



Strategic Leadership and Role of Library and Information Centres in Environmental Sustainability: An Overview of Green Technologies

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Abstract

Library and information centres are not only preserving the legacy of scholarship and documenting important human contributions to knowledge, but are also disseminating knowledge resources with their systems and practices in ways that facilitate quick access to most appropriate knowledge resources that users are looking for. Library and information services are humanism in practice and thus libraries must contribute to an important issue of human concern such as environment sustainability through knowledge based interventions, and by bringing about awareness of environmental issues and existence of green technologies. Identifying smarter technologies and methods which are environmentally benign and sustainable is need of the hour. There are plenty of electronic gadgets and smart applications available to control resources waste. Libraries and information centres should play a strategic leadership role in their institutions and surroundings for adoption and absorption of green technologies and dissemination of information on environment sustainability. In partnership with the IT department, green technology programs such as energy saving software can be tested in the library and labs that save energy can be set up. Green information literacy is key to foster awareness of information resources on environmental sustainability, green technologies and green initiatives. Library and information centres therefore should not only act as testing beds and teaching tools but also a trigger point for green initiatives. This paper projects an overview of green technologies and through extensive literature survey and analysis portrays the role of library and information centres in environment sustainability. Discusses various approaches for green initiatives and highlights the need for green information literacy.

Keywords: *Environmental sustainability, Green technologies, Green libraries, Social responsibility, Strategic Leadership*



1 Introduction

Modernization, advancement and development of our society are important but it is equally essential to protect our environment and human ecological systems. Libraries play an important role in providing access to knowledge resources, rendering information support services and development of social capital. They preserve the legacy of scholarship, document the worthwhile human contributions to knowledge and disseminate existing knowledge resources through their established systems and practices and state of the art technologies. Through their interventions of knowledge based services and green information literacy campaigns, libraries can contribute their share of protecting the environment and developing sustainable societies.

Environmental damage is a worldwide problem that just keeps getting worse and needs to be addressed immediately. A sustainable society is one that ensures the health and vitality of human life and culture and of nature's capital, for present and future generations. Such a society acts to stop the activities that serve to destroy human life and culture and nature's capital and to encourage those activities that serve to conserve what exists, restore what has been damaged, and prevent future harm (Viederman ,1993).

Too many different activities for societal modernization ranging from deforestation, increasing volume of e-waste, ruthless use of chemicals in agriculture and household and growing emission of greenhouse gases are leading to environmental damage. Environmental problems such as climate change, pollution, non-sustainable energy, resource depletion, and recycling Information Technology (IT) devices considered the biggest glitches which are facing developed as well as developing countries. IT devices have become a critical issue due to the great amount of environmental damage caused by IT companies from consumption of resources, raw materials, energy, and waste disposal. To tackle this problem, sustainability strategies have become crucial in Information Technology (IT) organizations--private and public (Albahlal, 2016). Presently the ongoing human activities are leading to more environmental damage than the efforts being made for its protection. A massive effort is required on the parts of all professions, institution and individual to shun activities that damage the environment and transition to green way of life. Sustainable environment is a huge challenge. Merely efforts of some green enthusiasts here and there cannot ensure the tangible results and desired impact. Environment protection and green way of life should be in the human conduct and action.

When the term "green" is used to describe a product or way of life, it means "environmentally friendly." Followers of the green movement believe that by reducing their own usage of resources, they can reduce their negative impact on the environment and influence culture to the same ends. The green movement has spread from individuals to companies and businesses as well, with these organizations consciously choosing a more green way of doing business. People can build green houses, drive



green cars, use green technology, and purchase green food, among many other things (Lyon, 2010). Green is largely becoming a standard term to denote processes, products, services and technologies that in one way or the other integrate with them the environment care and protection. Green word can be used to denote that the technology is environmentally benign and sustainable; the technology is intended to contribute the solution of some environmental problem or at a minimum, it should perform better than alternative “non-green” technologies” (Smith & Granqvist, 2010). A number of learned societies and associations have already started green initiatives e. g. American Chemical Society has Green Chemistry Institute which catalyse and enables the implementation of green chemistry; American Library Association has Sustainability Round Table.

2. Why libraries need attention?

The general perception about libraries is generally that they house only books and some computes terminals. Libraries, however, consume a large amount of energy that contributes to the global warming problem. For instance, library buildings, for the most part, were built before knowledge of global warming and climate change was widely recognized. A library houses high end computer printers, fax machines, network printers and photocopiers. All these machines have an environmental impact using ink, paper, and electricity (McElrath& Sutherland, 2015). Libraries are also having data centers that maintain servers that store OPACS and databases.

Even though, considerable amount of information is available in digital form, the major chunk of information is available in printed form. The pulp and paper industry is the third largest industrial greenhouse gas emitter. “71% of the world’s paper supply comes from natural forests. 125 million trees in 2008 were harvested for the U.S. book and newspaper industry (Callicott, 2010).The paper cycle involves a broad range of natural resource and environmental impacts because fibre supply relies on trees, paper manufacturing requires fuel inputs, and paper waste disposal can contribute to emissions of the potent greenhouse gas (GHG), methane (CH₄). In some countries, the paper cycle may be seen as a net sink for GHG because of reliance on renewable wood by-products and the maintenance of forest plantations (S. Subak, 1999). Libraries consume enormous quantities of energy for user services and comfort, content creation and preservation. They produce considerable waste, particularly in the use of energy, water, computer paper, and used electronic equipment.

Additionally, electronic and hazardous waste is growing drastically, causing a major disparity between the goals of library sustainability and the reality of their daily operations and services. Every library shipping room constantly receives new books, periodicals, interlibrary loan orders, publisher catalogs, approval plan slip orders, correspondence, and a variety of other mails. Furthermore, each library throws away weeded and unneeded print books, government documents, magazines, newspapers, bound periodicals, microfiche, junk mail, office computer paper, and general waste. As the number of digital projects and networking functions escalates, libraries are faced with increasing energy costs, as well as the need to recycle unwanted equipment, obsolete computers, CDs, disk drives, and used computer paper (Jankowska & Marcum,



2010). Libraries therefore are increasingly facing the challenges of e-waste management and must have policies in place to protect their environments from the harmful effects of such materials.

Green libraries and green information services are a new buzz concept to stay ahead in environmental issues. The concept of go-green technologies calls upon library & information professionals to follow ethical and green practices while dealing information products and services. In addition to this, libraries need to support the mission of their organization and therefore must also play their part in sustainability education, operations and outreach activities. Nonetheless, the phrase “green library” colloquially refers to a library building that is certified as an environmentally friendly building” (Aulisio, 2013).By adopting green technologies and creating a sustainable ambience and maximum use of natural light, libraries should set examples for environment friendly practices in their institutions and areas they serve.Libraries serve as symbols of the attitudes and values of their creators and can serve to extend those attitudes and values to future generations of occupants and visitors. Communities with the opportunity to build a new library or update an existing mentally responsible library should prioritize sustainable design measures” (JohannaSands, 2007)

The building design be such that it may fully or partially use renewable energy sources, if possible plan for rain water harvesting, provide maximum natural light and ventilation, adequately landscaped green surroundings, minimum radiations and pollution, environmental friendly furniture and fittings, adopt energy saving measures, ensure maximum comfort, convenience and minimum stress to library users. For instance, Anna Centenary Library Kottupuram, India is considered as the largest green library and most sustainable in Asia. This library uses natural light for most of its reading spaces, research and meeting halls. The Yogananda Library, Shoolini University, India uses its large central courtyard that puts uniform indirect light into all parts of the built floors as well as help control temperatures and climate inside the building (Qutab, Ali & Ullah,2016). Standards and rating system are also in vogue to ascertain to what extent structural of a building follow green building norms.In developed countries now new construction and library renovation, sustainability is increasingly achieved through LEED (Leadership in Energy and Environmental Design) certification, a rating system developed and administered by the U.S. Green Building Council (USGBC).

3. Various approaches to green initiatives

3.1 Social and Cultural

Social media is considered as one of the very powerful tools that have helped people to become greener, in the recent years. Social media has different advantages, such as allowing people to share information and ideas using a computer network (Albahlal, 2016). For instance, making a virtual meeting using social media will prevent people having to travel, reducing travel expenses and environmental resources. Many corporate



companies have become active users of social media in communicating their sustainability change initiatives as part of their corporate social responsibility. In addition, lately social media creates new business environments for users, which reduce high expenses for small businesses. As developing countries are highly concerned by e-waste problem and they need to exploit Green-IT opportunities and can contribute to economic, social and environmental benefits. Telecommuting technologies implemented in green computing projects have advantages like increased employee satisfaction, reduction of GHG emissions related to travel.

3.2 Green building – Material, design, performance technologies

A green building is one whose construction and lifetime of operation assure the healthiest possible environment while presenting the most efficient and least disruptive use of land, water, energy and resources. However, many of modern day construction and powering of buildings are damaging its ecosystem, oceans, lakes, forests and fields. There are plenty of threats to people, animals and plants. Our whole ecosystem is under threat. Such a situation is an unprecedented challenge for humanity as a whole. There are several categories of standard of green building certification systems such as G-SEED, LEED, BREEAM, CASBEE etc. For example, LEED™ gives credit to projects that show that they have reduced the resource consumption of the building by specifying products that are renewable, recycled, salvaged, certified wood, or that are low-emitting materials. This impact category of LEED™ also is concerned with appropriate waste management during construction of the building and during operation of the building. By putting an advanced plan into place for the effective recycling and salvage of building materials during construction, projects can reduce significantly the burden placed on landfills, as well as reducing the demand for raw materials for use in new materials (Kumar, 2014).

3.3 Energy savers and renewable energies

Energy is a prime necessity in all sections of society. The energy used in buildings is the largest. For example, as reported by the UNEP (2007), worldwide about 30 to 40% of all primary energy is used in buildings. About 70% of the electrical energy in the US is spent in buildings. Extreme climatic country like Kuwait more than 75% of the primary energy goes into buildings (Smith & Granqvist, 2010). May it for heating, cooling, lighting, or ventilation, demand for energy usage is increasing. A typical computer running for a day creates 494 kg CO₂, hosting a mere 10 MB of data produce two and half kilos of CO₂, the energy consumed by servers and data centres doubled over five years' time and the internet consumes between 170 and 307 Giga Watt of electricity which is equivalent to 11 to 19 % of the total energy usage of the humanity (Kurbanoglu & Boustany, 2014). Installing solar panels, geothermal wells and similar technologies is a necessity for generating alternative energy. For example, the Peru Free Library generates 200 watts of electricity, and the library actually produces and sells electricity back to its funding agency NYSEG (Collie, 2016)

3.4 Green IT - gadgets and apps



Green IT is a set of practical measures designed to ensure that Information Technology is developed, delivered and used in a way that is environmentally friendly, sustainable and energy efficient. It is also called as green computing. The major issues dealt in this are energy efficiency in computing and promoting environment friendly computer technologies.

Environment compliant purchasing is another area of fulfilling sustainability goals; libraries can procure IT equipment and other infrastructure products based on both their power consumption efficiency and their embedded emissions. Use of standards such as EPEAT and ENERGY STAR will help with buying decisions. Some of the areas include, prolonging the life of IT equipment, making duplex printing as default mode, opting to cloud computing as software as a service (SaaS), auto-turnoff of unused gadgets and recycling of IT consumables. At organization level green IT must be made a high priority agenda with top level management. For example, **University of Utah** has its own environmentally preferable purchasing guidelines. These guidelines support and facilitate the purchase of products and materials that minimize the harmful effects to the environment from their production, transportation, use and disposition.

Saving natural resources now made easy for green lovers. There are plenty of electronic gadgets and smart apps available to control resources waste. For example, LED light bulbs which consume very low energy compare to traditional light bulbs and even LEDs last for 25 times longer. As economic viability one can also choose compact fluorescent bulbs (CFLs) along with motion sensors installed. As reported in the Huffington Post (2014) “One smart light, the recently introduced Stack Alba smart bulb, changes brightness or turns off based on the time of day, how bright the room is and whether or not someone is home. Its developers say it will learn users' habits and respond accordingly. The Philips Hue is a similar LED bulb that lets you use an app to control your lights. You can even send a text message to tell your lights to turn off!” Smart devices also help in “vampire load” by disconnecting the power supply to unused or switched off devices as energy saving measure”.

Some of the sample mobile apps which help in green solutions are given below:

- a) Green Meter which tracks car's power use and fuel economy. GreenMeter can even let the driver know if his driving habits are environmental friendly.
- b) Ecorio can help in tracking “carbon footprint” by keeping track of where one travels. It can even plan trip to make as “environmental friendly” as possible, compares carbon footprint to the national average, and acts as a guide for a trip and even suggests purchase “carbon offsets” from a smartphone in support of green initiatives.
- c) Rippl gives free green tips each week, each coming with a customizable alert so that one can not only live greener, but also save money. For instance, it reminds you to grab your bags before leaving the house, bring your own mug when you go to your local coffee house so that you can get a discount and other offers from the shop.



- d) Safe Sushi - With the Safe Sushi app, one can keep track of which kinds of fish have the highest mercury levels and choose right sea food.

3.5 Daylight harvesting

More than ever, utilizing daylight in libraries is becoming a priority not only for aesthetic reasons, but also with the intent to save energy and costs. Lighting in libraries is important for several reasons. Library users obviously need sufficient lighting for reading books or text on a computer screen. Design considerations must include avoidance of excessive contrasts with may cause visual fatigue. The amount of light as it changes over the course of a day and through the changing seasons must also be considered in an attempt to keep the levels of light as consistent as possible (Dean, 2004). Roof monitors, skylights, and wall apertures are some of the design features used to improve the quality of natural lighting in libraries.

Use of day light sensors will helps in reduced energy consumption and controls the lights in day lit spaces. Using photo sensors in day lit spaces to control dimmable ballasts will allow a system to work without being actively operated by occupants. The importance of dimmable ballasts is in the way that the system operates on a cloudy day. With dimming lights, the change would still be in response to ambient light levels, but it would be subtle and not distracting to occupants, as well as consuming less energy in the turning off and on (Kumar, 2014).For example, the Tuscarawas County public library in collaboration with AEP, Ohio, USA has started lending out a device called Kill-A-Watt to its users which can assist consumers in making energy conservation decisions in their homes (Tuscarawas County Public Library).

3.6 Space management through alternative transportation

Arranging car pool schedule for interested library employees and users and limiting automobile use by reducing available parking space are other substitutes for space management. For example, use of bicycles and electric car with charging stations, promotion or subsidy of alternative forms of transportation for employees, such as carpools, fuel efficient vehicles, cycling, or mass transit mechanisms will largely help in controlling greenhouse-gas emissions.

3.7 Healthy atmosphere through microclimate

Libraries exist and function in a wide range of climatic conditions and some of them confront different climate conditions such as extreme heat in summer and very cold climate in winter and excessive rain during rainy reason. The very structure of the building and some additional measures can help to naturally create a microclimate in the library to facilitate comfortable climate conditions inside the library. In predominantly high temperature areas, raising the height of ceiling of reading room helps and rain water harvesting tank on roof may help to cool the reading area to some extent. Additional water bodies in the library premises, landscaped plantation and underground parking may help to create cooler atmosphere near the library. Imaginative building



planning and adoption of green technologies, vegetated roof may also help to create desired microclimate in the library.

3.8 Water management and recycling technologies

World population's demand for water is increasingly exceeding the ready availability of water. Management of water resources is thus the greatest challenge for environment sustainability. At some places, we face floods because of excessive rain and storm water; at other places conditions like drought are witnessed. Besides overall management of resources at the national level, water resources require to be adequately managed at institutional level. Techniques of water harvesting and storage and its use for varied purposes, can help institutions to be self-sustaining.

Use technologies or practices to reduce or eliminate the creation of waste materials as a result of various operations, which includes: collecting and reusing or recycling waste materials created as a result of establishment's operations; bans on plastic, shifting from paper to digital (digital record keeping), usage of bio-degradable plastics, sustainable innovations like usage of robots in recycling of concrete buildings and 3-D printing has opened up doors to manufacturing that were never before thought to be opened: from commercial use and mass-production, even down to more private, personal use at home. 3-D printing technology might even be able to build a house in a day (Szaky, 2014).

4. Action plans

4.1 Basic awareness programs, training and environmental literacy

Awareness is a key to participate in green initiatives. Systematic learning may require becoming a fully green literate individual. Even many of us on day to day basis informally contribute to green initiatives, but never aware of our contributions in green initiatives. Nevertheless, applying green practices in library and information systems and asking users to practice is not an easy task. Libraries are central to students' academic investigations; the work of librarians in embedding information literacy across the curriculum is an obvious place to transform the practices of knowledge inquiry (Stark, 2011). Using the library as a teaching tool and employing alternative education techniques in the building to raise awareness and promote more sustainable lifestyles can be useful. Libraries have a strong educational dimension such as user training, informational literacy, and reference services. Incorporating sustainability into the training activities can also foster its promotion and dissemination of knowledge about it.

Information literacy has close connection with sustainable literacy. Information literacy helps accessing and selecting the most relevant, current and reliable information sources to make well informed decisions on environmental issues. Information on various sustainable practices to be followed in an organization has to be structured and



disseminated through proper channels. For example, such information may include; types of plastic and its hazardous chemicals, water recycling methods, importance of water usage and tips, and printings involved on day today operations like power point presentations, letters, datasheets etc. Libraries need to be dedicated to recycling educational materials, which are no longer a part of the collection, in the most sustainable way possible. Recycling is an important process, but it is not enough to combat environmental issues.

Libraries can make greener purchasing decisions through policies as discussed in earlier sections, however, by using an app like *Good Guide* or *Ethical Barcode* which not only help, support library policies but also help in fine-tuned green purchases. These apps collect data about companies to help you sort through which products are actually green, compliant and which ones are just pretending. In addition to these, library professionals can provide training in responsible and sustainable use of libraries in all the academic programs. Libraries can use display boards or screens to educate the public about sustainability. For example, the Fountain dale Public Library in Bolingbrook, IL uses digital displays throughout the building to describe its green features. Each slide includes information about a particular technology as well as how many LEED standard credits the library earned for that feature. Information literacy instruction is a good opportunity for libraries to help users to shift their thinking towards sustainability. Public libraries are institutions supported by the government, therefore they should be the first institutions to incorporate principles of sustainability and turn themselves into models of green cultural facilities in the country. "Green Room" project of the Ministry of Environment (MMA), Brazil which began in 2000 with the aim of encouraging the implementation of social and environmental spaces that act as potential informational and environmental education centres with an aim of availability and democratization of environmental information. According to MMA the country has 363 green rooms in spaces such as universities, city hall facilities, associations, community and public libraries, among others (Cardoso & Machado, 2015).

4.2 Digitization of collection and sharing of resources

Although digital resources have larger impact on usage and accessibility of information, but it has negative environmental impacts due to energy use and the need to recycle electronic devices required to use them as well as use of computer consumables. As a solution to this, encourage positive responsible behaviours to users on consumption of paper, ink and toner. For example, Green Print a software that removes space and unnecessary images. And Eco-Font is a font face for text with tiny holes to reduce ink usage by 20% without much impact to readability. Promotion of use of open access resources, consortia models, more effective ways of resource sharing, policies encouraging just in time collection development can also be helpful.

A number of libraries are digitizing their uniquely held collections and acquire knowledge resources in digital forms. Hiring reliable cloud spaces for storage and quick access to such resources will be helpful. Forrester estimates that worldwide



spending on public cloud computing services will grow from \$25.5 billion in 2011 to \$160 billion in 2020, a 22 percent annual growth rate. Businesses are increasingly substituting cloud-based for internal resources to capture benefits like faster scale-up/scale-down of capacity, pay-as-you-go pricing, and access to cloud-based applications and services without buying and managing on-premises infrastructure. Cloud infrastructure addresses two critical elements of a green IT approach: energy efficiency and resource efficiency (Mines, 2011).

4.3 Simplified in-house operations and processes

In large libraries, administrative activities generates and handles a large amount of printed documents that along with the printed collections, makes them the main source of carbon footprint and waste generation in libraries. This can be reduced by implementing e-offices, re-designing of library operations and processes, implementing Lean concepts and creation and maintenance of open access repositories. Reengineering library system and revamping the library procedures using green concepts and technologies is also desirable.

4.4 Maintenance of library buildings

Maintenance and cleaning library premises without toxic and harmful chemicals, raising awareness among staff and users for a responsible usage of the building and installing environment friendly furniture projects are the areas to be dealt in green buildings. For example, WeBike – pedal for library furniture is a new innovation for library furniture, this type of furniture will have a pedal to recharge devices like smart phones in thirty minutes of time. WeWATT is a Belgium Company which has created these combo-desk-WeBikes (Going Green, 2014). Restructuring of library buildings using green technologies, incorporating energy saving measures, minimizing wastage of resources without hampering quick access to knowledge resources, efficiency of services and convenience of users should remain an ongoing process.

4.5 Collaboration with internal stakeholders

“As an example, when a marketing professor assigns an in-depth sustainability project, the library has an opportunity to play the role of “client.” Marketing majors will have insight into the minds of their peers and could design effective ways to energize the library’s sustainability outreach efforts. Possible marketing opportunities include the use of duplex printing, loaning library iPads for students storing class readings rather than printing, and, if your library has a coffee bar, offering the same discount most coffee shops provide when bringing a reusable mug” (Going Green, 2014).The library and the IT department can work together to test green technology programs in the library, such as energy saver software and developing lab infrastructure that saves energy.



As the LEED certification is an important standard that indicates whether a library is green enabled or not, education is a key component for LEED understanding. As a practice, many LEED certified libraries publicizes list of the green technologies used in their building projects and other service areas. Some are sponsor programs related to the green buildings and include permanent displays in the library to explain how the technology works. For instance, the Fayetteville Public Library went beyond these basic techniques to not only improve the sustainability of their operations but also become a community test bed for a renewable energy project. In such a scenario, especially public libraries, largely help to build sustainable communities because they focus on aspects of sustainability and foster equity by being a centre for community activities (Barnes, 2012).

4.6 Library information professionals as change managers

Embedded librarianship takes a librarian out of the context of the traditional library and places him/her in an “on-site” setting or situation that enables close coordination and collaboration with researchers or teaching faculty” (Carlson & Kneale, 2011). To actively get into such roles, LIS professionals must have conceptual skills, which mean, the ability to see the organization as a whole and it includes recognizing how the various functions of the organization depend on one another. It also makes the individual aware of how changes in any one part of the organization affect all the others. It extends to visualizing the relationship of the individual business to the industry, the community and the political, social and economic forces of the nation as a whole. Thus the manager gains insight into improving the overall welfare of the total organization (Ahmad & Yaseen, 2009). Library and information professionals can coordinate and create a think tank for knowledge services supporting green initiatives at the institution and its surroundings. Universities that have adopted villages for development/ community services can initiate green programs and through their knowledge interventions can make a marked change in such villages.

4.7 Performance measure of green initiatives

Green initiatives of libraries must be measured based on their programs and publish frequent dashboards on energy saving, waste cut down, waste recycling and other indicators related to green compliance. Energy dashboards and other energy monitoring software allow tracking of building energy use over time and provide data for measuring overall energy efficiency. They also make it easier to publicly report and display the building’s energy use over time, which visibly illustrate the building’s energy use to the public. These indicators shall provide details like the amount of water used annually by an average library, amount of solid and hazardous waste generated by a library, cost reduction effected by reducing energy, water, and paper use, percentage of daily library shipments received that end up in garbage bins, percentage of publisher catalogs produced on recycled paper, quantity of computer paper used per library employee and user, the amount of energy used per staff member and user, usage of environmentally friendly inks, cleaners, and recycled paper, paper and equipment recycling rates etc. For example, the West Vancouver Memorial Library’s energy



dashboard is available on their web site. It not only display building energy use in daily, weekly, monthly, and quarterly increments, but also translates those numbers into the length of time that the same amount of energy would light the Golden Gate Bridge which is a one mile wide suspension bridge between SFO and Pacific Ocean...Factually, these dashboards will help in visualizing the state of real time picture of green initiatives.

4.8 Corporate social responsibility (CSR)

The term "Corporate Social Responsibility (CSR)" can be referred as corporate initiative to assess and take responsibility for the company's effects on the environment and impact on social welfare. The term generally applies to company's efforts that go beyond what may be required by regulators or environmental protection groups. Corporate social responsibility may also be referred to as "corporate citizenship" and can involve incurring short-term costs that do not provide an immediate financial benefit to the company, but instead promote positive social and environmental change (Ministry of Corporate Affairs, Government of India).

The survival of the libraries both in the medium and long term depends on its economic feasibility, commitment with the environmental sustainability and socially responsible performance. Corporate social responsibility (CSR) covers the voluntary efforts of companies to address the social and environmental concerns of their stakeholders, including company shareholders, employees, the government, consumers, and the list goes on. As per National Library Board (2016) of Singapore, following are some of the many concerns which are predicted to become more important as far CSR is concerned;

- Climate change and water
- Corporate governance, disclosure and anti-corruption
- Enhanced role of governments
- Sustainable Procurement
- The UN Sustainable Business Goals and their relevance to business
- Stakeholder and employee engagement

We have examples of corporates helping public libraries in reshaping their structures; however, libraries should also revisit their library social responsibility (LSR) by implementing programs like green initiatives for sustainable development and participate in environment protection programs. For example, The Northern Ireland Library Authority (Libraries NI, 2015) has its own statement of corporate social responsibility. Its evidence supporting commitments clearly articulates environmental commitments with the following requisites, i. e environmental policy, annual sustainability report, carbon output monitoring scheme, vehicle procurement to latest Euro5 emissions standard, responsible disposal of electrical equipment guidelines, travel scheme, provision of communication systems to minimize staff travel, smoke free Workplace Policy, Energy Certificates displayed in Libraries, provision of efficient ICT systems to minimize use of computer consumables and provision of environmental information to library users. Hence, CSR must be part and parcel of doing services that



contributes to organizations' long term survival and at the same time offers value to a wide range of stakeholders.

5. Conclusion

Whether it is improving trash disposal or moving to bio-degradable library cards, it is worthwhile to look into options for greener libraries and foster a sense of green culture at organizational level (Collie, 2016). Nonetheless, every organizational setup has different rules and work culture, but it may be wise to check what is locally suited. To ensure larger contribution of libraries to the feasibility, reputation and responsible performance of their organizations, libraries would work together with their parent entity, take leadership role and participate in the critical strategies, plans and projects to drive the green initiatives. LIS professionals who are involved in green initiatives should make use of social media to disseminate information. The popularity and low cost of social media enables sustainability communicators to reach a large number of stakeholders simultaneously. This approach to social media use enables them to efficiently share information on events, policy issues, news stories, research, dashboards and innovative practices. Hence, libraries becoming promoters of sustainability and social responsibility initiatives, must try to integrate the components and initiatives which they started at libraries into the social responsibility strategies, plans and projects of their parent institutions. Combining such projects with public education programs strategically positions libraries to become community models for sustainability.

Libraries are playing an important role in development and advancement of human societies through preservation and dissemination of existing knowledge. They should step into the strategic leadership role of sustaining the natural environment by preserving relevant knowledge resources, creating think tanks, disseminating information on green initiatives, green technologies and best practices. Sensitising environmental issues, bringing awareness of consequences of environmental degradation, imparting green information literacy, coordinating the green activities, collaborating with environment departments and green enthusiasts, participating in sustainability focussed community services can be other roles for library and information professionals if they want to make greater societal contribution and have more recognition. If librarianship is humanism in practice, any service rendered for environment sustainability is service to the whole gambit of nature. Let us do something good for the good of nature.

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