

TRANSFORMATION OF MODERN LIBRARIES INTO GREEN LIBRARIES TO ATTAIN SUSTAINABILITY

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The concept of green library is very popular now a day. There has always been a focus for bringing about developments in a sustainable way by every nation. Sustainability has to be achieved in greater depths including the academic regime. Libraries which serve as the collection house of all kind of records shall be made green so that they can be made sustainable and harmless to the native environment. Purpose of this paper is to study the concept of Green Library, its importance, how to achieve it and the role which could be played by modern era Librarian in achieving it. The author in the present study has reviewed literature about Green Library and LEED standards to present a better picture of the Green Library concept and the role of Librarian therein.

Keywords: Green Library, LEED, USGBC and sustainable library etc.

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INTRODUCTION

Green library refers to a library which is designed to reduce negative impact on the natural environment and upgrade indoor environmental quality via proper site selection, consumption of natural and eco-friendly construction materials and biodegradable products, conservation of natural resources like water and other resources like paper and energy and responsible waste disposal or recycling etc.

According to New World Encyclopaedia, “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 utilisation but also preserve libraries and its materials for future generation.

The Online Dictionary of Library and Information Science (ODLIS) defines green library “green/sustainable 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 like water, energy, paper, and responsible waste disposal recycling, etc.” So this means green library include green and natural steps like careful site selection which maximise indoor environment quality, use of natural resources in construction of library building as well as it involve conservation of natural resources like water, energy, and paper etc.

HOW TO MAKE LIBRARIES TO GO GREEN?

There are various paths to achieve sustainability in the libraries and LEED (Leadership in Energy and Environmental Design) rating system is one of them and it was developed by United States Green Building Council (USGBC) in year 2000. LEED works for all buildings, from homes to corporate headquarters and at all phases of development. Project pursuing LEED certification earns points across several areas that address sustainability issues. Based on the number of points achieved, a project than receives one of four LEED rating levels: Certified, Silver, Gold and Platinum. LEED certified buildings are resource efficient and they consume less water and energy and also reduce greenhouse gas emissions.

LEED uses 5 different categories to judge a building's sustainability:

- Σ Site location
- Σ Water conservation
- Σ Energy efficiency
- Σ Materials
- Σ Indoor air quality, and
- Σ A bonus category for innovation and design

Site Selection

- Σ The first step towards building green library building is selection of site where the library is to be constructed.
- Σ The proper examination of site is necessary for reduction of the pollution from the construction activities
- Σ The site should not include sensitive and restrictive land type
- Σ An erosion and Sedimentation Control Plan should be created during the design phase of the project to control soil erosion, waterway sedimentation and airborne dust generation
- Σ The techniques such as temporary and permanent seeding, mulching, earth dikes,

silt fencing, sediment traps and sediment basins should be employed

- Σ The selection of urban site should protect green fields, need of cutting trees and preserve natural habitat with no need of new infrastructure for channel development.

Water Conservation

- Σ To conserve water the prime responsibility is to reduce the use of potable or drinking water in construction activities
- Σ The use of natural surface water should be avoided for landscape irrigation available near the project site
- Σ The captured rain water and recycled waste water could be used in place of potable water
- Σ The plants for vegetation should be used which have less irrigation requirements and native or adaptive qualities
- Σ Design the building sewage system which uses waste water or non-potable water. A water tank could be designed for storing rain water, recycled grey water, or treat water for sewage conveyance
- Σ Use of waste water for plantation or plant irrigation
- Σ Implement occupancy sensor in tap system to reduce wastage of water

Energy Conservation

- Σ Design the building envelope which have less power requirements and give high energy performance
- Σ Proper ventilation system should be designed in building for fewer requirements of lighting and air conditioning
- Σ Use of energy sources which are non-polluting and renewable energy potential like solar, wind, geothermal, low impact hydro, biomass and bio-gas strategies, etc.

- Σ The maximum input of the energy in building should be through renewable sources
- Σ Use heating, ventilating, air conditioning and refrigeration (HVAC&R) systems and associated controls
- Σ Lighting control system and use of day light could be initiated
- Σ Use HVAC equipments that use no CFC refrigerants and identify existing CFC refrigerants and provide a replacement schedule for them
- Σ Maximize use of the instruments which use less power

Building Material

- Σ For the construction of green building the eco-friendly material should be used. The material used in construction process should not harm the environment.
- Σ Strategies like reuse of waste material and production with least waste should be implemented
- Σ Use of fast renewable resources should be promoted wherever possible
- Σ Natural materials are generally less toxic than artificially produced material. They are less harmful to the environment and do not produce any toxic material in their processing
- Σ Use of locally available material can reduce the cost and pollution in transportation
- Σ Natural materials are less poisonous to the construction workers and building inhabitant. Some building materials, such as adhesives, emit dangerous fumes for only short time during and after installation, other can contribute to air quality problems throughout a building's life
- Σ Maximum utilisation of recyclable material should be done

Indoor Air Quality

- Σ Proper ventilation system should be design for good air quality
- Σ Implement the natural techniques to improve indoor air quality (IAQ) of building for health and comfort of building inhabitants
- Σ There are various plants which filter air of the building like spider plant, it absorb contaminants present in air. House plants like Aloe Vera, Boston fern and English ivy are also very effective in removing chemicals and biological compounds present in air
- Σ Air filters can also be used to entrap some air pollutants
- Σ Air quality monitoring system could be implemented to track on ventilation system and feedback about the performance
- Σ Prohibit smoking activities in building

Other Green Library Elements

- Σ Community Collaboration
- Σ Green roofs
- Σ Day light
- Σ Installing solar panels
- Σ Green materials
- Σ Raised floor system
- Σ Energy efficiency
- Σ Natural ventilation
- Σ Green power and renewable energy
- Σ Indoor environmental quality

Why Green Library?

- Σ Green libraries are very popular now a day because its urgent need in current environment full of pollution and toxic material. Emergence of new technologies and instruments raise the risk to environment and which raise alarm to save the earth as quickly as possible. Green library not only

saves the earth but also help in achieving sustainability.

- Σ Green library give pleasant atmosphere to the current users and also serve information needs to future users.
- Σ Green library means eco-friendly library which attract all type of users
- Σ Green library gives a beautiful and pleasant environment
- Σ Green library enhance better quality of life
- Σ Green libraries provides better health (physical as well as mental)
- Σ Green libraries help in saving earth for future generation
- Σ Green libraries help in saving resources like electricity
- Σ Green libraries helps to save paper, thereby trees
- Σ Apart from these above mentioned advantages of green libraries, there is another most important factor which influences libraries to adopt green library standards which is that it helps in achieving all five laws of library science.
- Σ Books are for use and green libraries promoting use of books by saving natural resources as well as environment
- Σ Every user his/her book- every user which exist currently as well as future users, all users should get books of their choice and green libraries enhancing sustainability which helps to fulfil this law of library science
- Σ Every book its users- every book which is available is of use of someone, today or tomorrow. So resources should be preserved for all
- Σ Save time of the users- green library design not only save resources and energy but also save time of the user

- Σ Library is a growing organism- most important achievement of green libraries is to satisfy fifth law of library science. It enables libraries to grow smoothly and enable to make changes without any hindrance in library building.

REVIEW OF LITERATURE

The author found the major VGS defects are issues concerning fallen leaves and dirt accumulation, safety issues during cleaning and repairs, insufficient maintenance access and unavailability of natural resources etc. Achini (2018) has observed that the construction cost of building of a green library is 37% higher than that of a similar natured conventional building but the end life overall cost saving is 21% higher in green building. Hence it has been stated that green library involve initial cost but save cost in the future run. Adetoun (2018) has studied the tools for greening libraries as a great public space cannot be measured by its physical attributes alone, it also serves people as a vital community resource in which functions always trumps form. Bhattacharya (2017) has explained various standards for green libraries, major green library initiations in the world, role of librarians and how awareness about green library can be created etc. Haipeng (2017) in his research explored the sustainable learning environment at University of California (UC) Merced Library, showing that the library is built to support active and constructive learning through its sustainable design as an open, collaborative and welcoming learning environment. M.Y.L. Chew et al (2017) have found that there is little research on maintenance of green buildings. These Researchers have worked on practices and methods concerning building maintainability and facilities management in green buildings. Nikam (2017) has highlighted the concept of green library, its features and elements. He has also emphasized on the role of modern librarian in the process and has mentioned some useful suggestions to

implement green library concept. Sornasundari and Sara (2016) have pointed out various benefits of green library buildings. They have suggested for focussing on sustainability of resources by greening existing library facilities and by providing green library services to users. Shah, Sudhir Kumar and Shah (2015) have described the term “Green” and the various challenges being encountered by librarians to implement the Green Library project. They have also iterated green libraries initiatives and the step taken by TERI in developing GRIHA. They have also suggested for implementing proper planning of buildings with solar energy system and roof water harvesting etc. Antonelli (2008) has explained the benefits of green library for future generation, concept of LEED, various green library programs. He has also discussed about some green library courses and has provided information about green library associations.

What Role Librarians Have to Play in Green Libraries?

- Σ Librarians have always been a key contributor to community learning efforts and it is also appropriate that they take a leadership role in sustainability movement.
- Σ Librarian motivate users to participate in green library project by introducing them with the benefits of green library
- Σ Librarian should adopt green library standards to design library building so as to achieve sustainability and thereby facilitating growth of the library in an eco-friendly manner.
- Σ Librarian by adopting green library design adds to reputation and overall image of the Library
- Σ Librarians can effectively handle to the budget involved in the setting up and routing working of the library to support the organisation because of green library system.
- Σ Librarian may play an important role to bring out a balance of the two parameters i.e. economy and ecology which are very crucial for making healthy, prosperous and sustainable libraries.

GREEN LIBRARY INITIATIVES IN INDIA

India is a developing country and it is the second highest populated country in the world. With such huge population, the country is facing problems such as pollution, diminishing resources, poverty and employment and environmental degradation etc. which are issues of concern. In this scenario, more emphasis is required to be given on recent emerging issues like hygiene, conservation of natural resources and focussing upon sustainable developmental policy through environmental awareness. The concept of sustainable development and conservation of environment is not localised and it penetrates to all spheres including the academic regime. The Energy and Resources Institute (TERI) has been at the forefront for initiating green library movement in India. Necessary guidelines have been issued to all academic buildings including libraries to ensure the compliance of GRIHA (Green Rating for Integrated Habitat Assessment) norms. Indian Green Building Council (IGBC) which was established in 2001 provides various services such as certification services, green building rating programs, and green building training program for promoting green buildings in India. LEED has also collaborated with other rating standard/systems to further accelerate implementation of green building projects in India.

Many of the Indian Libraries have already started on conceptualising and implementing provisions for natural lightings, energy savings, provision of natural air, cleanliness and proper disposal of waste products of libraries etc. India's first and Asia's largest LEED Gold rated library Building has been established at Anna Central Library at Chennai. Some other Libraries of India that have implemented the concept of Green Library includes libraries at

NIT, Silchar, University of Delhi Library, Karnatak University Library, Perna Karpo Library situated in Ladakh in Indian Himalayas and Madras University Library etc.

CONCLUSION

Modern trends in Libraries is not just exploring latest tools or technologies for storage and retrieval of information/documents etc. but is also to provide for sustainability of the libraries in a eco-friendly manner. The concept of Green Library is very important for both the user and the library itself. Green Library is either less harmful or harmless at all to our environment hence it is a kind of system where technology and environment go side by side to achieve sustainability. Librarians being an integral part of the library have an important role to achieve this kind of sustainability through Green Library. Every Library should adopt this concept and every librarians and all other belonging to the community should be well aware of this concept.

Green library is an emerging concept because of its various benefits and significance to the society. Some of the advantages of Green libraries are reduced cost of energy consumption, water conservation, solar energy utilisation and environment friendliness. Green library helps society from the harmful implications of a conventional library system which could be pollution, unmanageable waste and degradation of natural resources and environment. Therefore, concept of Green Library focuses more on enhanced use of natural resources like natural lightings with the help of windows to the reading rooms instead of artificial light like bulbs and tube-light etc., utilising bio-degradable materials in the library premises such wooden racks instead of plastic materials, utilisation of electronic media instead of print media to avoid wastage of paper, utilising solar energy etc. Thus, in a way green libraries are boon to the society.

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