost involved in the construction of the new library building or conversion of old libraries into new structures is holding back the administrative authorities to implement green library practices.

4. OBJECTIVES

- a. To analyse various green library initiative in India;
- b. To understand different greening techniques for the library;
- c. To understand various national and international standards for adopting green technologies;
- d. To understand the environmental awareness among Indian libraries; and
- e. To suggest innovative solutions for the implementation of green library practices.

5. DEFINITIONS

Online dictionary for library and information science (ODLIS), green libraries are defined as: Designed to minimize negative impact on the natural environment and maximize indoor environmental quality by means of careful site selections used natural constructions material and biodegradable conservation of resources (Water, Energy, Paper and Responsible Disposals).

Cambridge dictionary defines “Go Green” as to do more to protect nature and the environment.

6. LITERATURE REVIEW

Green Library studies are now emerging in the field of library and information science. Following are some of the important studies on green libraries. Younghee Noh and IinJa Hn (2018) (15) list the evaluation indicators for green libraries. Brown (2003) (1) refers to the comprehensive methods for greening the library. Scaper (2017) (2) emphasizes the need for construction of more green libraries. Pinkowsik (2007) (3) argues for green library websites. Antonelli (2008) (8) describes the green library initiatives in local communities. In India, Raysh Thomas (2016) (7) focuses on the role of librarian in building green library. Leena Sha et.al., (2015) (6) suggest various innovative ideas for greening the library.

7. IFLA CHECK LIST FOR SUSTAINABLE BUILDINGS

International Federation for Library Associations in its initiatives for green buildings libraries suggests the following important steps for greening the library building (16)

1. Facades
 - a. Use of solar energy and greening
 - b. Thermal insulation
2. Reusable materials for building constructions
3. Reducing air conditioning
4. Promoting natural ventilation
5. Revolving doors for library entrance
6. Promoting uses of day lighting
7. Power supply from renewable energy resources
8. Energy efficient heating techniques
9. Maximum use of rain water
10. Water saving techniques in library building
11. Use of thin client instead of personal computers.
12. Use of energy star certified hardware
13. Reduction in the use of paper

7.1 Energy Efficiency in User Services

IFLA also suggests various techniques to develop an energy efficient library through innovative user services.

- a. Avoidance of plastic bags in library
- b. Lending other than non book materials
- c. Avoiding chemical products in cleaning of library building
- d. Innovative services in reprographic section ex. scanning instead of printing.
- e. Promotion of LED bulbs.
- f. Recycling of electrical devices.
- g. Recycling printer cartridges.
- h. Promotion of digital archives.
- i. Standards in Green Library Building.

8. LEED

LEED (Leadership in Energy and Environmental Design) is an internationally recognized system developed by US Green Building Council (USGBC) for buildings. It is a point system where categorization for building is divided into five areas.(7)

- a. Water Efficiency
- b. Energy and Atmosphere
- c. Materials and Resources
- d. Indoor Environmental Quality
- e. Sustainability

LEED point system is further divided into three certified categories:

- a. Silver
- b. Gold
- c. Platinum

9. INDIAN GREEN BUILDING COUNCIL (IGBC)

IGBC is a part of Confederation of Indian Industry (CII). It was formed in 2001. The council has set various different criteria for different types of green buildings. It has also provided IGBC Green Campus Rating System to minimize environmental impacts of buildings and to encourage green concepts in education sector. Green Campus rating system aims to reduce the energy savings up to 30% and water saving up to 50% on educational campuses.(11)

IGBC Green Campus Rating System has following features:

- a. Site Planning and Management
- b. Sustainable Transportation
- c. Water Conservation
- d. Energy Efficiency
- e. Material and Resource Management
- f. Health and Well being
- g. Green Education
- h. Innovation in Design

Green Campuses are further divided into four-certification level:

Table 1. Certification levels

Certification Level	New Campus	Existing Campus	Award
Certified	40-49	30-44	Best Practices
Silver	50-59	45-53	Outstanding
Gold	60-74	54-66	National Excellence
Platinum	75-89	67-90	Global Leadership

10. GREEN RATING FOR INTEGRATED HABITAT (GRIHA)

GRIHA is a rating tool that analyzes the performance of the building with that of International Standards in terms of eco-friendliness. The basic features of GRIHA are as under:

- a. Pre constructions evaluated on environmental impact of new building.
- b. Building, Planning and Construction methods and type of material used.
- c. Building, Operation and Maintenance Stage for the efficiency of energy saving and environmental impacts are being analyzed.
- d. In India Manipal University, Jaipur is one of the educational campuses certified by GRIHA.

GRIHA uses various criteria for rating green buildings for educational institution. GRIHA council in collaboration with the energy and resource institute (TERI) and the Ministry of New and Renewable Energy (MNRE) designed GRIHA LD (Large Developments) scheme for assessing environmental impacts where campuses are located in more than 50 hectares. The criteria for GRIHA LD evaluations for educational campus are as follows:

- a. Site Planning
- b. Energy Saving
- c. Water and Waste Water Management
- d. Solid Waste Management
- e. Transport Management
- f. Social Management

Table 2. A comparative study of India's important green library buildings

Institute Name	Certification	Green Initiatives
IIT Roorkee	GRIHA	<ul style="list-style-type: none"> a. Solarification of Campus b. Generated 42 peak power output (KWP) in the year of 2019 through IITR photovoltaic solar power installed on the Mahatma Gandhi Library, IITR c. Changing resistant type fan regulator with electronic type d. Setting the temperature of A.C. at 25-26 degree Celsius e. Installation of LED Bulbs f. Replacing efficient tube lights with LED Bulbs g. Use of Green Materials for constructions h. E-Transport Methods within the campus.
Manipal University, Jaipur	GRIHA 5Star Rating for hostels (LEED Indian Platinum) IGBC Certification for academic block	<ul style="list-style-type: none"> a. Rajasthani architecture b. Consuming 76% less energy in A.C. c. Rain water conservation d. Rectification of impure water e. Consuming 50% less Fresh Water f. 100% LED Lighting
Anna Centenary Library, Chennai	Certification LEED Gold	<ul style="list-style-type: none"> a. Total number of 11 15Amp Sockets for electric charging b. Rain Water Harvesting c. Library Terrace is planted with albedo plants and green roof is provided to aluminum terrace. d. Efficient Lighting System thereby avoiding light pollution e. 64% water uses reduction by making efficient water fixtures. f. Use of highly efficient air cooled chillers g. Use of heat recovery wheels h. Day light controls for perimeter areas i. CFC and HCFC Free HBSE fire supporting system j. Recycling of waste material system k. Smoking prohibited environment l. Use of DCV System and CO₂Sensors and densely populated areas. m. Protective Methods from dust and moisture n. Energy way mats provided with minimum 6

		<p>feet long in all main entrances.</p> <p>o. The Anna Centenary Library Building consume only 30% less energy and 20% less potable water. The Green Building cost will be recovered in less than 3 years.</p>
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11. CONCLUSION

Libraries are important components in society, be it a public library or an academic library. Libraries can help in fighting climate change by adopting environment friendly methods following the adoption of various national and international standards. The reduction of carbon emission is an important component for the next generation libraries. In order to manage the extra cost of transforming existing infrastructure to new green library buildings, public private partnership model can be explored. For the conversion of old academic library building into eco friendly buildings governmental assistance need to be sought. Green library levy can be collected from users for implementing new technologies in libraries. In order to reduce energy usages green protocols may be developed by libraries. Awareness campaigns need to be conducted by libraries for popularizing the green libraries concept. The librarian can play a major role in promoting green concept in libraries and his role, as the protector of environment is very crucial in the climate change fight in a globalized world.

REFERENCES

- [1] Brown, B. (2003). The new green standard. *Library Journal*, 128, 61-64.
- [2] Schaper, L. L. (2003). Public input yields greener library design. *Library Journal*, 128, 62.
- [3] Pinkowski, J. (2007). Keeping track of green libraries. *Library Journal*, 132, 27.
- [4] Antonelli, M. (2008). The Green library movement: An overview of green library literature and actions from 1979 to the future of green libraries. *Electronic Green Journal*, 1(27), 1-11.
- [5] Meher, P. & Parabhoi, L. (2017). Green library: An overview, issues with special reference to Indian libraries. *International Journal of Digital Library Services*, 7(2), 62- 69.
- [6] Shah, L., Kumar, S., & Shah, M. K. (2015). Green libraries in academic institution: Need of the hour. *Social Issues and Environmental Problems*, 3(9), 1-5.
- [7] Thomas, R. (2016). India vs. International scenario. *Scholarly Research Journal for Interdisciplinary Studies*, 8645-8654.
- [8] United States Green Building Council. (2005). *LEED Reference guide: Version 2.2*. Retrieved from US Green Building Council website: <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>
- [9] Masson-Delmotte, V., et al., (2019). *Global warming of 1.5° C*. Retrieved from The Intergovernmental Panel on Climate Change (IPCC) website: <https://www.ipcc.ch/#:~:text=Through%20its%20assessments%2C%20the%20IPCC,where%20further%20research%20is%20needed.&text=IPCC%20reports%20are%20neutral%2C%20policy,relevant%20but%20not%20policy%20prescriptive>
- [10] *Kerala floods: How floods damaged public libraries in Kerala?* Retrieved from NDTV website :<https://www.ndtv.com/education/kerala-floods-how-floods-damaged-public-libraries-in-kerala->

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inpicture1914454#:~:text=According%20to%20an%20initial%20estimation,receive%20grants%20from%20the%20council

[11] Ministry of New and Renewable Energy, Government of India & The Energy and Resources Institute (2010). *Introduction to national rating system-GRIHA: An evaluation tool to help design, build, operate, and maintain a resource-efficient built environment*. Retrieved from https://www.grihaindia.org/files/Manual_VolI.pdf

[12] Carlarne, C. P., Gray, K. R., & Tarasofsky, R. (2016). *The oxford handbook of international climate change law*. Oxford, UK: Oxford University Press.

[13] *Anna centenary library system*. Available at: <http://www.annacentenarylibrary.org/>

[14] *IIT Roorkee library system*. Available at: <http://mgcl.iitr.ac.in/>

[15] Noh.Y,Ahn-In Jha,(2018) International Journal of Knowledge Content Development & Technology Vol.8, No.1, 51-77

[16]https://www.ifla.org/files/assets/environmental-sustainability-and-libraries/GreenLibraryChecklist/greenlibs_checklist_english-german.pdf
