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Going Green: Implementing Sustainable Strategies in Libraries Around the World

Buildings, Management, Programmes and Services

Edited on behalf of IFLA/ENSULIB by Petra Hauke,
Madeleine Charney and Harri Sahavirta

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About IFLA

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IFLA (The International Federation of Library Associations and Institutions) is the leading international body representing the interests of library and information services and their users. It is the global voice of the library and information profession. IFLA provides information specialists throughout the world with a forum for exchanging ideas and promoting international cooperation, research and development in all fields of library activity and information service. IFLA is one of the means through which libraries, information centres and information professionals worldwide can formulate their goals, exert their influence as a group, protect their interests and find solutions to global problems.

IFLA's aims, objectives and professional programme can only be fulfilled with the cooperation and active involvement of its members and affiliates. Currently, approximately 1,600 associations, institutions and individuals, from widely divergent cultural backgrounds, are working together to further the goals of the Federation and to promote librarianship on a global level. Through its formal membership, IFLA directly or indirectly represents some 500,000 library and information professionals worldwide.

IFLA pursues its aims through a variety of channels, including the publication of a major journal, as well as guidelines, reports and monographs on a wide range of topics. IFLA organizes workshops and seminars around the world to enhance professional practice and increase awareness of the growing importance of libraries in the digital age. All this is done in collaboration with a number of other non-governmental organizations, funding bodies and international agencies such as UNESCO and WIPO. IFLANET, the Federation's website, is a prime source of information about IFLA, its policies and activities: www.ifla.org.

Library and information professionals gather annually at the IFLA World Library and Information Congress, held in August each year in cities around the world.

IFLA was founded in Edinburgh, Scotland, in 1927 at an international conference of national library directors. IFLA was registered in the Netherlands in 1971. The Koninklijke Bibliotheek (Royal Library), the national library of the Netherlands, in The Hague, generously provides the facilities for the headquarters. Regional offices are located in Rio de Janeiro, Brazil; Pretoria, South Africa; and Singapore.

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Petra Hauke, Madeleine Charney and Harri Sahavirta

Preface

The ecological crisis is one of the biggest problems facing the modern world. It is therefore a key issue for everyone and especially for libraries to address. The Environment, Sustainability and Libraries (ENSULIB) Special Interest Group of IFLA states on its website: “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.”

The motto of the current IFLA President Glòria Pérez-Salmerón is: “Libraries: Motors for Change!” She explains: “The challenges facing the library field from ever-increasing globalization can only be met and overcome by an inclusive, global response from a united library field.” Green libraries with their emphases on environmentally sustainable buildings, services and programmes can in fact serve as “an inclusive, global response.”

IFLA has adopted the United Nations 2030 Agenda for Sustainable Development Goals (SDGs) that was endorsed in September 2015. It is therefore crucial that libraries develop a dynamic relationship around sustainable practices to achieve the SDGs. The so-called “Green Library Movement” is the consequent answer.

In 2017, ENSULIB organized a two-day satellite meeting at the Philologische Bibliothek at the Freie Universität in vibrant Berlin, Germany, entitled “Collaborative Strategies for Successful Green Libraries: Buildings, Management, Programmes and Services.” Participants came from all over the world, with contributions from Brazil, Cameroon, Finland, Germany, Kenya, Spain, Uganda and the USA. The winner of the IFLA Green Library Award 2017, the Stadtbibliothek of Bad Oldesloe, Germany, was also presented.

The papers submitted to be presented at the satellite meeting form the basis of this publication, supplemented by the best papers submitted for the IFLA Green Library Award 2017 competition, by papers from the Joint Session of ENSULIB and the IFLA Public Libraries Session as well as from the ENSULIB offsite meeting at the IFLA Conference 2017 in Wrocław, Poland, and by a research study on libraries’ sustainable practices at the Freie Universität of Berlin.

The editors thank everyone involved for their effort and hard work in making this book possible. To begin, gratitude goes to all the students from the Fachhochschule Potsdam (Potsdam University of Applied Sciences), who deftly organized the meeting as an example of project management within their university courses. ENSULIB also thanks the Philologische Bibliothek Berlin as the local host of the satellite meeting.

We also want to thank the authors of the articles and the photographers for providing their contributions. To the students from the Berlin School for Library and Information Science at the Humboldt-Universität we give kudos. They worked diligently throughout the winter semester 2017/2018 in constant contact with the authors, reviewing, editing and formatting their articles, addressing copyright issues and generally overseeing responsibility for all tasks involved in producing a professional publication. We also thank our colleagues Rebecca Diamond (Los Angeles, CA), Louise Jones (Hong Kong), Christie Koontz (Tallahassee, FL) and Karen Latimer (Belfast, Northern Ireland) and – last but not least – John Ryan (Dublin, Ireland) who helped with proof reading.

ENSULIB and the editors thank IFLA, especially the Professional Committee and Janine Schmidt, the IFLA Publications series editor, for accepting and indeed welcoming and drawing under their umbrella this IFLA publication on green libraries. Last but not least, a big thank you goes to Claudia Heyer and the publishing house De Gruyter Saur, Berlin/Boston, to encourage us to realize this publication and to include it in their program.

Harri Sahavirta

1 A Garden on the Roof Doesn't Make a Library Green

A Case for Green Libraries

Abstract: Catalysed by the urgency of climate change, this chapter provides a multifaceted definition of sustainability as applied to libraries. Drawing from a range of international projects, the reader sees how dedication to sustainability action has become more central and widespread in the library profession worldwide. Successful examples are drawn from IFLA's Green Library Award as well as other innovative programmes, services, buildings and projects based on increasing consciousness around environmental responsibility. Cultural factors are sensitively taken into consideration when defining success, recognising the variability of different countries' access to resources.

Keywords: Green libraries; Sustainability; Climatic changes; Community development

Introduction

Sustainability as an aim, driven by anxiety about climate change, has truly become a global phenomenon. Consequently, environmental awareness and sustainability have entered the centre of discussion in the library world. Let us think, for example, of the immediate success of the IFLA Green Library Award: 30 libraries from five continents submitted their green library project for the first annual award in 2016. The number of submissions has not decreased since then (Leyrer, in this volume) and one may well claim that libraries all over the world are therefore increasingly committed to environmental sustainability.

Despite this, no one has comprehensively defined what environmental awareness means for libraries. One might also ask whether a single definition would be possible when considering the varying conditions for the operation of libraries in different parts of the world. Cultural and social factors – even the climate and level of education – vary greatly from Uganda to Ukraine as well as Brazil to China and Finland. However, libraries everywhere should be allowed to call themselves green libraries if they undertake environmental work which has been successful.

Moreover, there are also general characteristics for sustainable libraries. The purpose of this article is to create an overview of these specific and common fea-

tures as well as perceive the essence of sustainability. The starting point may be Finnish public libraries and the environmental work undertaken in the Helsinki City Library, while examples are taken worldwide and introduce the green projects represented in this volume.

Growing Environmental Awareness

The libraries' environmental friendliness or sustainability forms a sort of temporal cycle. If, for example, we think of Finnish libraries 50 years ago, environmental friendliness and sustainability were dictated by circumstances. In the 1960s and 1970s, those living in previous wartimes remembered the scarcity of such periods, when the standard of living was not at all at the current level, with Finland and many other European countries relatively poor. The heating costs of housing and public buildings were minimised, everything possible was recycled, goods were not bought in vain and certainly not thrown out before their expiry date. The consuming culture of later generations – at home and work – was quite different. At the same time, the world was woken up in the oil crisis to find that natural resources are not unlimited and human beings are destroying their environment by polluting or, in the worst case, launching a nuclear war. For many libraries around the world, scarce conditions are still a matter of fact.

Since the 1970s, the trend has been twofold in Finland and elsewhere in Europe. Consumption habits have changed completely along with prosperity. Individuals buy more products, which are often packaged with needless amounts of cardboard and plastic. In everyday life a completely new category of essential commodities – computers, mobile devices and other technologies – has appeared, which consume electricity and have an unnecessarily short life cycle. Today considerably more waste is produced, with increasing amounts coming from information technology devices.

On the other hand, environmental awareness has grown. Scientists have studied the influence of human beings on their environment and the impact of pollution on humans. According to scientific studies, current carbon dioxide emissions are causing climate warming, which has a huge impact on living conditions (although the exact impacts of warming cannot be identified). Pollution is dangerous to health and plastic waste a threat to not only the oceans but also human beings. The increase in environmental awareness has led to a change of thinking and action at the individual level, as illustrated by a project at the University of Massachusetts Amherst Libraries called “Talking Truth: Finding Your Voice Around the Climate Change Crisis” (Chamey and Colvin, in this volume). At

national and international level, almost all countries are committed to the Paris Agreement (United Nations 2015) and the United Nations has recently released the Sustainable Development Goals (SDG), 17 goals to transform our world, to which, among others, the IFLA in the library sector is committed. The United Nation's goals also offer a platform for national sustainability programmes which libraries in Portugal are attempting to implement (Pinto and Ochôa, in this volume).

Scientific knowledge and understanding of environmental issues has increased. However, this information only reaches some people while others simply remain ignorant of environmental issues, which has always been the case in terms of scientific results. However, the new phenomenon in the Western world is a selective denial of scientific knowledge. While our lifestyles and achievements are largely based on the exploitation and application of scientific results, an ever-louder group of people selectively denies such information. The denial can be based either on religious beliefs, in which case divine revelation is believed to overturn scientific knowledge, or philosophical relativism, in which case it is held that there are no absolute truths and all views are equally good. In its simplest form, this argument points out that “there are other opinions”, seen recently when the United States broke away from international environmental work and in June 2017 announced it would cease all participation in the Paris Agreement. Scientific knowledge, however, is not a matter of opinion but based on well-founded, intersubjectively tested and peer reviewed research. If we present an alternative view to science, it must be at least as well founded and justified.

Consequently, there is plenty of well grounded environmental information, but it does not reach everyone. Some people remain ignorant, partly due to denying the validity of knowledge while others are simply negligent or thoughtless. It would therefore be natural to define the dissemination of environmental awareness and information as the task of green libraries. One might think that the library is an entity where reliable, relevant and up to date environmental information is easily found. The library could also be expected to promote environmental awareness and sustainability in their community. Librarians are professionals in information management, trusted as such, so are expected to not disseminate misinformation or “alternative facts”.

Sustainable Library – Green Library

However, the definition of the green library has not been built around reliable environmental information. Nor has it been said at the practical level that libraries themselves would have internalised environmental awareness – libraries, while

well placed to respond, are sometimes unintentionally negligent or thoughtless, but involuntarily so. This is why it is advisable to refine the definitions of green and sustainable libraries, but at the same time create a critical eye for sustainable activities and environmental awareness of libraries.

Sustainability is usually defined so that it includes economy, environment and equality. Sustainable development should therefore take account of economic considerations (saving resources), but the development should also be environmentally conscious. In addition, development should include a social aspect: it is not sustainable if it increases human inequality. The sustainable library's definition can be built on these basic pillars, with the author's preferred wording as follows:

Sustainability = Responsibility + Responsiveness + Respectfulness

Thus, the *sustainable library* takes seriously and responds to the various economic, environmental and social challenges our societies confront. Sustainable libraries should act responsively and promote responsibility in their community in every possible way, not just by sharing reliable information.

The green library has been considered as a narrower concept which focuses on the environmental impacts of libraries. This author's argument is that the green library should be defined more extensively to include environmental awareness (dissemination of environmental information), the environmental friendliness of the library in its building and own activities as well as wider community support (sustainability) (Sahavirta 2017).

Such a broad definition has not been the starting point for a green library debate. Environmentally sustainable, the green library is often defined as an energy efficient building. ODLIS does not use the term green library, providing a "see" reference to *sustainable library* which is defined as:

sustainable library:

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.). (Sustainable library n.d.)

Such a definition is, in a sense, very easy since the criteria of environmental-efficient buildings are simply applied to the libraries. It is evident that these criteria cannot be ignored. The environmentally friendly library should take into

account general heating as well as air-conditioning recommendations and save electricity, for example, in its lighting solutions. A marvellous example of such an ecological library building is *Sun Yat-sen Library of Guangdong Province* (China) where rain water is collected, solar power used to generate electricity and there is fresh air instead conditioned air. The greenness of the building is strengthened by a roof garden and lawns in front of the library (Huang and Chen, in this volume).

However, the weakness of this definition is that it applies in the same way to all buildings and therefore cannot be a defining feature of the green library, since it does not differentiate libraries from other buildings. Not all green buildings are green libraries and a garden on the roof does not make a library. Highlighting the criteria of the green building also means that most libraries operating in old buildings will almost automatically fall outside the definition. It is therefore worth considering whether we want such stringent criteria for the green library that few libraries are capable of fulfilling. This is taken into account in the Chinese example while the project also delivers educational projects in sustainability.

Nevertheless, the environmental friendliness of the library building also includes how the feature characteristics of the library are designed considering environmental aspects. In this way an added criterion can be that the public library building is centrally located and hence easily reachable by foot, public transport or bike. On the other hand, it can be presumed that the lighting and temperature of book warehouses – where no one is constantly staying – will be planned according to the usage. These are environmentally significant properties of the building but which are no longer common to all buildings, only libraries. However, old library buildings may still be relatively powerless in fulfilling these criteria as the library cannot decide how the surrounding city develops, or even how traffic in its neighbourhood is planned.

Establishing a green library definition for building features is also a double-edged sword, in the sense that energy-efficient buildings tend to contain a lot of technology. Solar panels and rainwater recycling are certainly environmentally friendly features, but, for example, computer-controlled air conditioning divides opinions. The technical problem is that the equipment consumes electricity, generates (hazardous) waste and is not very long-lived but rather ages quickly. This is the basic problem with all technology – we have to ask what happens to outdated devices.

If the debate on the green library is restricted to environmentally friendly and energy-efficient library buildings, it completely ignores how various areas are managed in the library. However, the library cannot be praised for its environmental friendliness if it does not observe key environmental practices and routines. The Online Dictionary for Library and Information Science definition

acknowledges this: green (sustainable) libraries must recycle as well as sort waste and save, among other things, paper and electricity through good practices.

Such practices can be required of a green library as a universally accepted principle. For example, this criterion is used by eco-labels, seen with how the Helsinki City Library's application for the EcoCompass eco-label for small and medium-sized enterprises (SMEs) was specifically assessed on how well the library paid attention to energy- and paper-saving, recycling, procurement ecology and, for example, the substances and processes used in cleaning (Ekokompassi n.d.). In a similar manner, at Freie Universität in Berlin, the green library project includes paper-saving, removal of plastic bags and energy-saving IT equipment (Landes, in this volume).

However, it has to be said again that environmental practices and routines cannot be a defining feature of the green library, as these are general requirements for green offices. The construction of the environmentally sustainable library must therefore begin by examining the building and environmentally aware practices but cannot be left at this level. Libraries must also find criteria suitable only for libraries and separate libraries from other actors, which can be a surprisingly difficult task. When we considered the appropriate and realistic criteria in Helsinki to demonstrate the environmental awareness of the library, we drew attention to the recycling of books withdrawn from the library, the amount of environmental information and timeliness of the collections, as well as the number of events increasing environmental awareness (Sahavirta 2013). In addition, of course, the eco-label required that the library created an environmental strategy for itself.

Green Library Environmental Strategy

Strategy and environmental management are an important part of libraries' environmental work, as they define the means of environmental work but also its objectives and responsibilities. In a way, environmental management is only possible when we know what is required of an environmentally aware library. Once the requirements are clear, corresponding goals can be set and a plan put in place for how to achieve them. It would be natural to assume that all libraries have an environmental strategy and environmental management is familiar as a concept. However, this was not the case in Finnish public libraries when examined in 2012 (Sonkkänen 2013, 128) as well as German academic libraries (Landes, in this volume). However, there has been an interesting opening in this direction in Brazil (Cardoso, in this volume).

In a certain sense, the lack of environmental strategies is surprising because, as environmental awareness in the 1990s became the centre of the debate, all organisations were required to take environmental aspects into account. The demand has been so pervasive that hardly any company can be found that does not stress its environmental friendliness in its publicity. Environmentally aware airlines are used for flying and environmentally friendly cars for driving unless a greener alternative, the train, is favoured. Unfortunately, concern about the environment has not always been real and companies have sunk to counterfeiting or greenwashing. However, companies and organisations are well aware of the value of environmental friendliness to their image and have used all possible means to highlight the positive image of themselves as “green”.

Libraries' strategy has been different, assuming, in a slightly arrogant way, that they always have been green – it has been noted that libraries have recycled their collections for hundreds of years before anyone (else) spoke of recycling. For this reason, libraries have not been particularly keen on declaring their environmental values or even thought that the discussion about the issue is important. The need to develop and create criteria for green libraries has yet to be acknowledged. However, arrogance is often a form of blindness, as is the case here, which leads to why the environmental management of libraries is often not as effective as it should be.

It is obvious that libraries are environmentally friendly in their basic activities, as they do not consume non-renewable raw materials or produce dangerous waste. Therefore, it seems the main problem for libraries is the type of paper used to print books, a decision which cannot be influenced by libraries in practice. Libraries can therefore be lulled into the belief that everything is fine, and the libraries recycle their material like a model student in an environmental class, including books with plastic-coated jackets and those removed from collections after a few loans.

Shared Space and Instruments

In addition, libraries nowadays also have a considerable variety of technologies to offer to customers. In the library people can use technologies such as computers, printers, scanners, tablets, gaming devices and consoles. The technology needs electricity to function and replacing after relatively short periods of use. Technology that is five years old starts to be hopelessly outdated and no longer meets the needs of the library or its users. Libraries are consuming more and more technology and producing more and more waste.

However, it has been argued that libraries are environmentally friendly in spite of such trends. According to such an argument, shared facilities and technical equipment reduce total consumption. Not everyone purchases their own printer or scanner, because in the library you can use these services free of charge. This idea has also been furthered by viewing the library as a common living room in which smaller apartments are sufficient for the inhabitants of the locale, meaning that energy-saving takes place through such a model. This argument was presented earlier when detailing that by entering the library customers will turn off the lights in their home and come to a shared lit space. Many lamps are turned off because the library is lit (Sahavirta 2017).

The argument seems logical, but is it valid? The alleged environmental friendliness, as well as restraint on consumption and energy-savings, is based on background assumptions, which are not in any way obviously proven. It has not been established whether the equipment supply of the library really reduces the need for the individual to own a device, or whether they use common devices when they cannot access their own. Do customers really turn off the lights at home when coming to the library? It might be surmised that a person will come to the library to work because there is no peaceful working space at home. The lights therefore remain on at home where other family members remain. The energy-savings brought about by shared space and common devices are therefore based on assumptions difficult to verify, with the actual saving probably impossible to calculate. Environmental awareness in this regard may be more ideological than actual.

In any case, the idea of sharing is becoming increasingly meaningful to people, so we should therefore mention the public libraries which lend tools and other goods. The environmental friendliness of this service is once again based on the restraint of consumption. The background idea is that people don't buy tools or goods they need infrequently if they can borrow them for free from the library. In some Finnish libraries it is possible to borrow a drill machine or even a cargo bike, while in the United States there are libraries specialising in loaning tools. In addition to environmental friendliness this action aims to be sustainable, as it supports the activity possibilities of the inhabitants of the area. In the best case, the sense of community is growing (Söderholm 2014).

Another example can also be pointed out. Libraries often allow their customers to recirculate their own books in libraries, but the sustainable street library *BookboXX* brings freely recyclable books into city centres and university campuses. An individual can bring or pick up a book on their way to work or home (Kutt, in this volume).

So what should be the reaction to these types of arguments? It may be doubted that assumptions mentioned above are valid as well as that the shared facilities

and equipment will not bring about any real energy-savings, even if in some cases they can reduce consumption. On the other hand, the argument shows that our approach to consumption has changed. Instead of increasing disposable consumption and consumption hysteria, environmentally friendly alternatives are focused on while humankind strives to make more environmentally aware consumption decisions. The intention and message given by humankind are therefore good and in the right direction, even if the outcome may not be apparent.

The argument based on shared space and equipment can therefore be seen as a sincere attempt to create a more environmentally friendly library – or a pseudo action, a greenwash.

Greenwashing?

This approach brings us to the ethical aspect of the debate: when do actions have integrity regarding the environment? Is a laudable purpose or goal sufficient as the criterion for positive action? Or should actions be judged only on the basis of the outcome? There are rarely unambiguous answers to philosophical questions and it is always possible to come up with examples in which an action that looks good creates unpleasant consequences, as well as those where a very negative deed leads to something good. The assessment of such actions is even more difficult because there is not necessarily just one result, but a number of consequences, some of which may be positive and negative, as is shown in the following example:

Traffic has a significant influence on climate change. It causes one-fifth of Finland's greenhouse gas emissions. More than 70% of traffic emissions in our country are generated by road traffic, in particular from private cars. The second largest source of emissions is shipping, which generates about one fifth of the carbon dioxide emissions of transport. Aircraft emissions are less than 10% and trains contribute little to Finnish transport greenhouse gas emissions.

Air transport is responsible for a couple of percent of global carbon dioxide emissions. Although aeroplanes are becoming more energy-efficient, the increase in the popularity of flying takes away the benefits of technical solutions and the efficiency of air transport. Air traffic emissions continue to grow and are expected to double in ten years. The increase in air travel emissions is even feared to invalidate the effects of reductions in other emissions sectors.

Approximately 70 percent of the emissions of flying are carbon dioxide. According to studies, air traffic emissions contribute to climate change 2 to 5 times more than carbon dioxide emissions from aeroplanes. The multiplier effect is due to other emissions from flying and their indirect chemical reactions in the atmosphere. That is why air transport

contribution to human-induced climate change has risen from 2% to around 3.5%. (Lentola-skuri 2018, originally transl. from Finnish)

As stated earlier, airlines are happy to emphasise their environmental awareness and willingly declare themselves to be environmentally friendly when they succeed in reducing the amount of aircraft emissions. Unfortunately, reducing emissions means that flying is a little less harmful than before. This would therefore appear to be greenwashing, in which there is an attempt to present environmentally harmful activity as environmentally friendly. Is this the only possible conclusion? No, at the same time, airlines recognise the fact and importance of attempting to stop climate change. The reduction of emissions is the target of airlines, who do not cite how road traffic and shipping are actually greater polluters than air traffic.

Air passengers often do exactly the opposite and explain that the flight is a small part of the world's air traffic and scheduled flights would run exactly the same way even if not used. This is probably the most usual sceptical argument that every spokesperson of environmental awareness has to face: energy-saving or reduction in consumption of some kind is of no importance when five million Finns consume the same way as before and, besides, industry and transport are the great polluters. The question is how often individuals – in libraries – argue in this way. It may be true that libraries do not pollute very much and environmentally aware actions in one library do not bring about significant change but is that a reason to continue doing nothing?

To answer the sceptics, one may note that it is true that the action and consumption of one human being is not normally relevant to total consumption, but when the crowd grows gradually the influence will also begin to show. The same holds true for libraries. Moreover, the environmental impact of libraries' actions can seem equivocal, but every act reminds us that this issue is important, while it should also be remembered that small actions contribute to big results. These are key lessons for libraries that cannot undertake major environmental acts, but can increase the environmental awareness of their communities as a starting point for future and more widespread endeavours.

Digitalisation versus Print

Until now, the debate has been about the physical library, the library building, where materials and workspaces are available. It can be claimed that digitalisation and the e-library change the situation considerably in a greener direction.

E-libraries are not heated or lit and no one comes to them by car, but above all, digital-format materials can claim to be much more environmentally friendly than those traditional. The environmental friendliness of printed versus e-books has, however, been debated for a long time and the options are not self-evident (Carpenter 2016). It is a well-known fact that the production of a printed book is taxing in nature. The maximum damage comes from the manufacturing of paper which uses both trees and water, but it is necessary to also take into account the transport of printed books from one place to another. Digital content is superior in this respect.

However, the problem with e-books and other digital content is that their use requires a separate device. The manufacturing of equipment requires raw materials as well as finished equipment to be transported from one place to another, while using them requires energy and the lifetime is short. The e-reader expires in about four years and models increasingly change more often, with the end result increased electronic waste. Carpenter argues that the environmental friendliness of e-readers will ultimately depend on the user, such as how many books will be read with the device:

There is the fact that producing a single e-reader requires the extraction of nearly 33lb of minerals and uses about 79 gallons of water. It should come as no surprise that traditional, printed books do not require even close to the same amount of resources, and being aware of these simple facts makes it crystal clear that e-readers are not a perfect solution. However, depending on individual reading habits, they *can* serve as a way to avoid excess CO₂ emissions, and it is for these reasons that this issue of the utmost importance. (..)

Though it would be lovely if we could all look to e-reader technology as an environmentally friendly alternative to print, in reality, whether or not they have the power to decrease our carbon footprint is dependent on our personal habits. A single e-reader's total carbon footprint is approximately 168kg, and for a book, this figure is somewhere in the range of 7.5kg; the book's length and type can lead this figure to vary. Using an average of 7.5kg, we can conclude it would take reading about 22–23 books on an e-reader to reach a level in which the environmental impact is the same as if those books had been read in print. (Carpenter 2016)

Of note is Carpenter's calculation of publishers printing more books than they can sell. When these surplus books are destroyed, the environmental load of the publishing industry increases. At the same time, libraries are considered to have an advantage because with printed books, many people can read the same material. This contradicts the argument about shared use that was previously discussed but the argument is double-edged. The library book may circulate to 50 (or even 100) borrowers before it is removed from collections. In this way, the argument would be tenable but libraries acquire material for their collections which is known in advance to be unlikely to be borrowed/lent many times. It is possible

that a book is not borrowed from a library even once as some libraries collect more specialised literature. Similarly, public libraries are dominated by the trend to acquire large quantities of the most popular material which will be removed as soon as demand declines, perhaps after a few loans. This is a conundrum that libraries and publishers must work to resolve together.

Open Access to Environmental Information

Difficulties in defining a green or sustainable library based on building features, environmental awareness routines, shared space and equipment, as well as recycling of electronic content or collections, are problematic. In this way we return to the idea that the green library would provide easy and open access to relevant and reliable environmental information. Open access to environmental information is a prerequisite which libraries easily accept as a target for themselves. However, this prerequisite can still be reinforced by insisting that the green library should actively promote environmental awareness in its own community.

How well then do libraries meet these prerequisites? In Finland and Europe, the requirement for open access to information is quite easily fulfilled. The characteristics of democratic society include freedom of expression and transparency of official information: environmental information is published and not concealed, with official documents generally public. It will then depend on the professional skills and knowledge of librarians as to how relevant and reliable a collection will be acquired by the library. The relevance of environmental information can also be a very local issue and vary depending on whether the library is located in the city or countryside, close to mining, fishing or fish farming industries. In this volume, some case studies from Africa offer a very different viewpoint from the Western European one (Koudjam Yameni; Mulumba and Akullo; Mwanzu, in this volume).

Reliability in turn means paying attention to source criticism and data currency. Environmental information, like other information, is getting older faster than before. The requirement for the timeliness of the information therefore shortens the life cycle of the environmental literature and thus, in a certain sense, reduces the environmental friendliness of the collection. This is a problem that is not generated with network materials which can be updated without the need to change the physical volumes. However, the weak point of the web material is critiquing the source as it may be difficult to assess who has produced the information as well as how much the original has been altered and updated, or whether the material has been updated at all.

The easy discoverability and active offering of environmental information are also challenges for libraries. As the amount of information grows, organising it will be a difficult task. Libraries traditionally employ a classification system which is used to classify works first in the main information category and then specifying sub-categories. For example, a work on environmental philosophy will have the main category of “philosophy” with “environmental philosophy” as the sub-category. This extremely simplified example already reveals the basic weakness: environmental philosophy, construction, politics and environmental protection, ecological cultivation as well as green architecture all belong to different main categories and are dispersed on the shelves in the physical library.

Eco-Shelves and Green Corners

Libraries have attempted to solve this problem by creating “eco-shelves” or “green corners” to gather environmental information from many different categories. This naturally facilitates the discovery of environmental information by visually browsing. However, moving books to a dedicated shelf may mean that those with environmental information disappear from the philosophy and architecture sections of the library. Online materials are potentially more discoverable as they are not located on one particular shelf. However, using the internet and databases to find online materials (as well as online catalogues to find books) is not necessarily easy and requires knowledge. The user must know the basis of the data search and evaluate the timeliness of the information, while the web material source critique must also be mastered. This is in no way just a public library problem and university libraries have begun to organise courses for students on searching environmental information, which is a natural solution to a situation in which more and more theses are multidisciplinary and touch on environmental issues (Jadefrid et al. 2016; Xu 2016). Some universities have also launched projects to increase students’ environmental awareness, which in Cameroon has modified student behaviour in the library and campus (Koudjam Yameni, in this volume).

The problem with environmental information is that printed materials can only be located in one place at a time and easily disappear into a large collection. In the case of databases and web materials, difficulties can be generated by the large number of materials and assessment of information. Libraries can make it easier to find environmental information through search guidance, but also by collecting it on eco-shelves or green corners. Other means are material recommendations and exhibitions which will allow the library to also take an active grip on supplying environmental information. Active propagation of environ-

mental awareness would also include the organisation of environmental events, conferences and exhibitions (Claesson; Seifert and Rogge (public libraries); Jones (university libraries), in this volume).

The adoption of such an active role means that the library commits itself to green values and raises them in its community; this is a part of the library's marketing, which should not be avoided. It would be appropriate for libraries to remind their customers that visiting the library reduces their carbon footprint, especially if they use public transport for journeys. Such a reminder will certainly arouse a positive reaction in environmentally aware customers. But perhaps even more important is that the library, at the same time, with its own authority, stands up for green values and emphasises their importance (Sahavirta 2013).

Community Building

In recent years, the environmental awareness of libraries has also been tied together with communality and inclusion, which have become trends. This development may be reflected most clearly in new services such as urban gardens. Libraries have started to provide customers with information on environmentally friendly cultivation, while at the same time offer spaces for cultivation or co-culture (Schumann, in this volume). Such a project where the public library introduced urban gardening, food sharing and makerspaces led to the Stadtbibliothek Bad Oldesloe (Germany) winning the IFLA Green Library Award 2017. Similarly, events directed at children which teach recycling and waste management by crafting and investigating emphasise communality. In countries where municipal waste management does not exist or the sorting of waste is non-existent, the library's contribution may be significant (Pigura; Vučkovič, in this volume).

A particularly impressive example of environmental awareness communality is the IFLA Green Library Award winner from 2016, El Pequeño Sol ecological library. The Mexican village gathered recycled goods for construction material of the school library, creating a project which was found to be "a project where sustainability was in the soul of the project from the first starting of the idea until to the new library" (ENSULIB 2016). The aim was to support children's reading through a new learning environment, while at the same time increasing community cohesion and environmental awareness.

Another project with a strong social aspect is the planting of reading trees in front of public libraries, sponsored by the National Library of Kenya. By planting trees together with children, they could be informed about climate change and

how the trees create shady reading places by adults, while fruit trees can feed children using the library (Kavuri-Mutuku, in this volume).

This returns to the sustainability concept and that libraries should be responsible actors in their communities, supporting economic stability, environmental awareness and equality. In a way, economy and equality associated with sustainability are also prerequisites for environmental awareness. In a community with much poverty, there may be no unnecessary consumption and a disposable use of commodities. At the same time, however, it is clear that environmental protection or, for example, the proper sorting and treatment of waste, is not central in the plans of such a community. But the example of a “Garbage Hero” from Liv, Ukraine, shows how an accident at an unauthorised waste deposit near the city, in a poor region, led to effective environmental education projects in the region’s libraries (Patron and Rusakova, in this volume).

Similarly, equality – and, for example, girls’ schooling – affects the community’s environmental awareness and how the next generation will be raised. Consequently, conditions for environmental awareness also include green literacy. Literacy and education are needed in order to allow as many people as possible access to environmental information and are prerequisites for environmental awareness. Of course, this is a problem in developing countries where the population may not have access to formal education.

Literacy, however, no longer comprises of just the ability to read printed texts, but much more. Multiliteracy includes our ability to read and use different sources of information, such as computers and networks, but also understand and evaluate our reading. Promoting digital and critical literacy is an important task for libraries all over the world.

Conclusion

This article has created an overview of various efforts to define the green library and argue for sustainable libraries. At the same time, some strong examples of libraries’ environmental awareness and sustainability have been presented. From these reviews libraries can create the following operational programme:

- A library should take into account the environmental impact of its building as well as its own activities and create an environmental strategy that defines the means and objectives of the environmental work. This work should take into account the specific features of the library, not just the criteria for green buildings and offices.

- A library can promote recycling and sharing in its own communities in different ways. The actual environmental effects of shared facilities, equipment and goods may not be significant, but the action raises environmental friendliness as a value and signals the importance of environmental issues to the community.
- The basic task of libraries is to ensure open and easy access to reliable and relevant information, which includes environmental information. A library should be active in this environmental work and environmental information can also be shared by non-written means, such as working together.
- The prerequisites for a community's environmental awareness are many common phenomena belonging to the area of sustainability. Literacy and critical literacy, information retrieval skills and the displayed information are such, with their promotion a natural task for libraries. More broadly, the improvement of equality and living conditions are prerequisites for the growth of environmental awareness in communities.

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Katharina Leyrer

2 Libraries Sow the Seed of a Sustainable Society

A Comparative Analysis of IFLA Green Library Award Projects 2016

Abstract: The IFLA Green Library Award shows that libraries all over the world are committed to environmental sustainability: Thirty libraries from five continents submitted their green library projects to its first round in 2016. Based on the submissions to the competition, this paper offers a summarising overview of green library projects worldwide. It addresses the following questions: how are green library projects similar and how do they differ concerning their goals, thematic focus, implementation and visibility on the library's website? What motivated the librarians who submitted a project to launch a green library initiative? To answer these questions, three data sets have been collected and interpreted: the submissions to the IFLA Green Library Award 2016, screenshots of the participating libraries' websites and an online survey of those who submitted a project. This analysis shows that IFLA Green Library Award projects feature a wide range of topics and forms of implementation. The most significant commonality is that more than half cooperated with partners to implement their project. The differences between projects primarily lie in their visibility on the library's website, their duration, funding and staff resources.

Keywords: IFLA Green Library Award; Green libraries

Introduction

In recent years, the disastrous effects of climate change have become evident. The Intergovernmental Panel on Climate Change (IPCC) has urgently called for action on an international, national and local level to mitigate climate change (2014). The IFLA Green Library Award, announced for the first time in 2016, is evidence of libraries recognising their responsibility to contribute. The IFLA Environment, Sustainability and Libraries Special Interest Group (ENSULIB) created the award in order to support green libraries worldwide and make their sustainability activities visible to an international audience, arguing that "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". Thirty libraries from

all over the world submitted their projects on environmental sustainability, including eight public libraries, six university libraries, three school libraries, two special libraries, one national library as well as a library association, a NGO and an architect. The award brought together green library projects from sixteen countries in different parts of the world, such as the USA, Columbia, Mexico, Australia, Croatia, Germany, Portugal, Great Britain, Ukraine, Ghana, Korea, Malaysia, Nepal, Papua New Guinea and Taiwan. The variety of locations shows that libraries all over the world advocate for sustainability.

Libraries Competing for the IFLA Green Library Award 2016

The effects of climate change and ecological problems differ depending on geographical location, while libraries' political and financial conditions vary from country to country. It was therefore assumed that libraries submitting their projects to the IFLA Green Library Award competition designed and implemented their sustainability activities with different foci and aims.



Figure 1: Libraries from all over the world took part in the IFLA Green Library Award Competition.

Consequently, this paper addresses the following questions:

- How are green library projects similar and how do they differ in relation to their goals, thematic focus, implementation and visibility on the library's website?

- What motivated the librarians who submitted a project to launch a green library initiative?

To answer these questions, three datasets have been collected: the submissions to the IFLA Green Library Award 2016, screenshots of the participating libraries' websites and an online survey of those who submitted a project. These data sets were interpreted by means of qualitative content analysis. Characteristics of these data sets as well as survey and interpretation methods will be presented in the section "Research Design", following a short overview of the state of research in the section "State of Research".

In the section "Results", the results gained by analysing each data set are merged and compared in order to present commonalities and differences of the projects in detail. This section shows how the projects' aims, topics, implementation, outcomes and visibility differ and correspond. Finally, the results' implications for librarianship and subsequent research requirements will be discussed (in the section "Discussion").

State of Research

Much of the literature on green libraries focuses on sustainability aspects in constructing and operating library buildings (such as the work of Götz 2012; Hauke and Werner 2013; McBane-Mulford and Himmel 2010). Since 2000, however, the idea of an extended concept of the term green library has been gaining importance. Green library approaches also include educational and cultural activities, sustainability collections as well as green library services (Hauke, Grunwald and Wilde 2014). This broad understanding of the term green library forms the basis of this paper.

While individual publications on green libraries can be found in different parts of the world, for example in Hongkong (Jones and Wong 2016), Taiwan (Tseng 2008), France (Desrichard 2010), Croatia (Kraljević 2013) or New Zealand (Miller 2010), it is only in US librarianship that the issue is widely discussed (Hauke, Grunwald and Wilde 2014). Moreover, comparative studies on green library projects are rare and limited to the US and Canada (Jankowska, Smith and Buehler 2014; Townsend 2014). Thus, this paper complements the current state of research by analysing and comparing green library projects and their implementation on an international level. Furthermore, it also raises the question about the motivation of library staff to design sustainability activities which is of particular interest since, in many regions, environmental sustainability is scarcely an issue.

Research Design

The concept of triangulation has been followed to obtain a comprehensive view of the projects submitted to the IFLA Green Library Award competition. Three different datasets have been collected, analysed and compared: the submissions to the 2016 competition, screenshots of the participating libraries' websites and an online survey of those who submitted a project.

As the submissions to the competition have not yet been published apart from the three winning projects, their authors were asked for permission via email. As a result, twenty-seven of thirty projects were included in the analysis. The submissions vary in form and length, as fifteen libraries presented their projects as a paper while seven provided a set of slides and three a video; two libraries even submitted both a video and a paper/set of slides. The submissions, therefore, described the green library projects in a variety of ways and depth of detail.

In order to gain information on aspects that are not, or scarcely, discussed in the submissions, information has been gathered from their authors via an online survey. The authors were asked to answer eight questions on different aspects of their green library project via email in September 2016, with thirteen completed questionnaires received by November of the same year.

The third data set focuses on how libraries make their commitment to environmental sustainability visible on their website, if they do so at all. The submitting libraries' websites were analysed, considering whether they feature posts on sustainability topics, how many posts are included, whether they are up to date, how they are positioned and the nature of their content. The analysis was performed in March 2016 – close to the award's deadline – as well as in September 2016, in order to also gain insight into whether sustainability is continuously addressed on the libraries' websites.

These three data sets enabled the analysis of the green library projects from different perspectives. Each data set was interpreted by means of qualitative content analysis using the software MaxQDA. Finally, the results gained by each data set were merged and compared.

Results: Commonalities and Differences of the Green Library Projects

Influencing Users, Community and Environment: Goals

While there was not a goal that all, or most, of the green library projects shared, there were some aims that several libraries mentioned. They indicated that libraries focused on different aspects with their green projects, such as the aim to influence their users and communities but also reduce their own ecological footprint.

Nearly half of the libraries studied (thirteen out of twenty-seven) stated that their goal was raising awareness for sustainability and environmental issues. One third (nine out of twenty-seven) went even further by aiming to change their users' attitude towards nature and promoting a sustainable lifestyle. Eight libraries wanted to reduce the library's negative impact on the environment. Only occasionally did libraries mention community involvement and promoting the library with its services as a goal.

Environment Issues and Social Responsibility: Motivation

In relation to their motivation for implementing a green library project, the libraries studied mentioned, in particular, a social responsibility and the urgency to respond to environmental problems. For seven of the twenty-seven libraries, ecological crises and the effects of climate change were significant factors in their commitment to sustainability topics. Almost a third (eight out of twenty-seven) of the libraries stated that it is the libraries' responsibility to advocate environmental protection and sustainability. Eight libraries were also motivated to launch a green project so as to serve as a model for other libraries and members of their community. Furthermore, the online survey showed that in some libraries the crucial factor for the green library project was the sustainability commitment of funding institutions or motivation of individual employees.

From Gardening and Recycling to Mobility: Thematic Focus

The IFLA Green Library Award 2016 shows that green library projects encompassed a great variety of topics, as many covered several different areas. Nonetheless, some common themes can be identified. Nearly half of the green library projects (twelve out of twenty-seven) focused on reducing the library's use of

resources, while waste separation and recycling (eleven out of twenty-seven) were deemed important areas, as were the use of sustainable materials (nine out of twenty-seven) and sustainable transport (eight out of twenty-seven).

The topic most frequently mentioned, however, was gardening (fifteen out of twenty-seven), with more than half of the libraries offering workshops on creating and cultivating gardens or organising the exchange of seedlings and seeds. Three even had their own garden that served as a location for reading and enjoying the library's collections, as well as cultivating vegetables and herbs.

In addition, there were numerous other topics that occasionally feature as part of a green library project including sustainable fashion, fair trade and biodiversity.

Little Money, Lots of Partners: Realisation

While green library projects have shown a lot in common in their implementation, there were also considerable differences. Most noticeably, a large number of the libraries studied implemented their green projects in cooperation with a partner, such as social and environmental organisations, companies, schools or municipalities. One third (nine out of twenty-seven) of the libraries provided special collections on sustainability, environmental protection and gardening. Organising events and activities on environmental topics was also often part of green library projects (eight out of twenty-seven).

Six libraries actively involved users in their green library project. For example, the public library in Kennemerwaard, Netherlands, offered a platform on Facebook to discuss sustainability topics and plan activities. The Public Library in Whittlesea, Australia, encouraged users to contribute content on environmental topics to their digital platform. In San Cristobal, Mexico, the school community even constructed a new school library building for the Pequeño Sol school.

However, the green library projects studied also differed considerably in several aspects of their implementation, particularly in relation to their duration as well as staff and financial resources.

While one library started their engagement in sustainability activities thirty-four years ago, the most recent project was launched just one year ago. Furthermore, each library allocated a different amount of resources for their green project. In most libraries only one employee was responsible for implementing the project, while others stated that twelve or sixteen employees were involved. A similar picture occurred concerning the financial resources, as most libraries implemented their green project without, or with little, additional funds. Two

sustainable library construction projects, on the other hand, involved costs of approximately 24,400 and 27.7 million Euro.

Websites Without Sustainability Posts Versus Multimedia Pages on the Environment: Visibility

The green library projects also differed significantly in how far they were visible on the respective library's website. On eight out of twenty-seven websites, there was no post pointing to sustainability or the library's green project. Seven libraries, on the other hand, published a post on their sustainability commitment either in March or September 2016. In both assessment periods – March and September 2016 – nearly half of the libraries (twelve out of twenty-seven) posted information on their green library project on their website; this shows that these libraries have continued to work on sustainability topics, even after they submitted their project to the IFLA Green Library Award competition in April 2016.

All in all, libraries' commitment to sustainability was not visible on approximately one third of the examined websites. However, the majority of the libraries used their websites as platforms to promote their green projects.

Effects on Users, Environment and Libraries: Results and Future Plans

When asked for the results of their green library projects, the libraries' resumés clearly paralleled the goals they had formulated. Seven out of twenty-seven libraries stated that they have reduced the library's negative impact on the environment, six observe that their users' awareness on sustainability increased while three say that they became role models for other libraries.

However, there was one result that had only occasionally been mentioned as a goal, which did not refer to environmental sustainability but the library itself. Almost one third (eight out of twenty-seven) of the libraries concluded that their green library project had raised the library's profile and increased the use of its services. As examples, the libraries listed gaining new partners, a growing number of users and strong presence in the local media.

The online survey also showed that twelve out of thirteen libraries plan on continuing their sustainability activities.

Discussion

The results of this survey help to identify why the issue of environmental sustainability in libraries is of little interest to many in librarianship. Looking at the participants' reasons for creating and implementing a sustainability project, there are two main motivating factors: ecological crises and the effects of climate change on one hand as well as the social responsibility of libraries to engage in environmental protection on the other. One reason why the issue does not attract interest on a high level worldwide could be that the effects of climate change vary depending on the respective region. Furthermore, there is no international consensus on the responsibility of a library to engage in environment protection and sustainability. The first step therefore should be a broad discussion on whether and why libraries should have this responsibility.

The results of this survey also show that it is possible to implement a green library project with limited staff and financial resources, regardless of the type of library. There is a myriad of possibilities to create and realise a green library project and results make it clear that such projects not only have a positive effect on the environment but also on the library. Green library projects can serve to promote the library and its services, as well as present it as an active player in the community, thereby enhancing its value.

There were some problematic factors that influenced the results of the survey. Firstly, submissions to the IFLA Green Library Award competition are different in form and length, while only half of the participating libraries took part in the online survey; there was hence more information on some projects than others, influencing the results. Secondly, the survey is mostly based on self-analysis of the participating libraries' staff. Future research could collect data sets that are independent of the libraries' own assessment, for example by interviewing users. Finally, the respective libraries' geographic, economic and social circumstances are not taken into account in the analysis, although they have a major impact on the respective projects.

Conclusion

All in all, the results of this analysis mirror the trend in current literature not to limit the term green library to environmentally sustainable library buildings, but also include services, collections and events on sustainability topics. The projects submitted for the IFLA Green Library Award competition showed that a multitude of libraries around the world, however different the underlying conditions may

be, were committed to environmental sustainability. To effect change on a local, national and international level, these joint efforts are crucial: “A single library promoting sustainability practices does not matter in the absence of a network of [...] libraries, working collectively toward advancing sustainability” (Jankowska 2014, 3).

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Madeleine Charney and Jenny Colvin

3 Contemplative Pedagogy

Building Resilience in Academic Libraries

Abstract: This paper addresses the emerging movement of contemplative pedagogy in higher education with an emphasis on academic librarianship. The authors posit how integrating mindfulness-based practices into pedagogy and programming builds resilience in students, creating meaning in an age of climate disruption, information overload and uncertain times. Examples of librarians' relevant professional development activities are also included. Library spaces offering mindfulness opportunities for students are explored and a contemplative-oriented, campus-wide collaboration centred on climate disruption is featured. Selected Sustainable Development Goals (SDG) of the United Nations 2030 Agenda are touched on, demonstrating how contemplative approaches in academic libraries support well-being, justice, community building and concern for the fate of the earth.

Keywords: Contemplative pedagogy; Academic libraries; Resilience (Personality trait); Climatic change; Mindfulness

Introduction

The United States is experiencing an intense wave of turbulence following the highly divisive 2016 presidential election, reactivating racial as well as religious biases (Neberai 2017) and shaking the foundation of democracy. The restoration of civility will rely on "individual thinking combined with a diversity of lived experiences, as they allow for an understanding of more facets of truth" (Neberai 2017, 10). Along with the roiling of social waters, scientists report that the earth reached its highest temperature on record, "heading toward levels that many experts believe will pose a profound threat to both the natural world and to human civilization" (Gillis 2017). Compounded by the everyday stress of information overload, these disturbing factors make for a brew of destabilising emotion, distraction and disconnection. This text points to Contemplative Pedagogy (CP) as a powerful and flexible set of tools which academic librarians can employ – in and out of the classroom – to expand their students' capacity for learning, wellness, meaning making, community building, earth care and a lasting resilience for weathering challenging times. CP also supports many Sustainable Develop-

ment Goals of the United Nations 2030 Agenda for Sustainable Development, in which the International Federation of Library Associations and Institutions (2015) played an active role in developing.

In their book *Contemplative Practices in Higher Education*, Daniel Barbezat and Mirabai Bush (2014) discuss the critical need for education to integrate time and space for students' reflection. While analytical thought is considered a hallmark of good education, they explain the dire need for "holistic engagement and attention that is especially fostered by the student finding himself or herself in the material" (4). In essence, the students' personal agency is critical in order for them to fully experience course material and apply its meaning as well as use for themselves. CP techniques invite students to focus internally, whether through a guided exercise, open-ended discussion, free writing, silence, breathing, movement or some combination of modalities that fits the teacher's intent and skill set, within the context of the learning experience.

Professional Development

Academic librarians are exploring CP through conferences, workshops, social media groups, retreats as well as in conferences and meetings outside of the profession. Samantha Hines and Jenny Colvin initiated a petition to create the Contemplative Pedagogy Interest Group within the American College and Research Libraries (ACRL), with the group approved in June 2016.

Programming and activities at the 2017 ACRL Conference in Portland, Oregon reaffirmed the growing interest in CP, with multiple presentations of related content, spaces and activities with similar themes. Deborah Ultan Boudewyns and Jill Luedke offered a three-hour workshop at the ACRL Conference, March 26, 2015, *Mindfulness Practices in the Classroom for Engaged Learning*. A Zen Room and quiet recharge space (which became known as the Introvert Recharge Room) were also available throughout the conference, with yoga and meditation sessions offered daily.

Librarians also explored CP in local venues. In March 2017, twenty librarians from across a five college consortium attended the Contemplative Pedagogy and Mindful Librarianship Retreat (Charney and Smith 2017). Their two-pronged approach offered opportunities to learn about CP, programming, spaces and professional development as well as practice mindfulness techniques such as breathing exercises, walking a labyrinth, stretching/movement and a collective listening exercise. The event started with a group discussion based on *The Mindful Librarian: Connecting the Practice of Mindfulness to Librarianship* (Moniz

et al. 2015), followed by small groups further exploring the themes of teaching, one-to-one research consultations, workplace issues, programming and spaces, personal contemplative practices as well as CP in the context of social justice.

In June 2016, the Mindfulness for Librarians Facebook group was launched with a series of virtual hangouts taking place between December 2016 and April 2017. Zoom video conferencing allowed for a personal connection, with all sessions recorded and posted to the page. In such an informal forum, participants offered mindfulness-based teaching tips, co-facilitated discussions, presented projects and shared professional development opportunities as well as helpful apps, books, audio and websites. Guided meditations included a breathing exercise, yogic finger mudras and a body scan. Membership surged to nearly four hundred after an article about mindful librarianship appeared in *American Libraries* (Ruhlmann 2017).

Conferences and trainings outside of the profession are essential for librarians interested in CP. Examples include those organised by the Center for Contemplative Mind in Society (CMind), the Association for Contemplative Mind in Higher Education (ACMHE) and UNC-Asheville – A Mindful Campus.

Clearly, academic librarians are striving to bring more depth of meaning to their teaching of the research process. A distinct example is the ACRL Framework for Information Literacy, which heralded a paradigm shift in the profession. The fourth chapter of *The Mindful Librarian: Connecting the Practice of Mindfulness to Librarianship* handily maps mindfulness to the conceptual underpinnings of the framework, demonstrating how students are now asked to understand why information literacy is important as opposed to “how” to be information literate (Moniz et al. 2015, 83). The book illuminates the framework’s repetitive use of words such as mind, open, awareness and ambiguity as well as the discipline and attentiveness required to develop the resiliency necessary to “work through the process of starts and stops that can occur when researching” (Moniz et al. 2015, 85). Threshold concepts, the main structure of the framework, are characterised as transformative which relates to lasting change in the student’s learning process. When librarians infuse their teaching with the transformational resilience fostered through CP they do more than just help students navigate the difficult parts of the research process. CP is a call to action, for both librarians and students to mutually strengthen their respective psycho-social-spiritual as well as intellectual skills over time.

Librarians, Stress and Burnout

An increasing number of U.S. librarians recognise the need to manage their own stress to be more satisfied and efficient in the workplace, including their role in the classroom. When a recent mindfulness webinar for librarians had more than five hundred live participants, it seemed like a cry for help with these challenges (Moniz, House and Neufeld 2017). A more holistic view of teaching recognises our bodies (those of both teachers and students) as “valid knowledge producers and having its own value for generating focus, stillness and more importantly, anchoring us in the ‘now’ moment” (Wagner and Shahjahan 2015, 7–8). The rapidly changing landscape of academic librarianship is fraught with pinched budgets, heavier workloads and the dizzying reorganisation of services, spaces and priorities. In a recent study, academic librarians experienced role ambiguity, role overload and burnout at or above the level experienced by other occupational samples, while the role stressors significantly predicted an array of psychological, health-related and work-related outcomes. The study examines the relationships between the role stressors and negative effect on job satisfaction, satisfaction with life and psychological well-being, resulting in psychological burnout (Shupe, Wambaugh and Bramble 2015). In addition, many institutions expect academic librarians to prove their worth through publishing and demonstrating student learning through assessment, which adds to such pressure.

Pedagogy

Librarians are incorporating methods relating to mindfulness and contemplation in their own work as teachers. At Oregon State University, librarians used reflective teaching practices for evaluation of individuals and programmes, creating a framework for all librarians in an instruction programme (Hussong-Christian 2013). Librarians in the Kentucky Library Association’s Library Instruction Roundtable used reflective learning in a retreat situation to model the behaviour and discuss potential uses in their libraries, ranging from personal growth to assessment and critical thinking (Porter 2014).

Student reflection is most often mined for assessment of instructional objectives and to demonstrate student learning (Bordonaro and Richardson 2004; Gilstrap and Dupree 2008). Rather than using the term contemplative pedagogy, librarians publishing about CP prefer words such as reflection, mindfulness and activities, designed to enhance focus and attention. Bordonaro and Richardson (2004) concluded that student reflection played an important role in helping stu-

dents understand the process alongside the research. Jill E. Luedke (2013) experimented with offering a focusing exercise at the beginning of a one-shot instruction session, helping the students enter the headspace of receptive learners. Jenny Colvin found that a wrap-up guided reflection exercise better prepared the students to know what they needed to do once they left the instruction session (Colvin and Sippel 2016). Kellie Meehlhause (2016) adapted the Minute paper to combine student reflection with a selfie exercise. Other techniques include inviting students to:

- stay open to swerves in the direction of their research,
- mindfully craft research questions as well as distinguish between information needs and ideal sources to meet those needs,
- free write about their research interests in the context of the course,
- consider who may be involved in the conversation around their subject and whose perspectives they have not yet considered,
- engage in a brief grounding experience such as a communal breath or moment of silence,
- listening to relaxing music,
- gazing at soothing images,
- tracing a finger labyrinth (Charney and Smith 2017; The Labyrinth Society 2017).

Spaces

As students' academic lives blend with their social lives, their need for spaces in libraries shifts as well (McKinstry 2004). Mathews (2009) encourages the examination of students' need states, or the reasons they are using library spaces aside from research. He considers personal uses such as reflection and meditation to be major categories, with his conclusion arising from the perspective of improving library marketing, in which the library and user benefit from considering additional needs from library spaces. The Center for the Future of Libraries (CFL) of the American Library Association recently included mindfulness spaces as a trend to watch (Figueroa 2016). The concepts of CP are listed under the unplugged trend and CFL urges librarians to consider the ramifications of the unplugged trend on future space design (American Library Association 2014).

Librarians approach the topic of mindfulness spaces from varying perspectives. Three librarians at ACRL 2017 displayed different versions of mindfulness spaces in libraries: a large space with pillows and seating, intended for groups; a smaller room with space for only three people; and a brain-exercise space (Quinn

et al. 2017). Two librarians at the ACMHE conference in 2016 showed how spaces could range from permanent to pop-up, depending on demand and space possibilities (Colvin and Sippel 2016). New spaces provide opportunities for programming and collaboration with other entities on campus.

In the midst of a hectic day on a buzzing campus, dedicated, quiet spaces offer solace and renewal to all members of the community. Furthermore, when the quiet space is situated within a campus library, users' perceptions of the library expand beyond just the informational resources and services available. The calm that results from even a short break could mean the difference between interactions driven by stress as opposed to those lifted up by empathy, which Greason proves is developed through mindfulness practices and defines as "an ability to suspend judgment and bias to walk in the other's shoes" (Greason and Cashwell 2009, 4). Offering quiet spaces sends a signal to students, faculty, staff and librarians that their health and well-being are valued by higher up decision makers. This, in turn, can raise morale and improve relations on campus. While quiet spaces offer a temporary haven for everyone, they might be needed most by those already struggling with mental health challenges.



Figure 1: Librarians walking labyrinth at professional development retreat.
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Students and Resilience

Academic librarians need to be aware that in 2016 roughly one in eight first-time, full-time college students in the U.S. (11.9%) reported feeling depressed frequently in the past year, while among the 10.7% of students who reported having a psychological disorder just over half (51.8%) have frequently felt depressed in the past year (Eagan et al. 2017, 12). Additionally, more than one-third (34.5%) of incoming first-time, full-time college students frequently felt anxious and those who reported having a psychological disorder were significantly more likely to

report frequently feeling anxious (79.5%) (Eagan et al. 2017, 13). As our society grows more acutely aware of the effects of climate change there is great potential for these more fragile students to be profoundly affected.

Floods, droughts, storms and extreme heat threaten our sense of place, food and water supplies, housing and infrastructure, physical health and safety, access to work and school, as well as strain domestic relations and spawn political tensions. Efforts to alleviate or avoid climate change-related threats and tensions can lead to substance abuse, anxiety, depression, violence and suicide. Leslie Davenport, author of *Emotional Resiliency in the Era of Climate Change: A Clinician's Guide* (2017) refers to mental health professionals as “the right people to be at the epicenter of the battle to save our home from climate change” (Davenport 2017, 13). She laments the absence of colleagues and institutions to help address such an unprecedented crisis. Providing neutral welcoming spaces and ample resources, it is arguable that libraries, including those academic, are already equipped to share that role. Becoming more adept in contemplative pedagogy will position librarians to contribute to building resilience even more so.

In his book *Transformational Resilience: How Building Human Resilience to Climate Disruption Can Safeguard Society and Increase Wellbeing*, Bob Doppelt describes the critical need for building effective knowledge and skills so that individuals and communities can manage deep trauma before the severe effects of climate change are experienced. Such a capacity, which he calls transformational resilience, includes practices to calm the nervous system while exploring assumptions, beliefs and perceptions to facilitate psycho-social-spiritual stability (Doppelt 2016, 78). He divides these skills into the categories of Presencing and Purposing, defining them respectively as “regulating the body’s fear-based reactions” and “finding meaning direction and hope in adversity” (Doppelt 2016, 84).

Ellen Hall (2017) explains how the impacts of climate change “can put strain on social and community relationships, leading to increased levels of aggression, violence, and crime.” She adds that communities that have “a strong social fabric [...] and have taken efforts to reduce social disparities are better equipped to respond to and quickly recover from climate impacts”. Her article draws from a groundbreaking report, *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance* (Clayton et al. 2017). Several of Hall’s 13 Key Takeaways: Tips to Support Communities intersect with the objectives of libraries and can be amplified in an academic community through the use of CP. These include facilitating social cohesion through communal design, providing clear and frequent information, engaging community members and providing opportunities for meaningful action.

Talking Truth at the Library

An example of communal design, engagement and meaning making is seen in a project hosted at the University of Massachusetts Amherst Libraries. The idea sprang from a conversation between a librarian, professor of environmental conservation and education doctoral student. Their daily despair around the barrage of climate change news felt like too much to bear alone. They believed they were not alone with the cognitive dissonance of carrying on through the work day alongside the heavy knowledge of the demise of the planet. Sensing the need for a campus wide conversation, they initiated a three-part series and named it Talking Truth: Finding Your Voice Around the Climate Crisis (Chamey 2017). When 60 people (faculty, students, staff, librarians and community members) arrived for the first session, they knew they had struck a chord. In breakout groups, with each person responding to the question With Whom do you Talk About Climate Change?, the room crackled with animated conversation and at times tears were shed. The second session, based on a model developed by Harvard scholar Marshall Ganz, used storytelling to explore personal values and what moves individuals to act around the urgent matter of climate change (Working Narratives 2013). For the third session, participants entered a dimly lit room with background tonal music. While viewing a short video loop of CO₂ levels rising from 800,000 years ago until the present year, it dawned on those present that they were witnessing a moving record of our planet hurtling toward unlivable temperatures (National Oceanic and Atmospheric Administration 2016). The images then transitioned to breathtaking landscapes and incredible creatures of land, air and sea, from a miniscule octopus atop a fingertip to a mighty blue whale. The juxtaposition of the earth's destruction alongside the life force of our planet evoked a powerful recognition of the interconnectedness of all life, the vulnerability of ecosystems, innocence of the more than human world and imperiled existence of all. Participants were then asked to free write a response to the question How do you feel about climate change?, which was inspired by the work of Joe Duggan from The National Science and Technology Centre in Canberra, Australia. The writing samples were then sent to the University Archives in the main library, with many more to follow future Talking Truth programmes. This expanding time capsule reflects the University of Massachusetts Amherst community's emotional response to climate change, with a notable shift in intensity following the exceedingly divisive presidential election of Donald Trump in November 2016. There are currently about one thousand writing samples (and some drawings) housed in the Archives with future plans for sorting, coding, audio- or video-recording, as well as performing live readings of the work on campus and in the community.



Figure 2: Reflective writing experience at the Amherst Sustainability Fair. © J. Cote.

At the end of the third session (which was meant to be the last), a psychology professor volunteered to help continue the incubator project. Soon after, a science librarian, undergraduate English major as well as staff members from campus planning and extension joined the planning team. The unique, flattened hierarchy of the planning team and participants lent a rich, intergenerational aspect to the project, with everyone relating as human beings regardless of their status on campus or in the community. A contemplative exercise is always incorporated, sometimes as simple as inviting participants to take a few deep breaths, a reminder of the role of our body in the learning experience. In the second year, a weekly session called *Holding Earth: Mindful Climate Action*, centred on guided contemplative practices, was led collectively by participants. There were also films and guest speakers focused on renewable energy solutions and activists' frontline stories. Rooted in and complementary to the research and teaching that happens on campus, *Talking Truth* is infused with a spirit of experimentation, flexibility, inclusivity and social transformation. In one case, a programme was postponed on the spot so everyone could attend a student divest protest that erupted at the same time as the scheduled programme.

Paul Wapner, Professor of Global Environmental Politics at American University, Washington D.C. attended a *Talking Truth* workshop at the CMind conference. He remarked afterwards that the project provides "a chance to unearth the

deep-seated sentiments we feel and, by giving them voice, enable them to find stability, solidity and, most of all, expression.” He deemed the project a necessary step in climate activism and

especially fitted to academic institutions since it practices whole-person education... [and] integrates cognitive, emotional, and somatic experience and provides tools for clarifying and deploying them in the service of climate protection. (Wapner, personal communication, 2016)

In the fall of 2017, a weekly collaboration will commence between Talking Truth and Paperbark Literary Magazine, an environmental humanities journal starting up on the campus. Activities will include inspiring readings from climate change works, art making, creative writing exercises as well as discussions to cultivate a community of contributors to Paperbark and generate material for the magazine. The weekly series will be called Hearts in Action: Creative Responses to Climate Change.

Sustainable Development Goals

Talking Truth touches on an array of the 17 Sustainable Development Goals (SDG). The contemplative aspects of the project point to Good Health and Well-being (Goal 3) while the cultivation of empathy as well as community building speaks to Peace, Justice and Strong Institutions (Goal 16). Programmes such as Renewables Are Ready educated participants about Affordable and Clean Energy (Goal 7) as well as Sustainable Cities and Communities (Goal 11). The overarching theme relates to Climate Action (Goal 13) with activities that encourage appreciation for the ecosystems necessary to sustain all life, including Life Below Water (Goal 14) and Life on Land (Goal 15).

Although this paper does not delve deeply into the SDGs, there is potential to integrate contemplative practices and transformational resilience into the targets, scaling up the effort to fit an international scope. For example, Goal 3 (Good Health and Wellbeing) addresses depression and the potential outcome of suicide. Target 3.D aims to strengthen the capacity of all countries for early warning, risk reduction and management of health risks (International Federation of Library Associations and Institutions 2015). A recommendation for research, development and promotion of mindfulness-based programmes could be added to this target. Understanding and managing trauma would allow communities to act from a place of being trauma-informed, as opposed to being trauma-organised. Trauma-informed preparedness translates to thoughtful, equitable and life-sus-

taining decisions by individuals, institutions, communities as well as governments, even while under duress caused by climate change and other challenges (Doppelt 2016, 285).

Conclusion

CP essentially asks us to slow down, reclaim our bodies and remember our whole selves which can feel hijacked by everyday life (Shahjahan 2015, 499). Especially when practiced over time, CP promises librarians and their students an enduring inner strength that feeds engaged learning, effective teaching and empathic citizenry. This paper serves as an invitation for librarians (and their partnering colleagues) to be bold and stretch beyond their comfort zone as they experiment with CP techniques. The recent flurry of professional development for librarians that centres on mindfulness is reassurance that there is support and increasing acceptance of such innovations. Considering the hyper-paced and divided state of the U.S., the world may motivate librarians to be agents of change through their teaching methods and subtly administer care to their students in the process. When librarians demonstrate how to connect their inner lives with the global challenges all face they contribute to the meaning of collective experiences and invite students to be part of the experiment. While climate change may seem like a distant threat to some, science says otherwise. Getting ahead of the curve, for instance beginning to master presencing and purposing skills now, would be a wise strategy for managing inevitable climate change trauma; this text illuminates the momentum for CP within U.S. academic libraries, an excellent test bed for imaginative advances. Looking further ahead, IFLA's partnership with the United Nations 2030 Agenda for Sustainable Development holds great promise for integrating the protective, stabilising and empathy-invoking effects of contemplative pedagogy and practices on a global scale.

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Leonor Gaspar Pinto and Paula Ochôa

4 Public Libraries' Contribution to Sustainable Development Goals

Gathering Evidence and Evaluating Practices in Portugal

Abstract: Initiated in November 2016, the project *Bibliotecas Públicas e Sustentabilidade: Recolha de Evidências da Contribuição para os ODS* [Public Libraries and Sustainability: Gathering Evidence of Contribution to SDGs (Project PLS)] aims to develop a framework for evaluating public libraries' contribution to Sustainable Development Goals (SDGs) and tailor it to Portuguese public libraries. This paper discusses the role of impact evaluation practices and competencies in the processes of gathering evidence and advocacy towards libraries' contribution to the UN 2030 Agenda, focusing on the project's first stages. After presenting the research background and general methodological frame, the relevant approaches, methods and tools for assessing libraries' contribution to sustainable development (SD) are examined, particularly the impact evaluation perspective. The resulting Model for Evaluating Public Libraries' Contribution to SDGs is discussed as well as the alignment process with SD goals and national priorities by using the SDG# Mapping Tool. Finally, some key aspects of the ongoing research are presented.

Keywords: Public libraries; Sustainable Development; Environmental impact analysis; Portugal

Introduction

Despite being an old concept shaped by evolving contexts (Giovannoni and Fabietti 2013; Kidd 1992), sustainability (or sustainable development¹) has become a buzzword over the last two decades, nurtured by discussion about man-made global warming and resource protection.

This paper is an updated version of that presented at the 83rd IFLA World Library and Information Congress, Wrocław, Poland (Pinto and Ochôa 2017).

1 Although some researchers argue that there is a conceptual difference between sustainable development and sustainability, in line with Gray (2010, 53) as well as Giovannoni and Fabietti (2013, 22), we use these concepts interchangeably since we consider that both entail the same parameters and implications in terms of policy and strategies.

The most commonly quoted definition of sustainable development² stresses the meeting of needs and puts a clear focus on intergenerational equity along with responsibility in a broad sense. In September 2015, the adoption by United Nations member states of the 2030 Agenda for Sustainable Development set the global, national and local framework for putting that responsibility into action. Achieving the seventeen Sustainable Development Goals (SDGs) and one hundred and sixty-nine targets will mean that “no one was left behind”, but also reflect the progressive and cumulative engagement of countries, communities, sectors, public and private organisations as well as citizens in the process (United Nations 2015). Within the quest for global sustainable development, the Library and Information Services (LIS) sector should be a key partner and active contributor. To be recognised as such by stakeholders, the LIS sector needs to promote libraries' role as development agents, namely by gathering evidence and evaluating their contribution to implementation of SDGs.

In this context, a team of researchers at the Faculty of Social Sciences and Humanities of the Universidade Nova de Lisboa (Portugal), willing “to think globally, but act locally” and looking for an answer to the question “How can public libraries gather evidence and evaluate their contribution to Sustainable Development Goals?”, has initiated a research project in November 2016 entitled *Bibliotecas Públicas e Sustentabilidade: Recolha de Evidências da Contribuição para os ODS* [*Public Libraries and Sustainability: Gathering Evidence of Contribution to SDGs* (Project PLS)]. The Project PLS aims to develop a framework for evaluating public libraries' contribution to SDGs and tailor it to Portuguese public libraries. As recommended by the report *Worth Their Weight: An Assessment of the Evolving Field of Library Evaluation* (Imholz and Ams 2007, 32–34), the project strategy intends to strengthen library advocacy efforts through evidence-based results and a comprehensive research agenda that promotes systematic evaluation of libraries' contributions, conceptual models as well as analytical tools to make a unified and full case for public libraries.

This text aims to respond to as well as, where possible, translate these needs into productive suggestions for future research and evaluation of ongoing strategies and alignment processes.

² Published in 1987, the Brundtland Report states that “sustainable development is development that meets the needs of present without compromising the ability of future generations to meet their own needs” (United Nations, World Commission on Environment and Development 1987, 43).

Background and General Methodological Framework

Since 2012, researchers at the Faculty of Social Sciences and Humanities of the Universidade Nova de Lisboa have been pursuing a line of research that intersects LIS performance evaluation with sustainability transitions management³ and competences development. During 2013 and 2014, this intersection was put into practice in co-creation workshops on “Building a Sustainability Assessment Framework”, targeted at students of LIS courses. These interdisciplinary experiences led to the definition of a draft conceptual framework for assessing the sustainability and impacts of LIS, which was further consolidated (Ochôa and Pinto 2014) and expanded by introducing the standard 16439 of the International Organization for Standardization [ISO] (2014) as well as media and information literacy evaluation perspectives (Ochôa and Pinto 2015).

The intensification of advocacy initiatives of the International Federation of Library Associations and Institutions (IFLA) towards global sustainability after 2013 (for example *IFLA Statement on Libraries and Development* 2013; *Lyon Declaration* 2014), international adoption of the *Post-2015 Development Agenda* (United Nations Office of Drugs and Crime [UNODC] 2013) in September 2015 and release of the *Final List of Proposed Sustainable Development Goal Indicators* (United Nations 2016) in June 2016 made clearer the need to provide the LIS community with methods and tools for measuring as well as evaluating its contribution to sustainability. Since 2016, these initiatives have been developed at a national level by the participation of the Associação Portuguesa de Bibliotecários, Arquivistas e Documentalistas [Portuguese Association of Librarians, Archivists and Documentalists] in the International Advocacy Programme (IAP), addressing sustainability issues in several partnerships (namely FEBAB), events (seminars and regional meetings) and specialised webinars.

Evaluation research and evidence-based theory provided the general framework for Project PLS. The research question was addressed through an eminently qualitative methodology supported by the combination of two principal methods: literature review and construction/application of conceptual models as well as tools for analysis.

The Project PLS is structured in five principal stages:

- (1) Identification of relevant approaches, methods and tools for measuring and evaluating LIS contribution to sustainable development
- (2) Alignment with SD goals, targets and indicators

³ Transitions are complex and long-term processes comprise of multiple actors and changes.

- (3) Development of a framework for evaluating public libraries' contribution to SDGs
- (4) Pilot test (group of Portuguese public libraries)
- (5) Final report

During the first stage, the literature review process was complemented by a questionnaire that analysed Portuguese public libraries' involvement in SDGs international, national and local initiatives.

Libraries and Sustainability: Approaches and Methods of Evaluation

Within the broad *corpus* of sustainable development and sustainability evaluation, the literature review on the LIS/sustainability topic and further application of an analytical tool led to the identification of three main approaches:

- greening libraries and reducing their environmental impact;
- culture as the fourth pillar of sustainability, largely driven by UNESCO;
- the libraries' contribution to global (sustainable) development goals, fostered by IFLA.

Although these areas of theory and practice are frequently interrelated, for analytical purposes they were separated.

Concerning the intersection of LIS with evaluation and sustainability, the *corpus* analysis showed that adopting an impact assessment perspective would provide an adequate model, methods and procedures for gathering evidence on LIS contribution to SDGs. Within this broad *corpus*, two approaches stood out:

- Markless and Streatfield's model of library impact evaluation (2006) and, particularly, the *Impact Planning and Assessment (IPA) Road Map* developed for the Bill & Melinda Gates' *Global Libraries (GL)* initiative (Bill & Melinda Gates Foundation n.d.; Streatfield and Markless 2009). In 2013, the GL approach produced a Common Impact Measurement System (CIMS) based on data collected by public libraries grantees (Streatfield, Markless and Cottrill 2015) and later a public library impact data hub, a *GL Data Atlas* (Schrag et al. 2015).
- The ISO 16439 standard on measures and procedures for assessing the impact of libraries (2014), which provides guidance to the LIS community on that matter as a "response to worldwide demand for specifications of library impact assessment" (vi).

Avoiding the discussion about the conceptual distinction between evaluation and assessment (see, for instance, Streatfield and Markless 2009, 135), both were considered as synonymous, referring to the process of determining the merit or value of something or result of that process. In line with ISO 16439 (2014), impact is here defined as “the difference or change in an individual or group resulting from the contact with library services” (4). LIS impact evaluation, therefore, is the process of gathering evidence of changes or benefits to individuals, institutions and/or society, which have resulted from library services or products.

As Streatfield and Markless (2009) emphasise, change is the essential element of impact: changes in individuals’ knowledge and skills, attitudes and perceptions, behaviour as well as broader social or economic change. The GL IPA Road Map suggests six principal areas (dimensions) where public access to information in libraries can make a difference: culture and leisure, education, communication, economic development, health and government as well as governance (e-government) (Streatfield and Markless 2009, 138). Later, the CISM added one more area, digital inclusion (Schrag et al. 2015, 4–5). In the IPA process, data is collected using two related measurement systems: Performance Metrics (PMs), using twenty-one required and two optional indicators for measuring technology and services provided; and CIMS, using forty-one required and fifty-three optional indicators for measuring impact on the lives of people (Bill & Melinda Gates Foundation n.d., 28–31). Within this assessment process, evidence “can be any type of information piece of data that people use to help them answer a question” (Bill & Melinda Gates Foundation n.d., 8), which “becomes evidence when you use it to build a case about the impact of public libraries” (n.d., 8), with an indicator “a specific statement against which achievement or progress can be quantitatively measured” (n.d., 9).

The ISO 16439 standard (2014, 14–17) presents a set of methods and procedures for assessing the impact of LIS considered to be the most heavily used and that have proved most effective for that purpose. The type of effects of LIS impact is synthesised in Table 1.

Table 1: Type of effects of LIS impact (based on ISO 16439).

Effects of LIS impact	
Individuals	Changes in skills and competences Changes in attitudes and behaviour Higher success in research study or career Individual well-being

Table 2: (continued)

Parent institution or community	Higher institutional prestige and rankings Greater and more positive visibility of the library Increased institutional funding, research grants, donors Attracting top researchers, academic staff, students Attracting other research entities, business, NGOs
Social	Social life: 1) Social inclusion; 2) Social cohesion Participation in information and education: 1) Free access to information; 2) Free Internet access; 3) Education and lifelong learning Local culture and identity Cultural diversity Community development Individual well-being Preservation of the cultural heritage
Economic Value	Return on Investment (ROI)

According to Streatfield (2002, as cited in International Organization for Standardization 2014, 21), in most cases LIS impact cannot be captured directly, so can be collected in the following ways:

- Inferred through
 - output data (for example attendance at events, levels of service use, results of examinations)
 - library performance indicators
 - user satisfaction levels
- Solicited (through questionnaires, interviews, focus groups or other methods for requesting information or opinion)
- Observed (through structured observation, informal observation, self-recording, tests)

Frequently, the combination of different methods provides a richer set of findings, leading to a better understanding of LIS impacts.

Model and Tools for Evaluating Public Libraries' Contribution to SDGs

By incorporating this impact assessment perspective into the Project PLS, it was considered that evidence of public libraries' contribution to SDGs should be collected through impact assessment methods that could be aligned with sustain-

able development goals and targets. In this context, the contribution concept plays a leading role: on the one hand, it emphasises the focus on goals (SDGs) and on the other embodies the assumption that public libraries in general, like the grantees using GLIPA Road Map, have “contributed to the changes identified and ha[ve] ‘added value’ but there may be other influences involved so we do not seek to prove causal relationship” (Streatfield and Markless 2009, 136).

The impact assessment perspective was the cornerstone of the Model for Evaluating Public Libraries Contribution to SDGs represented in Figure 1. Being driven by an evidence based approach, the model also emphasises an aspect that is crucial for the assessment process: the existence of adequate evaluation skills. Building on previous research on impact evaluation competences for cultural organisations (Ochôa and Pinto 2017), the essential competences for implementing the PLS assessment framework were identified and grouped around six domains: reflexive practice, technical practice, situational analysis, management, interorganisational and interpersonal (285–286).

For the alignment with SDGs and national priorities, we created a SDG# Mapping Tool with six columns, organised in two groups. The first group is called SGD# and has two columns: targets and indicators. The second group is named “Methods for Gathering Evidence of Public Libraries’ Contribution” and comprises of four columns: change dimensions, type [of method], indicators/other [methods] and sources. When planning the mapping process, we prioritised the analysis of SDGs and targets aligned with present Portuguese strategic priorities towards the 2030 Agenda, namely SDGs 4, 5, 9, 10, 13 and 14 (Portugal 2017, 10–12).

Table 2 exemplifies the process by presenting the results of SGD 4 mapping. It should be noted that all targets were thoroughly analysed even though this figure only shows those that will be integrated into the framework for evaluating public libraries’ contribution to SDGs.

In what specifically concerns the methods for gathering evidence about public libraries’ contribution to education/digital inclusion, the SDG indicator associated with target 4.4 was found to be too narrow: by focusing on Information and Communications Technology (ICT) skills it leaves out other “relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship” (United Nations n.d., Target 4.4). Considering the EU context and growing influence of the Digital Competence Framework for Citizens (DigComp), the Portuguese National Statistical Institute (INE) formulation of the correspondent indicator (4.4.1)⁴ was adapted to comply with the SD target and DigComp’s

⁴ According to INE (Instituto Nacional de Estatística n.d.), the indicator 4.4.1 refers to the proportion of individuals between the ages of 16–74 that can perform ICT related tasks (%) by type of task (annual).

five domains: information and data literacy, communication and collaboration, digital content creation, safety and problem solving (Vuorikari et al. 2016, 12–16).

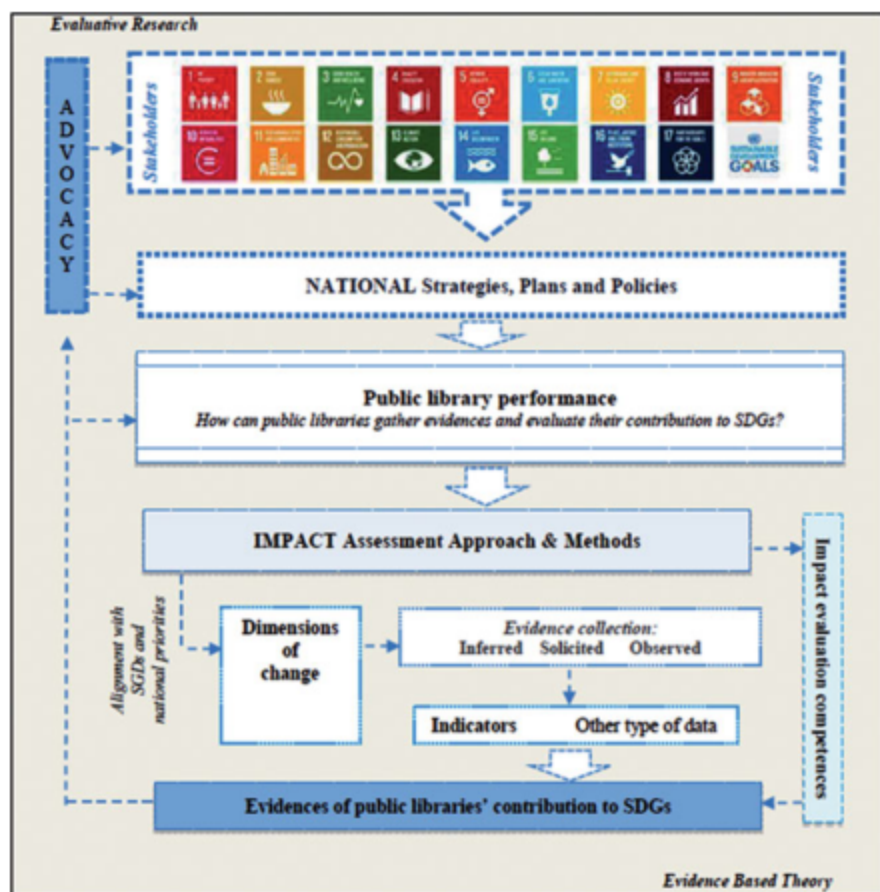


Figure 1: Model for evaluating public libraries contribution to SDGs. © L. G. Pinto and P. Ochôa.

Table 2: SDG# mapping tool.


SDG #	METHODS for gathering EVIDENCE of public libraries' contribution				Sources & Notes	
	Indicators	CHANGE Dimensions	Type	Indicators / Other		
 4. Ensure inclusive and equitable quality education as well as promote lifelong learning opportunities for all	4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1 Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by gender	Education (Competences)	Solicited (Questionnaires)	Number of students who use public library services (for example WIFI, computer, Internet, physical space, tutorial programme) to complete their homework, by education level and gender	Adap. GL CIMS indicator 17
	4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by gender	Education (Competences) (Participation in lifelong learning)	Inferred (Output data) (Library performance indicators)	4.3.1a Participation rate of youth and adults (ages 18–64) in formal and non-formal training at the library (%) in the previous 12 months, by gender 4.4.1a Proportion of individuals aged 16–74 that attended ICT training at the library and have basic or above basic skills (%), by skill domain and gender	Adap. INE proxy indicator 4.3.1 Adap. ISO 11620, B.2.2.5 (number of user attentances at training lessons per capita)
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	Education (Competences) (Participation in lifelong learning) (Digital inclusion)	Solicited (Tests) (Questionnaires)	4.4.1a Proportion of individuals aged 16–74 that attended ICT training at the library and have basic or above basic skills (%), by skill domain and gender	Adap. INE proxy indicator 4.3.1 Adap. ISO 11620, B.2.2.5 (number of user attentances at training lessons per capita)	Adap. DigComp and DESI

Table 2: (continued)

<p>4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship as well as appreciation of cultural diversity and culture's contribution to sustainable development</p>	<p>4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment</p>	<p><i>Education</i> [Competences] [Attitudes and behaviour] [Promotion of sustainable development]</p>	<p>Solicited [Questionnaires]</p>	<p>Number of library visitors who are qualified to get a job as a result of educational or job-related training opportunities they accessed using public library services (for example online education opportunities/programmes, training and assistance, workshops, study groups or learning circles)</p>	<p>Ada p. GL CIMS indicator 19</p>
<p>4.7.1a User attendances at library events aimed at knowledge and skills needed to promote sustainable development</p>	<p>4.7.1a User attendances at library events aimed at knowledge and skills needed to promote sustainable development</p>	<p>Inferred [Output data] [Library performance indicators]</p>	<p>Ada p. ISO 11620, B.2.2.4</p>	<p>Ada p. ISO 11620, B.2.2.4</p>	<p>Ada p. ISO 11620, B.2.2.4</p>

Final Remarks: Relevant Aspects that Might Become Learned Lessons

Up until now, this research concentrated on drawing a Model for Evaluating Public Libraries Contribution to SDGs and mapping tool that facilitate public libraries' understanding of sustainability transition management strategies. The core of our final report (expected to be presented in March 2018) will be a measurement, learning and advocacy strategy that can help Portuguese public libraries demonstrate how they contribute to local, national and global sustainability. Some aspects that might become learned lessons are worth mentioning:

- If there is already a national alignment and monitoring system of indicators for the stated goals and targets we should use, whenever possible, the national indicators, aligned with a public library focus and integrated into the library performance evaluation system. We should also add other specific indicators that can provide stakeholders with evidence of public libraries' contribution to the Agenda 2030. In this context, we recommend:
 - Better leverage of existing data among the statistical agencies to allow for consistent estimation of contributions
 - Increased access to data, in order to facilitate more robust library evaluation research
 - Identification of gaps in impact data and how they might be filled
 - Convening international workshops/forums to discuss evaluation drivers, impediments and enablers
- Since many of the SDG indicators are targeted at specific age groups and/or gender, breaking down data by group age and gender is a useful guiding principle.
- Being in an EU Member State, Portuguese public libraries should pay attention to the final list of EU SDG (European System of Sustainable Development Indicators, EUSDI set), which will be annually monitored from 2018 onwards.
- Specifically in areas concerning education and digital inclusion, using DigComp as reference for assessing public libraries' contribution to digital competences development will be imperative. Since 2015, DigComp is used in the EU for self-assessment and curriculum development (Europass) as well as in the construction of the Digital Skills Indicator which is part of the Digital Economy and Society Index (DESI).

Finally, it is important to mention that public libraries, to raise awareness of the role they can play in the near future, need to show proof of their contribution to UN 2030 Agenda and SDGs by measuring and gathering evidence of their perfor-

mance, namely in relation to access to information and knowledge, access to ICT infrastructures and media as well as literacy competences development. At the same time, library workers' participation and engagement in the ongoing advocacy process must be boosted by providing them with adequate sustainability evaluation competencies.

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Nathalice Bezerra Cardoso

5 Environmental Responsibility in Brazilian Libraries

Applying Environmental Management, Disseminating Environmental Information and Putting Into Practice

Abstract: In addition to the construction of sustainable buildings, there are several actions that can be applied to a librarian's everyday activities aiming at sustainability. The goal of this study is to present through examples how librarians, as managers, citizens and professionals, can put environmental management into practice in their work environment. Libraries have a major potential to develop actions for sustainability, as they are one of the most common cultural facilities in Brazilian cities and towns. They should be an example for society, incentivise production of knowledge as well as spread information and environmental knowledge. This work also highlights the importance of creating partnerships with other institutions to make libraries increasingly sustainable. Sustainable libraries will help to produce critical thinking aiming to reduce humans' ecological footprint, contribute to the sustainable development of a region and thus improve people's quality of life. We conclude that it is crucial that library science develops a relationship with sustainability to collaborate to achieve the United Nations Sustainable Development Goals (SDGs).

Keywords: Sustainable development; Libraries; Environmental sciences; Information services; Brazil; Library science; Environmental responsibility

Introduction

In Brazil, there are no specific national guidelines focused on sustainability within the context of public libraries. The country follows the guidelines of the IFLA/UNESCO *Public Library Manifesto* (1994) as well as *Caracas Declaration* (United Nations Educational, Scientific and Cultural Organization 1982) which expresses the commitment of the Latin American and Caribbean public libraries to the region, reinforcing their role in democratic life and stimulating citizen participation. According to data from the National System of Public Libraries (SNBP), the country has to date (April 2015) six thousand one hundred and two public libraries in twenty states and the Federal District (Sistema Nacional de Bibliotecas Públicas n.d.). It is the most widespread cultural public service in Brazilian

municipalities, with the potential to become a centre of production and diffusion of information as well as environmental knowledge.

Given that sustainability is a priority in today's world, it is imperative that governments and society mobilise in the search for sustainable solutions, from which the field of Library and Information Science cannot be distanced.

Libraries are potential spaces for citizen awareness and should serve as an example for achieving Goal 11 of the United Nations Sustainable Development Goals, to make cities and communities sustainable. As institutions maintained by the State, public libraries should incorporate sustainable construction, criteria and principles for saving natural resources, minimising environmental impacts, rational management of public properties and adequate management of solid waste. At the same time, they should not forget their mission to collaborate to broaden access to information as well as to encourage reading besides sustainable practices.

In Brazil, the most widely used sustainable building certificates are the Leadership in Energy and Environmental Design (LEED), issued by the Green Building Council Brasil (GBC Brasil), and the Brazilian adaptation of the French High Quality Environment (HQE) certificate called AQUA ("Alta Qualidade Ambiental", meaning high environmental quality), issued by the Vanzolini Foundation. It is important to clarify that both the LEED and AQUA certificates require payment for the project analysis and certification fees. The monetary values differ according to the project and it often becomes impractical to obtain certification due to the high costs involved.

In the case of the construction of a new library, it is easier to implement sustainability criteria in projects for certification purposes. However, it is known that not all libraries can be rebuilt or restored, such as libraries registered in the Institute of National Historical and Artistic Heritage (IPHAN). These cannot make major modifications to the building due to legal restrictions, especially with their facades. The current economic crisis also hinders investments in the retrofitting of public libraries.

However, in addition to the construction of sustainable buildings, there are several actions that can be applied in the day-to-day operations of a library to reduce human impact on nature and promote sustainable development. It is extremely important that such actions become part of the daily life of any librarian, functioning as a starting point for environmental awareness and generating behavioural changes throughout the community.

Environmental Management Guidelines

The application of “Environmental Management” (EM) in the work environment is fundamental in promoting sustainable development. As well as raising the curiosity of those who visit the library, it also serves as an example of ecological correct actions and behaviours, prompting inquiries and reflections by the users of the library. It is important to highlight that according to the *Vocabulário Básico de Meio Ambiente*, the concept of EM means the attempt to reconcile the use of natural resources with the minimum amount of damage, ensuring long-term productivity (Fundação Estadual de Engenharia do Meio Ambiente 1990, 107).

When focusing on EM, it is important for the library to be concerned about human resources and establish who will be involved as well as responsible for defining actions, initiatives, programmes and projects. Once the team is set and actions are planned, it is important to establish partnerships with local companies and institutions, with one way to attract business interest being working with marketing to recognise institutions that have made the library more sustainable. Local media and social networks are key vehicles for such dissemination.

It is important to emphasise that in Brazil the *Environmental Public Administration Agenda* (A3P), published by the Ministry of the Environment (Ministério do Meio Ambiente 2017), has fundamental guidelines to apply EM and has as its general objective to implement

(...) environmental management in Government’s administrative and operational activities. This agenda presents principles of behavioral changes ranging from a change in investments, purchasing and contracting services by the government to proper management of solid waste generated at work and of used natural resources. All this to improve the quality of life in the workplace and contribute to sustainable development. This document serves as a reference to insert environmental management in any working environment and should be adopted by librarians. (Cardoso and Machado 2015, 12)

It is critical that all library managers be aware of this publication in order to apply EM to their work environments. It is also worth noting the objectives of Law No. 12,305, enacted in August 2010, that establishes the National Solid Waste Policy:

- I Protection of public health and environmental quality
- II Non-generation, reduction, reutilisation, recycling and treatment of solid wastes, as well as environmentally appropriate disposal of tailings
- III Encouragement of the adoption of sustainable patterns of production as well as consumption of goods and services
- IV Adoption, development and improvement of clean technologies as a way to minimise environmental impacts

- V Reduction of the volume and hazardousness of hazardous waste
- VI Incentivising the recycling industry, with a view to promoting the use of raw materials and inputs derived from recyclable or recycled materials
- VII Integrated solid waste management
- VIII Articulation between the different levels of public power and work with the business sector, with a view to technical and financial cooperation for integrated solid waste management
- IX Continued technical training in the area of solid waste
- X Regularity, continuity, functionality and universalisation of the provision of public services for urban cleaning and solid waste management, with the adoption of management and economic mechanisms that ensure the recovery of the costs of services provided as a way of guaranteeing its operational and financial sustainability, in compliance with Law No. 11,445 of 2007
- XI Priority, in government procurement and contracting, to
 - (A) recycled or recyclable products,
 - (B) goods, services and works that consider criteria compatible with socially and environmentally sustainable consumption patterns.
- XII Integration of reusable and recyclable material collectors into actions involving shared responsibility for the product life cycle
- XIII Encouragement of the implementation of product life cycle evaluation
- XIV Encouragement of the development of environmental and business management systems aimed at improving production processes and reusing solid waste, including energy recovery and use
- XV Encouragement of environmental labelling and sustainable consumption

The law relies on reverse logistics to determine the importance of shared responsibility for the product life cycle. The objective is to transform companies that produce, import, distribute and trade, as well as consumers, into agents responsible for solid waste disposal.

Libraries' Potential as Actors for Sustainability

Every library should do their part. Therefore, avoiding waste in library services is essential to reduce litter production and lessen the impact of such solid waste on the environment. It is important to remember the sustainability rule of the five Rs before throwing something away: refuse, reduce, reuse, repurpose and recycle. Placing selective collection bins in the library is also critical, while small changes in consumption habits and behaviours are especially relevant for the conservation of the environment as well as sustainable development.

The 5 Rs – Refuse, Reduce, Reuse, Repurpose, Recycle

Refuse

Some examples of good practice are avoiding the use of white paper for document printing, as well as encouraging the use of text types such as digital publications, audiobooks and electronic journals.

One other habit that needs to be revised is the disposal of plastic bags in dumps, as this material is derived from petroleum and takes about one hundred years, depending on exposure to light and other factors, to decompose. According to Recicloteca (n.d.-b), plastic represents about 20% of waste in Brazil, while it is believed its use and consequently disposal will increase further in the coming years.

According to a Fundação O Boticário de Proteção à Natureza's publication (1991), many dangerous chemical elements such as propylene, ethylene, phenol, benzene and polystyrene are used in the manufacturing of plastic bags. In addition, bags of this type usually do not end up in the correct destination, but rather are dumped in rivers, seas and the ground (230).

In the United States, one million sea birds and one hundred thousand mammals per year have been killed by plastic bags, surpassing the number of dead animals in the oceans due to oil spills and the presence of metals or other toxic materials (United Nations 2017). It is known that the same occurs in Brazil, so it is necessary to avoid not only the use of plastic bags but also all products made of plastic, as well as to make necessary provisions for recycling.



Figure 1: Water fountain at the Biblioteca Parque Estadual do Rio de Janeiro (BPE).
© N. B. Cardoso.

When purchasing equipment and furniture for the library, ecological solutions should also be chosen. For instance, in the case of a water fountain, both for public and library staff use, it is possible to give preference to those that do not need cups (Figure 1), thus avoiding the use of disposables.



Figure 2: Bathroom faucet at BPE.
© N. B. Cardoso.

Placing plastic seals on bathroom faucets, so faucets are not fully pressed down, hence dispensing less water when pressed, is another effective idea (Figure 2).

Reduce

In this context it is necessary to reduce the use of paper, so as to avoid the consumption of white paper and give preference to TCF (Totally Chlorine-Free) paper, which is bleached using oxygen and hydrogen peroxide. Another solution is to give preference to recycled paper that needs less water to be produced than white paper (one ton of recycled paper requires two thousand litres of water and uses 1,000 to 2,500 kWh of energy). The production of recycled paper also avoids the use of polluting chemical processes, reducing the pollutants released in the air by 74% and those discharged into the water by 35% (Recicloteca n.d.–a).

A related factor is how eucalyptus monocultures cause desertification of the climate and soil. According to Cardoso (2008), large forests such as eucalyptus require an enormous amount of water and each eucalyptus tree needs approximately thirty litres of water per day to grow effectively. This ends up generating a large water deficit in regions where they are cultivated and consequently some desertification of the region. This is a serious problem, since many plantations are sited at the borders of streams and river springs, eventually drying up the soil. In the north of Espírito Santo alone more than one hundred and thirty streams dried up after eucalyptus had been introduced in the region.

Another important action is to review texts on computers before printing in order to avoid the maximum use of paper. If one really needs to print, both sides of the sheet could be used, with Recicloteca (n.d.–a) stating that using both sides of the paper can reduce the use of printing and writing papers by up to 50%.

According to Recicloteca (Recycling and Environmental Information Center) (n.d.–a), paper waste corresponds to approximately 20% of the overall waste produced by Brazilians, while two to three tons of wood and significant amounts of water (an average of one hundred thousand litres) as well as energy (5,000 kWh;

Brazil ranks fifth on the global energy-consuming list) are required to produce one ton of paper. Highly toxic chemicals, chlorine and chlorine dioxide, are used in the separation as well as bleaching of cellulose and pose a serious risk to human health and the environment, compromising the quality of water, soil and food (Instituto Brasileiro de Defesa do Consumidor 2004, 34–35).



Figure 3: Toilet flush box. © N. B. Cardoso.

Another way to avoid waste is by placing a PET bottle into the toilet flush box to reduce water use (Figure 3).

If the library has an outdoor garden, it is essential to collect rainwater to water the plants. There are several websites and videos on the internet teaching how to make a rainwater collector with recyclable material.

Other small changes in habits, such as turning off the lights when no one is around, turning off air conditioning at the end of the day in non-storage areas (otherwise it would not be beneficial to books) as well as not leaving doors and/or windows open when air conditioners are on, are collaborative ways to save energy.

According to the Akatu institute (2011), it is necessary to shut down the computer at lunch time and whenever it is inactive for more than half an hour. A personal computer turned on for one hour a day consumes five kWh per month, with the same for the monitor when left inactive for more than fifteen minutes. It is of great value to research equipment that consumes less energy at the time of purchase. When it is necessary to replace old with new equipment the former should be donated to someone in need of such.

LED lamps last longer and use less energy than cold fluorescent lamps. Using stairs instead of elevators, in addition to saving energy, offers a means of healthy exercise. Disseminating this information by placing signs at elevators, explaining the health benefits, usually ends up encouraging the use of stairs.



Figure 4: Photovoltaic energy power plant at BPE. (Rio de Janeiro. Secretaria de Cultura, 2014).

Light, the company responsible for the distribution of electric energy in the city of Rio de Janeiro, has a Program of Strategies for Energy Efficiency (PEE), which finances public projects that aim to reduce energy consumption. In the renovation of the public library Biblioteca Parque Estadual do Rio de Janeiro (BPE), *Light* was a partner that, through the PEE, enabled the installation of a system of photovoltaic solar energy that generates the energy used in the electrical system of the library (Figure 4). This facility contributed to the library being the first in Brazil to obtain the Gold category LEED certification. The power plant would save 132.5 T of CO₂ per year but, unfortunately due to the current economic crisis in Rio de Janeiro, the library closed due to a lack of resources.

Reuse

Another important issue is the discarding of books and other library materials. Before discarding, libraries should check whether they can donate the books to another library or if it is possible to recycle the material.

In relation to furniture, the Formica used in the furniture of the BPE library is made of recyclable PET bottle material. Many chairs are made of wicker¹ and the wood used to make the floor of the library has the FSC certification (Figure 5) that guarantees its origin as a result of forest management (Rangel, 2014).

¹ Wicker is of plant origin and, when protected, has several uses, mainly in the manufacturing of baskets and furniture.



Figure 5: Wicker chairs at BPE.
© N. B. Cardoso.

Repurpose

As for electronic waste (or e-waste), the State of Rio de Janeiro used to have a social inclusion project that would accept donations of computers. The Fábrica Verde project, created in 2011 by the Secretaria de Estado do Ambiente (State Department of the Environment), promoted the training of young people in assembly and maintenance of computers. Out of every four computers donated, students were able to produce one in usable condition that was subsequently donated to community telecentres promoting digital inclusion.



Figure 6: Fábrica Verde Project. © B. Alcântara.

Any company, institution, or individual could donate used computers for the project. Unfortunately, the project was stopped in 2014 and since then there are no public activities regarding the disposal of electronic waste in Rio de Janeiro. Libraries could adopt this idea by partnering with companies (and contributing

to SDG Goal 17: Partnerships for the Goals) that collect electronic waste and providing a room to carry out training of young people for the job market. This would contribute to SDG Goal 4 (Quality Education) as well as reduce the impact of e-waste in the environment, since heavy metals such as cadmium, lead, mercury and beryllium are present in the composition of computers.

According to the eCycle website (Cerni 2011), mercury, a metal that damages the nervous system, causes motor and sensory disturbances, tremors and dementia, is present in TV tubes, monitors, batteries, bulbs and personal computers. Lead, which is used in cell phones, monitors, TVs and computers, causes genetic alterations, attacks the nervous system, bone marrow as well as kidneys and causes cancer. Cadmium, present in the same devices that use lead, causes lung and prostate cancer, anemia and osteoporosis. Beryllium is a component material of cell phones and computers and causes lung cancer. Neuci Bicov, environmental management specialist at the Center for Disposal and Reuse of Computer Waste (CEDIR) belonging to the Centro de Computação Eletrônica of the University of São Paulo (CCE/USP), states that everything using batteries, electronic boards and wires has some contaminating material. Bicov details that this type of contamination is cumulative, namely that the more contact one has with it, the worse it is for their health.

Any e-waste or electronic equipment such as printers, scanners, phones and cell phones should also be disposed of in an appropriate place. If the equipment is not in a condition to be donated, it is possible to demand a proper disposal place from the manufacturer. According to *Lei Nº 12.305, de 02 de agosto de 2010* (2010), manufacturers are also responsible for giving the correct destination for disposal for the materials they produce. The end consumer's lack of knowledge often disrupts this process, causing these products to end up in landfills or dumps. There are non-governmental organisations (NGOs) and companies that collect e-waste, such as Sixtosix in Rio de Janeiro and Hewlett-Packard, Dell, Sony and Canon throughout Brazil, as well as NGO PC Vida, Coopermiti, Lorene, Ecobraz, Sucata Eletrônica and Descarte Certo.

According to ACESSA (2008), in 2004 more than three hundred and fifteen million computers were disposed of on the planet, while the US National Security Council (1998), details that of this total about twenty million were donated (3%) while the remainder were recycled (11%), went to waste landfills (15%) or remained at homes and in companies (70%) even though no longer used. 40% of a computer is composed of plastic, 37% of heavy metals which are harmful to human health, 5% of electronic devices, 1% of rubber and 17% of other materials.

According to Baldé, Wang, Kuehr and Huisman (2015), it was "estimated that the total amount e-waste generated in 2014 was 41.8 million of metric tons (Mt). It is forecasted to increase to 50 Mt of e-waste in 2018" (8). Most of this waste can be either reused or recycled, but usually ends up at landfills and dumps (the worst-case

scenario). This is why it is so important to reuse and recycle this equipment, since the materials used in its composition are tremendously harmful to the environment.

Recycle

According to the Associação Brasileira do Alumínio (2013), recycled aluminum process uses only 5% of electricity and according to the International Aluminum Institute (IAI) releases only 5% of greenhouse gas emissions when compared to primary aluminum production. The process reduces the volume of waste generated that would be destined for landfills. It also stimulates ecological awareness, encouraging the recycling of other materials either because of its high residual value or even through environmental education programmes.

Brazil is the country that recycles the highest amount of aluminum (Figure 7), but this relates to the social and economic issues of the country. Aluminum is worth more than paper and glass when it comes to recycling and many unemployed people become recyclable waste pickers as they do not have professional qualifications. In this case, recycling becomes the only income for many Brazilian families.

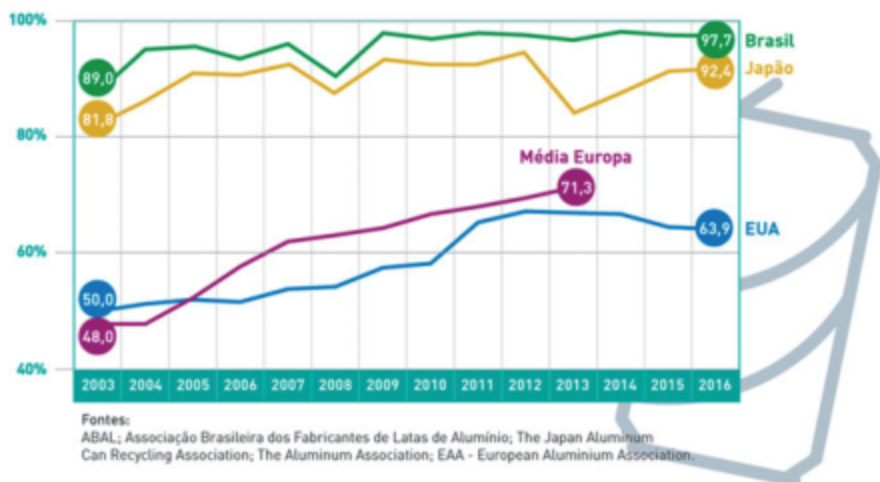


Figure 7: Aluminum Can Recycling Index (Associação Brasileira do Alumínio 2013).

If sold, recyclables could help libraries raise money for books or services. Ideally, however, libraries should partner with self-employed recyclers and encourage them to engage in cooperatives (*cooperativas*). In Brazil, according to Sebrae (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas 2017), “*cooperativa* is

an organisation constituted by members of a certain economic or social group that aims to perform, for the common benefit, a certain activity". This work in cooperatives would not only improve the recycler's working conditions and thereby facilitate the achievement of SDG Goal 8 (Decent Work and Economic Growth), but also contribute to the achievement of further goals. Preventing such waste from polluting our rivers and seas would contribute to achieving SDG Goal 14 ([Preservation of] Life Below Water), while conserving natural resources needed to manufacture new products through recycling would constitute a contribution to SDG Goal 15 ([Preservation of] Life on Land) as well.

Batteries must also not be disposed of with normal household waste. Good practice would be to put collection bins made of recyclable materials in the library at visible places (Figure 8). Only then will the library's users become aware of the amount of batteries they use and how many are no longer disposed of with ordinary waste. It is essential to partner with other companies in order to correctly dispose of this waste. Some supermarkets in Rio de Janeiro, such as Carrefour and Pão de Açúcar, carry out initiatives for collecting batteries (Figure 9).



Figure 8: Collector of batteries at the Library of the Brazilian Biodiversity Fund (FUNBIO).
© N. B. Cardoso.



Figure 9: Collector of batteries for recycling at the Pão de Açúcar supermarket.
© N. B. Cardoso.

Final Considerations

This paper attempted to show, through practical examples, how the application of EM in libraries is fundamental to serve as an example for the community, as well contributing to the Sustainable Development Goals. It also identified that many SDGs are directly related to the environment because they are essential for social and health well-being (SDG 3: Good Health and Well-Being), as well as that partnerships with other institutions are fundamental to the viability of such good practices.

It is noticed that librarians, in turn, must contribute actively to the sustainable development of the place where he/she works. This involves applying environmental management in the workplace, disseminating environmental information and putting into practice their skills and competencies as an educator, so as to raise environmental awareness of the community and ultimately bring about a better general quality of life.

It is essential to consider the library as a space for environmental education through programmes aimed at raising the awareness of the community and its users. Therefore, it is also important to create programmes and projects which aim not only to encourage reading but also make users aware of behaving in ecologically friendly ways, bringing together reading and environmental awareness.

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Lo Claesson

6 The Green Corner at Vaggeryd Public Library

Beyond Providing Information About Sustainable Development for Local Residents in Sweden

Abstract: Why should libraries be green? What is the purpose of a Green Corner in a library? As libraries have a responsibility not to contribute to the destruction of the environment, we must communicate with decision makers during the planning stages of new libraries. While most libraries are not built as green buildings and librarians may not have influence on improving building operations (such as heat and air systems), we can be role models and demonstrate to our patrons what everyone can do to make their homes and community greener and healthier. The Vaggeryd Public Library in Sweden set up a Green Corner which demonstrates ways in which the municipality upholds four environmentally-based principles. This paper provides background on the Green Corner and several cost-effective examples of projects, exhibitions and presentations that brought excitement and knowledge to library patrons of all ages. Exposure to a wide variety of green topics promises to shift the values as well as practices of patrons and elected representatives toward co-creating a more livable world.

Keywords: Public libraries; Green libraries; Sustainability; Sweden

Sustainability Frameworks

Vaggeryd is a small municipality with more than 13,800 citizens. Located in the south of Sweden, it has been working on sustainable development since 1997, when the municipality joined Agenda 21.

In 2013, Vaggeryd became a member of the Association Sveriges Ekokommuner (Swedish ecological municipalities), a voluntary cooperative organisation for municipalities, county councils and regions. The association aims to support and assist in the work for ecologically sustainable social development.

According to the association, four sustainability principles form the framework for a sustainable society and thus Vaggeryd's municipality's environmental guidelines. The principles hold that in a sustainable society, nature is not exposed to systematic

1. concentrated substances from the bedrock, such as fossil coal, oil and metals,
2. concentrated increase of substances from community production, such as nitrogen oxides, freons and hormone-like chemicals,
3. degradation and depletion of nature's cycles and diversity by physical methods (such as large-scale clear-felled areas, overfishing).

In addition, people must not be exposed to systematic barriers regarding

4. personal integrity, influence, competence, impartiality and meaning, such as that people's equal values and rights are recognised and respected.

The Frameworks Applied to Vaggeryd Library

These four environmental guidelines apply to all employees and elected representatives in their daily work, directing people towards more sustainable behaviour. The guidelines are meant to be accessible on the intranet as well as made known and noted at workplace meetings. The guidelines save energy, adapt transportation and promote purchasing with environmental considerations.

Employees and elected representatives do what is possible to reduce travelling between units; there is access available to electric bicycles and individuals can book one of the municipality's electric cars. There is a concerted effort to minimise printing as well as use of electricity while consumption of ecologically sourced and packaged coffee and tea is prioritised. The issue of environmental practices is a standing item on the workplace meeting agenda.

The Green Corner

In order to fulfill the library's goals and contribute to the local work on sustainable development, staff set up a Green Corner. The purpose is to provide a variety of information about sustainable development for local residents.

The group that plans the topics and activities consists of the municipal environmental strategist, municipality communicator, representatives from the recycling plant and municipality environmental group, library director and a teacher from the upper secondary school.

The Green Corner is located at the entrance of the library premises. There are multiple topics explored each year, preferably with a local connection. It has been identified that topics with a tangible connection to people's lives and finances are most compelling to patrons. Practices that affect finances based on how much

energy is used attracts people's attention, such as how to wash laundry in the most economical way.

In connection to each topic, a lecture or activity which is part of the library's programming activities is offered to patrons. Schools have played an active role in several topics, either producing an exhibition or making a PowerPoint presentation or film.

In upper secondary school, students participate as a part of the curriculum or their graduation essay. A small number of preschools have made exhibitions on how they were certified for Green Flag, the Swedish name of eco-schools. Green Flag is both an educational tool and certification programme for schools that work actively and over time to promote sustainable development in teaching and daily activities. A prerequisite for Green Flag is that students are involved in the process and work is based on their ideas.

In another theme, preschool children made their own toys out of used materials from ReMida, a local pedagogic recycling centre, while playing and exploring what you can create from different materials.

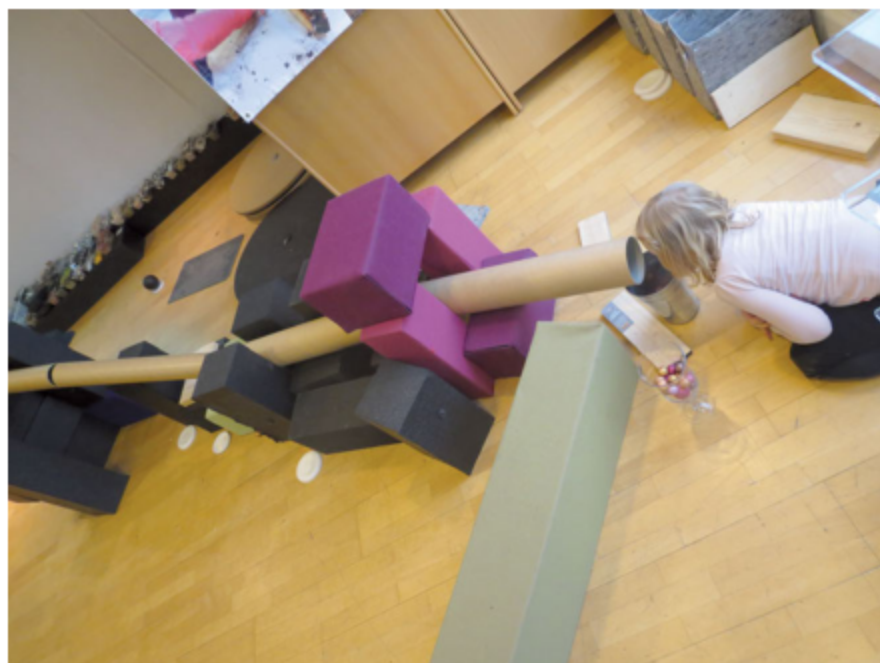


Figure 1: Preschool children exploring what to do from different materials.

© ReMida, K. Nordenstam.

The exhibitions attracted parents who were proud to see what their children had accomplished and hopefully became aware of the broader environmental values of the activities.

Impacts on Environmental Friendly Living

Local connection breeds interest. A recent library event was based on a fire that hit the recycling plant in the summer of 2017, which is located near settlements and a forest. As soil in the region is mostly sand, there were fears that extinguishing water would negatively affect the community's groundwater, as well as concerns about toxic smoke. Political discussions are still taking place as to whether the plant should be moved as well as how to assess environmental impact.

The leader of the emergency services gave a presentation at the library about the course of events during the fire and answered questions. The lecture was also livestreamed so as to reach out to a wider audience, along with a radio announcement, which brought many more people into the conversation than if the presentation had simply been offered to those present at the library.



Figure 2: The fire that hit the recycling plant that caused discussions about the environmental impact. © D. Högberg, Vaggeryd Municipality.

Another topic that engages many people is the prescribing of antibiotics and antibiotic resistance. Why are doctors restrictive in prescribing antibiotics? Why does your child get or not get penicillin when they have an ear infection? When over-prescribed, antibiotics increase the risk of developing resistant bacterial strains. Antibiotic-resistant infections, already widespread across the globe, can infect anyone and in the worst case lead to death. An exhibition on the topic was offered to all in the community, alongside a well attended and dynamic lecture by a physician of disease control.



Figure 3: Poster announcing an exhibition and a lecture on antibiotic-resistant infections.
© A. Bucuk, Vaggeryd Municipality.

Drawing Attention Through Attractive Objects

Libraries play a vital role in disseminating information. However, even the most interesting information can get lost in the shuffle, while screens, posters and book exhibitions are not effective enough. There must be something visual and spectacular, seen in the aforementioned case of antibiotic resistance where large eye-catching models of superbugs were hung from the ceiling.

Another attention-grabbing example was a toilet in connection with World Toilet Day, again connecting local and global issues. World Toilet Day raises awareness and inspires action to tackle the global sanitation crisis, a topic often neglected and shrouded in taboos. Today, 2.4 billion people struggle to stay healthy, keep their children alive and work toward a better future – all for the want of a toilet.



Figure 4: A toilet in the green corner in connection with World Toilet Day. © A. Bukuc, Vaggeryd Municipality.

The toilet was especially fascinating to children. Children discussed the proper use of toilets as well how toilet paper is the only thing to be flushed.

On the topic of waste management, the example of Christmas was used to demonstrate how to shred paper and garlands as well as dispose of non-functioning Christmas tree lights. Decorations for the library's Christmas tree were made from bottle tops and garlands from used felt pens.



Figure 5 (left): Garlands from used felt pens as Christmas tree decorations. © Vaggeryd Public Library.



Figure 6 (right): Christmas tree in the library, decorated with garlands from used felt pens and small flowers made from bottle tops. © Vaggeryd Public Library.

In connection with the exhibitions, books and informational material were displayed for all library visitors. During the first year, all books about the environment were displayed on one shelf. However, the books cover a wide range of fields, making them more difficult to find, meaning that people did not always connect them with the topic of the environment. It became clear that a more effective approach was to mark the books with the subject heading of the environment in the catalogue and then showcase them on certain occasions.

Starting With Children and Their Families

Children are involved in projects as often as possible, either by contacting schools or inviting them to participate in different activities and contests. Earth Hour is also organised every year with activities, which take place during the day, encouraging all who attend to make an environmental promise. Each person receives a candle to light in the evening so as to turn off their lights for an hour. This year, the theme of the food section of the event was vegetarian cuisine and cultivating one's own greens. Many local businesses with ecologically produced food participated, alongside three famous television chefs who cooked vegetarian food for visitors to taste.

There was a quiz for families, waste separation contest for kids and exhibitors showing solar cells as well as other energy-saving measures. Another year featured a children's television host who helped children refurbish their old toys, an activity which attracted many families.

The library also has a makerspace. As its ideology is connected with reuse, the activities in the makerspace typically use recycling material.

Through a partnership with an elementary school, the children may borrow boxes from the library with technical equipment such as wires, clutches, resistances or robots. One of the boxes contains an *Arduino* and includes parts of a model wind turbine. Fashioned from used material from the makerspace, the students learn to assemble and programme the turbine. When not used at school, any one can borrow the boxes.

Conclusion

Someone might ask if creating and managing a Green Corner take too much time away from other responsibilities at the library, but this is not the case as efforts centred on Green Corner are integrated into nearly all library work. For instance, when books are purchased on topics that correspond to sustainable development they are marked with a specific subject heading and added to the collection.



Figure 7: Plastic waste in an aquarium depicting issues in the ocean at large.
© Vaggeryd Public Library.

Regarding the cost, the library does not buy anything extra apart from some minor items such as signs. Materials for exhibitions are often procured from the recycling plant or ReMida, the pedagogic recycling centre. In an exhibition about plastics ending up in the sea, an empty aquarium from ReMida was used and filled with different kinds of plastic waste. The aquarium has attracted many children with no cost to the library.

A press release is sent before a new topic is focused on, with three local papers as well as local radio and television stations invited. All details are announced on the municipality and library websites as well as on social media, while lectures and Earth Hour are posted on bills in the municipality.

We believe libraries need to educate the public and work with decision makers who influence sustainable development. Sustainable development is as much a matter of democracy and equal values as it is tied up with humankind's survival and quality of life. If one has not set up a Green Corner or started greener practices in their library, it is best to start simply and test the most effective methods for their site.

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Purity Kavuri-Mutuku

7 Action to Combat Climate Change and its Impact

Green Library Initiatives at the Kenya National Library Service

Abstract: The green library concept has attracted a lot of interest worldwide, especially in public and academic libraries all aiming to provide inspiring library services in a conducive and user-friendly environment. The greening initiative at the Kenya National Library Service (KNLS) Nakuru branch was ranked among the top five applications for the IFLA Green Library Award competition 2017. The green library concept is slowly gaining momentum and recognition in Kenya, as public institutions such as universities and public/community libraries endeavour to construct libraries that meet our next generation of users' behaviour and expectations. A library building plan must include an environmental impact statement to ensure a low carbon footprint and that improved library services are offered efficiently and effectively (Druaipandi 2016). This paper presents the green library initiatives undertaken by KNLS Nakuru branch in line with the green library movement. These initiatives include the sustainable library building and reading tree initiative in some public primary schools which are members of the library book clubs within Nakuru County. The paper defines the green library/sustainable library building concept by giving examples and expanding on the reading tree concept as embraced by the Nakuru library. It is hoped that other libraries will embrace the idea and help address environmental problems such as climate change, global warming and air pollution that have adversely affected Kenya and the wider world.

Keywords: Green libraries; Children – Books and reading; Public libraries; Book clubs; Library buildings; Kenya

Background of the Green Library Movement

The green library movement emerged in the early 1990s and gained popularity in the library profession around 2003 (Antonelli 2008). The movement advocates the need to build green library buildings, green existing library facilities, provide green library services as well as embrace environmentally supportive and sustainable practices within the library system.

Definitions

The term green and sustainable are both used in this chapter, hence there is a need to define these terms here. According to the *Oxford Dictionary the term green* is defined as “pertaining or supporting protection of the environment” (Green 2012). On the other hand, *sustainable* means “conserving an ecological balance by avoiding depletion of natural resources” (Sustainable 2012).

Antonelli (2008) argues that the earliest articles on Green Libraries appeared in 1991 in the February issue of the *Wilson Library Bulletin*, which featured a special edition on libraries and the environment. The first article by J. and S. Le Rue, entitled *The Green Librarian*, explained how to be environmentally supportive at home and in the library. Another article, *Finding the Trees in the Forest: Environmental Information Sources* by Watson (1991), compiled a list of groups, agencies and publications that focused on the environment and environmental information. Elsewhere, Rome (1991) published an article on *Celebrating Earth Day all Year Long* analysing the history of Earth Day as well as ideas on how to capture public attention on environmental issues throughout the year. Another article by Ann Eagan, *Noise in the Library: Effects and Control*, examined noise pollution in libraries, while Smith (1991) in *The Library as an Environmental Alternative Among Other Things* analysed the role libraries need to play in preserving the environment. All of these articles, published shortly after the twentieth anniversary of the original Earth Day celebration, rekindled an interest in green environmental movements that think globally but act locally. Since then, a number of articles have been published advocating the need for libraries to go green and help in saving the environment.

What is a Green/Sustainable Library Building?

When the term green library is mentioned librarians tend to assume this relates to green library buildings. Scholars, however, have established some definitions as highlighted below.

The term green/sustainable library building has been defined as the practice of creating structures and using processes environmentally responsible and resource efficient throughout a building's life cycle, from site selection to design, construction, operation, maintenance, renovation and reconstruction (Genovese and Albanese 2011). Sustainability in this sense goes beyond designing a sustainable library building to introducing innovative library services and programmes as part of the ongoing life cycle of offering transformative library services.

Elsewhere, California's Department of Resources Recycling and Recovery defines a green or sustainable building as "a structure that is designed, built, renovated, operated, or reused in an ecological and resource efficient manner" (CalRecycle n.d.).

According to Fourie (2012), Wikipedia and Google give different definitions of the term *going green*. However, the one he found most appealing was to pursue knowledge and practices that can lead to more environmentally friendly as well as ecologically responsible decisions and lifestyles which can help protect the environment and sustain its natural resources for current and future generations.

From the above definitions, the green library movement is focused more on protecting the environment and conserving natural resources for future posterity. This calls for personal as well as institutional/organisational concerted efforts to ensure fauna and flora are protected from careless and intentional destruction by humankind.

The green building concept is measured according to a rating system such as the Leadership in Energy and Environmental Design (LEED) certification system developed by the U.S. Green Building Council (Antonelli 2008). LEED uses six credit categories criteria for new building construction:

- sustainable sites,
- water efficiency,
- energy and atmosphere,
- material and resources,
- indoor environmental quality,
- innovation and design.

Fourie (2012) highlighted some strategies that LIS (Library and Information Services) can adopt in order to move forward with *going green*:

- Targeting individuals in society in the context of their everyday lives: LIS can explore and promote the numerous practical issues where each individual can make a difference, such as using less paper through use of e-books, digital libraries, mobiles and tablets, saving fuel by using public transport, thinking about the food we eat and recycling. Many ideas can be gathered from the website of Middletown Thrall Library which is a good example.
- Exploring opportunities to involve people – LIS users and especially non-users – to generate creative ideas on their own as well as LIS' contributions to *going green*, such as involving them in making suggestions on using mobiles and tablets to cut down the use of paper and photocopies.
- Arranging strategic thinking and planning sessions to ensure sustainability.
- Identifying areas in which LIS need to participate to implement *going green* initiatives.

- Compiling reports on the status quo in different sectors regarding *going green*, such as in agriculture, construction, engineering, transportation and waste management.
- Working on developing expertise in behavioural changes, with a possible first step to focus on evidence-based information.
- Exploring means of sharing ideas on *going green*.
- Displaying relevant information on *going green* available in books, videos etc. through every possible means such as home pages, websites' own video clips or games.
- Information is associated with serious business and serious work, but perhaps some fun while sharing can act as an incentive to those involved, as well as for those at whom the information is aimed.
- Relating to the everyday life habits and needs of people as well as translating this on their behalf – not all information needs are realised and expressed – there needs to be proactive availability of information on food and eating, organic food, gardening, dealing with waste and water, pollution and recycling.
- Promoting scholarly research, especially with regard to the role of LIS as reflected in the reported review by Chowdhury (2012).
- Raising awareness of organisations working on various issues concerning environmentally friendly and sustainable libraries.

Green Library Goals

The world today is experiencing a high rate of consumption as well as use of unhealthy products, processes and systems that are causing irreversible damage to the ecosystem, thus affecting the economy, community and individuals. This calls for the creation of radical measures to reduce such impact through the types of structures being constructed and human activities affecting ecology.

Kenya National Library Service (KNLS) Nakuru, Kenya

Building Details and Description

The library stands on a piece of land measuring 0.378 ha. It was built at a total cost of \$2,500,000 and completed on July 2012.

- The Kenya National Library service, as its contribution to environmental responsibility, has resolved to construct buildings that, from their initial con-

ception and design, recognise and demonstrate the need to minimise consumption of resources and electricity used for artificial lighting throughout the full life cycle of the structure.

- The library is focused on reduction of waste pollution and environmental degradation. It has partnered with organisations that collect waste for recycling, encourages use of technology in communications and advocates only printing what is absolutely necessary. Waste paper and discarded books are usually sold to paper recycling companies, thus earning an extra income for the library.
- Daylighting: the large windows throughout the building allow natural light into the building, resulting in less electricity use.
- Water conservation: the library is fitted with low-flow fixtures including toilets, sinks and urinals. This helps control the amount of water consumption.
- Landscaping: there are more than 50 indigenous trees, fruit trees, plants, shrubs and flowers planted on the site, all of which are well adapted to the climate and soils of the region, hence requiring less irrigation.
- Library interior: the library walls are painted with oil paint which avoids health hazards and is washable.
- Book display: books on cultural diversity and environmental management resources are regularly displayed including, through a partnership with the National Environment Management Authority (NEMA), up to date reports on global warming.
- Plastic ban: the library takes a lead in discouraging clients and the wider community from using plastic bags which are damaging to the environment. The initiative was spearheaded by a journalist and friend of the library, which led to the Kenyan government issuing a gazette notice banning the use of plastic bags, effective from 28th August 2017.
- Library Reading Tree: the Library Reading Tree is a project that started in 2015. Children put a sticker with their name, age, school, class, title and author of the storybook they have read in the library on a painting of a tree. The children's inquisitiveness about the reading tree during a school outreach programme made the authors think of starting a green revolution campaign in schools as a way of educating children about environmental conservation. Library staff plant a combination of fruit trees and other indigenous medicinal trees, which are looked after by the children in the book club and environmental club members. Out of the six book clubs, trees have been planted in two primary schools so far, Kenyatta and St. Xavier primary schools. The Kenya Forest Service provides trees for this initiative at no cost.



Figure 1: Plastic Ban Nakuru. Retrieved from The StreetsOfNakuru Twitter account (October 2016).



Figure 2: The library reading tree. © KNLS.

Why Plant Trees and Why Focus on Public Schools?

The goal is to encourage the children to learn that it is good to conserve the environment and planting trees helps to combat climate change. Trees also provide shade for reading away from the scorching sun and make the environment not only beautiful but natural. The authors aim to bring the Library Reading Tree to life in all public primary schools in Nakuru.



Figure 3: Primary school children with teachers, library staff volunteers and the community, planting trees. © KNLS.

Children who attend these schools are from the informal settlement – an area not formally planned but occupied illegally – with the majority suffering from malnutrition and low self-esteem. It is hoped that the children will soon start enjoying eating fruits from the trees that have been planted, thereby boosting their health.

Conclusion

This paper presents green library initiatives undertaken by the KNLS Nakuru branch including the Reading Tree initiative in some public primary schools which are members of the library book clubs within Nakuru County. The initiative supports the United Nations 2030 Agenda for Sustainable Development, SDG 13: Climate Action, that calls for people to take urgent action to combat climate change and its impact. One way this can be achieved is through afforestation, which can accompany and lead to the growth of more reading trees in the world.

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Konrad Kutt

8 The BookboXX

A Sustainable Street Library

Abstract: Like the sun, books are a renewable resource and come with next to no cost of energy. The BookboXX project engages trainees from different professions, bringing books to a larger segment of society and involving society in a new understanding of sustainability. The BookboXX speaks to citizens of every age by offering a deeper sense of place, an interdisciplinary and creative outlet, free resources and in some cases the role of memorialising very difficult times as well as challenging situations. Receiving international recognition, the BookboXX project represents the splendour and simplicity of human potential.

Keywords: Telephone booths; Street libraries; Public libraries; Sustainability; Sharing; Cooperation

Introduction

Throughout history, the public library has offered collective access to culture, history and accumulation of knowledge. At its inception, the library was reserved for clergy and privileged members of society, scholars and students. However, after the establishment of public municipal and national libraries, they became accessible to the general population, with the purpose of the library to lend printed books at no cost. Through repeated lending and borrowing, many benefits were seen in terms of cultural heritage, comparable to ever-renewable energy, like the sun.

With the advent of the BookboXX, a new style of sustainable, decentralised book exchanges have been created. For example, the traditional beautiful, yellow German telephone box is furnished with book shelves for its new career as a street library. Its purpose is not as an administered or private collection of books but rather a type of commons. This non-bureaucratic, community-oriented means of sharing, distribution and release of high quality books strives to find new readers. The books will be passed on or given away, again and again. Over time, many people will have taken a book in their hands, with this opportunity creating many new readers.

A Library for the Street

In many respects, this street library is also place to learn about sustainability. As a first step, trainees from a range of professions, along with their teachers, refurbish and convert the telephone box in their trade school. As a holistic project of education for sustainable development, trainees learn how to create a new kind of library as a place for communication, with books as the central element. An old-fashioned telephone box, small, historic, outdated as well as unfamiliar to most students, is transformed and emerges with new forms and functions.



Figure 1: Education for sustainable development: trainees turning a telephone box into a BookboXX. © K. Kutt.

Trainees work on aspects of social and environmental sustainability by making use of local cultivated certified wood, recycling material, colour and metal technology as well as gardening and landscaping. In addition, they calculate and install an in-house lightning system, a library-owned solar system as well as a charging station for mobile phones and other devices.

The end of the fossil fuel age is evident to all, with energy instead coming from the sun. Sustainability principles become apparent when looking at the interdisciplinary range of professions involved and their various learning places. The collaborative process of design is also adapted to a specific future site, with the intended content, functions and features created in conjunction with political education as well as reflective and action-oriented community building.



Figure 2: The German-Polish BookboXX at the IFLA Conference in Wrocław, Poland, August, 2017, with its own solar system. © P. Hauke.

Example “Mahnmal Gleis 17”

A memorial, Platform 17 (Gleis 17), was established in 1988 at the Berlin-Grunewald railway station to remember the deportation of 50,000 Jewish men, women and children from Berlin into Nazi concentration camps between 1941 and 1945. A BookboXX was placed at the site with one shelf focusing on books about the atrocities and deportations, while the motto “Reading and Understanding” is written on the BookboXX in German and Hebrew.



Figure 3: Renovated BookboXX at rail track 17 at the railway station Berlin-Grunewald. © K. Kutt.

Example “Tempelhofer Feld”

Another BookboXX is placed near the former airport Berlin-Tempelhof in the city centre of Berlin. The thematic background centres on the historic airbridge,



Figure 4: BookboXX at the former famous airport Berlin-Tempelhof, recalling the airbridge.

© K. Kutt.

the eleven month Berlin Blockade of all land-based connections through East Germany by the Soviet Forces in 1948–49. Trainees from the Berliner Stadtreinigung (Berlin City Cleaning) chose this site for their BookboXX, while the focus of the books is the heavily disputed future usage or free-space of the former airport area and its political relevance. The symbol of the airlift became the centre of discussions for the design of the BookboXX in 1948 and today the whole former airport ground serves as an open field for the general public. Pioneers in the field of urban gardening and performing artists receive widespread attention.

Example “Polish-German Oder-Partnership”

The river Oder is emblematic of German-Polish cooperation. Two rivers, Oder and Neiße, have formed the borderline between Poland and Germany since the end of the Second World War in 1945, with the river a symbol of the so-called Cold War (Kalter Krieg) for another forty-five years until 1990. Today, the BookboXX is a symbol of this connection, with the flagging pages of its design resembling a bridge across the river. The pages carry wisdom about books such as “You open a book and it opens you”, “In the beginning was the word” and “There is nothing good, if not done”. This BookboXX (in Poland: BiblioboXX) has travelled from Berlin to places such as Stettin, Łobez and Wrocław, where it has moved from one school to another, celebrating Polish-German friendship. It was also placed in front of the Jahrhunderthalle, attracting thousands of delegates of the IFLA World Library and Information Congress in August 2017.



Figure 5: The Polish-German BiblioboXX, placed in front of the School No. 5, celebrating friendship between both countries.

© Z. S. Zawodowych.

Example “Europe”

The BookboXX Europe promotes a sustainable Europe as well as cultural and literacy diversity throughout the continent. Books connect Europe, seen as the BookboXX travels from one school to another. Pupils connect and negotiate the vision of a united as well as borderless continent in times of significant challenges and negative sentiments towards Europe.



Figure 6: The “BücherboXX Europa”, decorated with an open tumpike as a symbol for European openness. © K. Kutt.

The Concept Behind the Project

Besides the preceding examples of sustainability seen with BookboXXes, such as its unique focus on vocational training and sociocultural education, there are approximately 3,000 different-sized open bookshelves or book cases distributed all over Germany.

These street corner libraries are sustainable in several ways. Their main motto is “Bring a Book, Take a Book, Read a Book,” while their main criteria are simplicity, low-threshold and informal access, shared responsibility as well as social participation as books are enjoyed for free. A new economy of exchange, unconditional sharing and gifting is demonstrated and practiced. A book consumes – apart from production – no energy. Intellectual capital flows freely, books are read repeatedly, while care for books keeps wear and tear in check.

The street libraries are spread across very different types of townships, from upper class to socially challenged neighbourhoods. They are often close to “quarter managed centres” where they contribute to citizens’ quality of life and cultural development.

The book has discovered the public space as it becomes visible through the street libraries. In the midst of the fashionable digital modern age, a growing demand for collective experience and community spirit is observable. At the same time, people are increasingly sceptical about a consumerist economy as well as centrally-managed civility and culture. Conversation circles and creative writing workshops are becoming established, transforming experiences around the BookboXX into a literary cultural agent. With the creation of mini-libraries, the private becomes public and the smart-city receives a self-organised urban library. It is even possible to track your personal book on its journey with the help of the worldwide acting BookCrossing system, connecting past and future readers as a special case of community building.

When private as well as domestic libraries are disbanded and city bookshops sort their stock, books often end up as paper waste in incineration plants. The BookboXX builds a new, sustained, self-organised distribution cycle – not with the habitual order of a municipal library but by principle of emergent chance and surprise.

Challenges

Each BookboXX is maintained by a group of volunteers from the neighbourhood called caretakers (Kümmerer). They take care of the general and conceptual order as well as cleanliness of their little library, while regularly organising meetings, readings and discussions for the general public with authors, actors and contemporary witnesses to history.

The question of vandalism often comes up, especially when free goods – available for everybody – are seemingly open, free and without any security. To this author’s knowledge, a glass pane of a BookboXX was destroyed only once to date, as is common for windows in the neighbourhood where such occurred. There was otherwise no deliberate damage in seven years.

Further reflection on the transfer of responsibility from the individual to care and responsibility for the broader commons is necessary. This transition remains a challenge and is a central part of civic education today as well as the future. It is of worth considering the visitors to whom restraint would be encouraged. Though

well meaning, they flood the BookboXX with cartons of used books while visitors often empty all or many shelves at once.

Of course, the free public library is an alternative, an experiment. New distribution systems are in latent, ongoing competition with existing libraries and bookshops. For example, the number of public municipal libraries in Berlin has declined from two hundred to eighty over the last fifteen years. However, there are also exemplary, constructive collaborations between city and street libraries. In these cases, books that are sorted are not discarded but redistributed and find another life.

On the other hand, the existence of antiquary resellers and second-hand bookshops sometimes leads to commercialisation from the bottom-up. Comparable to the collection of deposits for bottles, there are visitors who earn money by reselling books from the street libraries, with only a few caretakers disappointed by such rare examples. More emblematic of the project's success is local and international recognition including receiving the official award of the UN Decade of Education for Sustainable Development (UNESCO 2005) and UNESCO World Action Programme for Education for Sustainable Development (UNESCO 2014).

Conclusion

In summary, the BookboXX project inspires individuals to revisit the very central tenets of sustainable economics and lifestyles. The street library is a living example, used by young and old alike in the community. The reuse of old telephone boxes sets an example for other kinds of sharing and gifting, including upcycling economy, renewable energy and participatory cooperation while taking responsibility for the old and new. The new street library is part of a larger movement of urbanism from the ground up, representing a longing for community connections and alternative economies, as well as decreasing the current generation's ecological footprint and freedom from fossil fuels.

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Ira Patron and Lilia Rusakova

9 Garbage Hero

Eco-Education Project “Library ECOstyle” at the Lviv Regional Children’s Library, Ukraine

Abstract: After an incident causing multiple deaths at a landfill in Lviv, Ukraine, in May 2016, the Lviv Regional Children’s Library created the environmental education project, Garbage Hero. This project is ongoing since October 2017, with thirty-eight events held to date where nine hundred and seventy-one participants, children and adults have learned how to sort garbage and recycle through entertaining presentations and workshops. A computer game on garbage (waste) sorting called Garbage Hero was provided by partners of the project, while the ECOcorner at the library offered interactive events such as planting greenery, cleaning up a nearby park and using eco-packaging for books. Knowledge gained from this project was shared among librarians throughout Ukraine.

Keywords: Sustainable living; Children; Waste minimisation; Refuse disposal; Recycling; Ukraine

Introduction

The Ukraine is in the process of joining the European Union, which has stringent laws on waste collection and recycling. Some types of waste have long been subject to recycling worldwide, so there is a need for garbage to be utilised as a strategic resource, which is currently not the case in the Ukraine, as well as to involve the younger generation in this mission.

Ecological education for children of preschool and primary school age is centred around a system of activities in the library and beyond. It is extremely important to explain the essence of ecological culture to children in an accessible way. As a result, children will not only be able to sort rubbish themselves, but also teach this skill to their parents. One of the tasks of the project is to draw the attention of teachers to the challenge of environmental education and conduct joint events. During the project, librarians tested new environmental practices with knowledge gained shared among librarians from Lviv’s region and throughout Ukraine.

Background

At the end of May 2016, a tragedy occurred at the Gribovitsky landfill in Lviv where an uncontrolled fire caused the deaths of six people. This event attracted the attention of the entire city's community to the environmental problems of the region and country of Ukraine. The Lviv Regional Children's Library felt the need to engage in solving environmental problems and started the *Garbage Hero* project.

Ecological education is one of the priorities of the library. The author of this project, who is a member of the department for preschoolers and junior pupils at the Lviv Regional Children's Library, is one of the motors in libraries. The author took an active part in various environmental events taking place in the city and visited the specialists of the Griffin landfill, a serious environmental threat to the inhabitants of nearby neighbourhoods. These visits helped establish contact with future project partners.

All global problems start small and all global solutions begin with individual acts. Collecting and sorting garbage is a heroic act and hence the name *Garbage Hero* was created, partnered with *Shadow Masters* who developed a virtual garbage collecting game of the same name.

Library ECOstyle

This eco-education project is aimed at children from four to ten years old, as well as their parents and teachers. The objectives of the project include teaching children about eco-thinking, caring for natural resources, reducing waste as well as sharing their knowledge with relatives and friends. Children and adults learned about sorting garbage, reusing waste materials as well as collecting used batteries, plastic bottle tops and waste paper through educational as well as entertaining presentations and workshops.

The ECOcorner at the library offers interactive events such as planting greenery and a winter garden around the building, a drawing competition, cleaning up a nearby park and using eco-packaging for books. The computer game *Garbage Hero* teaches about garbage (waste) sorting and was provided by partners of the project. Thirty-one events with nine hundred and seventy-one participants (children and adults) have been held during the still ongoing project and it is hoped that its environmental impact will continue through new events and partners.

The logo, as seen below, was developed with the aim of showing planet Earth as a place that must be taken care of. The book *The Little Prince*, by Antoine de Saint-Exupery (1943), served as an inspiration for this image as the prince was told, after washing and dressing each morning, that he must tend to his planet, a message which has become more relevant over time. Tying the image together is the library's lion logo, also an emblem of the city of Lviv.



Figure 1: ECOLion, the project's logo. © K. Rheinarovych.

Aim and Objectives of the Project

The eco-library project of was entered in a contest in Ukraine organised and financed by the British Council programme, *Active Citizens* (British Council 2017a; British Council 2017b). The coordinator of the project, Iryna Pigura, was eligible to enter the contest as a member of the Youth Section of the Ukrainian Library Association (UBA) as she had passed specialised training during the Forum of Young Librarians in Kyiv in April 2016. This training taught participants how to be active and responsible citizens of one's country, city and library. The project's success in this competition led to it gaining financial support and hence a starting point.

An example of one of the library's environmental projects is a campaign to teach individuals how to sort rubbish properly, accompanied by an explanatory poster provided by ABE Lviv.



Figure 2: A banner on how to sort garbage. © K. Sukhorebska.

One of the first events the library took part in was the *Urban Workshop 2016*. Children learned, in a playful way, how to sort garbage, while they also examined eco-books and made postcards from used plastic tops. Through this event, the *Garbage Hero* project contributed to an increase in environmental awareness of children and Lviv families, with their knowledge of how to correctly deal with household waste subsequently improving ecology in the city. Through this project, children and adults receive information about environmental hazards created by an irresponsible attitude towards waste. They also learn more about ecologically friendly products which can be used in everyday life and other aspects of an ecological lifestyle. Children learn how to sort garbage properly and protect nature.



Figure 3: Participating in the *Urban Workshop 2016*. © K. Sukhorebska.

Other libraries and schools are following the example of the Lviv Regional Children's Library. It is important that users of the library learn more about environmental problems and how to solve them, as raising ecological consciousness has a positive impact on community development.

Events and Activities

Project Events

The project started in May 2016. Project details can be found on our Facebook page (ЕкоБібліотека n.d.).

Long-Term Regular Events

During the project the library teaches concepts of waste sorting and recycling, both virtually and in practice, through:

- using the latest technologies, such as the computer game *Garbage Hero* for teaching waste sorting (Garbage Hero n.d.)
- teaching children, parents and teachers to produce promotional material explaining the need for waste sorting
- organising events for collecting used batteries, plastic bottle tops and waste paper
- sharing experiences with colleagues
- organising workshops for handmade crafts using waste materials
- organising eco-excursions
- sharing information about eco-social activities in the city
- sharing eco-posters and eco-news
- sharing eco-knowledge in urban areas

Short-Term Project Events

- Planting greenery (May 2017) (Львівська обласна бібліотека для дітей n.d.)
- Green parties (June 2016) (Львівською обласною бібліотекою для дітей, 2016a)
- Environmental drawing competition for children (May 2016) (Львівською обласною бібліотекою для дітей 2016b)

Participation in City Events

- Eco-Forum (April 2017)
- Urban workshop (June 2016, 2017) (Asafatow 2016)
- Climate and energy forum *PowerShift 2016* (February 2016)
- Lviv International Library Forum (September, 2016)

Changes in Library Design

- Designing the winter garden in the library
- Eco-packaging for books
- Creating the ECOcorner at the library
- Teaching children how to clean the park area near the library
- Regular posting of eco-informing topics on the library's blog (Lilja 2016a; Lilja 2016b)

Conclusion

Increasing the environmental awareness of children involved in the project is a positive shift in social development. The library believes it is duty-bound to educate a new generation through raising environmental consciousness. This is possible as the project meets the objectives of sustainable development: clean water and sanitation, an eco-friendly city as well as the responsible use of resources. The value of the project, *Library Teaches – Live in ECOstyle!*, lead by the Lviv Regional Children's Library (director Larisa Lugova) is demonstrated by it being placed in the top five highest ranked entries of the IFLA Green Library Award 2017.

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Qunqing Huang and Si Chen

10 From a Green Library to a Sustainable Library

Case-Study of Sun Yat-sen Library of Guangdong Province, China

Abstract: Sun Yat-sen Library of Guangdong Province is a large provincial public library with a history of over one hundred years in China. Located in a historic site, it has been transformed into a green library with concepts of ecological and environmental protection. Its big lawn in the front, large old trees and courtyards inside the grounds are enjoyable for citizens, while even its roof garden became a landscape. Besides the pleasing environment, facilities and technology are introduced for energy conservation. Air conditioners could be replaced for most of the year by natural air, rainwater could be collected over an area of nine thousand square metres and solar power could generate electricity with photovoltaic panels.

A team of librarians was also organised to educate citizens through various services, such as the website “Ecological & Environmental Protection” with a dozen columns which was created in 2007 and remains active to date, with two million citizens visiting the website during this period. Activities such as forums, lectures, exhibitions, films, telephone-booth-looking mini libraries, plant seeds travelling as well as some campaigns have been held inside or outside the library, all of which contribute to the transformation of the green library into a sustainable library.

Keywords: Green library; Sustainability; Ecology; Environmental protection; Public libraries

Introduction

The sustainable development of human society has been significantly challenged by worldwide ecological destruction and resource shortages. As a result, it has become an important and common social issue to address environmental problems and promote environmental education worldwide. In 2016, six ministries of China, including the Ministry of Environmental Protection of the People’s Republic of China, jointly released *The National Environmental Promotion Education Outlines (2016–2020)* (China 2016), which underlines that libraries, museums

and cultural centres need to have a substantial role in creating and expanding ecological cultures, so as to further strengthen the construction of accompanying and complementary public services systems. As the information service and spreading centres, libraries should perform the functions of launching ecological education, providing ecological information and cultivating ecological culture.

In the last ten years, Sun Yat-sen Library of Guangdong Province has championed the ideas of people-oriented, ecological and environmental protection, making efforts to build up the library's ecological environment while also enhancing the ecological as well as environmental publicity and education. This has resulted in a green library building with energy conservation and natural, ecological environment spaces which are also aesthetically pleasing. It has become also a sustainable library with rich historical cultural resources, ecological and environmental publicity as well as education activities. In 2008, the library was reviewed as one of two hundred sample projects of "Green Building and Low Energy Consumption" by the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD). In the same year, the library was reviewed as the sample project of "Renewable Energy Sources and Building Integration" by the MOHURD, as part of the eleventh Five Year Science and Technology Plan. In March 2013, the library was awarded the honour of being seen as the "Environmental Protection Education Base" by the Department of Environmental Protection of Guangdong Province. Two years later, in December 2015, the library was given a similar award, being viewed as a sample public "Unit of Energy Conservation" by the National Government Offices Administration, the National Development and Reform Commission, as well as the Ministry of Finance of the People's Republic of China.

Green Ecological Environment Including Cultural and Natural Resources

Sun Yat-sen Library of Guangdong Province, established in July 1912, is the provincial comprehensive public library. In 2003, the government of Guangdong Province allocated five hundred million Yuan to start the project of enlarging and reconstructing the library. In order to create a green library in a fresh classical style with ecological environment protection, the project was designed with the aim of preserving ecology as well as prioritising energy conservation, actions of frugality and gathering human cultures.



Figure 1: The big lawn in front of the library.
© Sun Yat-sen Library of Guangdong Province.

The library is located in downtown Guangzhou city. It has rich historical and cultural resources having been the site of the Examination Hall of Guangdong in the Qing Dynasty, the Guangdong University during the period of the Republic of China, as well as Sun Yat-sen University. It was also the cultural education centre of Guangdong in modern times and is associated with the National Revolution. Its old sites, such as the Nationalist Party's first meeting place and Revolution Square, have been included in the list of national key cultural relics protection units. Elsewhere, the old site of Dragon and Tiger Wall, a wall to publish examination results in the Qing Dynasty, has also been included in the cultural relics protection units of Guangzhou city.

Taking advantage of the library enlargement and reconstruction, staff members make use of the natural ecological environment as well as enhance the greening of flat grounds between buildings. This develops more green sight spots, three-dimensional vertical greening as well as implements roof greening, with the intended result of connecting nature and the library buildings. The rich cultural and historical resources are protected so that learning spaces provided for the public are healthy, comfortable, green and culturally rich.

Green Building Spaces, Conserving Energy and Harmonising Environment

The enlargement and reconstruction project of Sun Yat-sen Library of Guangdong Province has introduced green ecological and architectural technologies as well as demonstrated natural ecology through a complementary focus on environmental protection, energy conservation and building physics. The local climatic characteristics and relationship between buildings are considered, such as having all face the sun so as to meet the requirements of ecological circulation;

this complements the idea of energy conservation, saving and utilising limited resources more efficiently. The effective connections between city planning and surroundings as well as buildings are prioritised, so as to ensure architectural spaces are not only comfortable and delightful but also energy efficient and environmentally protected. Six kinds of energy conservation and environment protection technologies have been introduced:

1. building containment energy conservation,
2. natural ventilation,
3. energy-saving lighting,
4. energy-saving air conditioning,
5. rainwater collection and usage and
6. solar photovoltaic power generation.

Such efforts already save 1,615 million kWh of energy each year. More could be done, however; air conditioners could be turned off for most of the year, with natural air used instead. Rainwater could be collected over an area of nine thousand square metres; the amount of rainwater currently collected annually is 30,000 m³. This collected rainwater is refined and recycled, which lessens the problems of flooding and drainage difficulties in rainy seasons, while also storing water for gardening in dry seasons.

The energy generated by the solar photovoltaic each year is 172,000 kWh, which is used for supplementing daily lighting inside the library building spaces.

Sustainable Resources Construction and Education Campaigns

Citizens' awareness of their ecological civilisation is one of the most important standards to measure the progress of environmental protection in a particular setting. As a key public cultural infrastructure and school for its citizens, every library should carry out its responsibility of environmental education. Based on the green environment and architectural space, the library organised a team of librarians to launch the project of "Ecological and Environmental Protection". The ongoing resources and campaigns for construction as well as education upgraded the green library into a sustainable library.

The Website of “Ecological and Environmental Protection Library”

In early 2007, Sun Yat-sen Library of Guangdong Province set up the website “Ecological and Environmental Protection Library,” specialising in collecting ecological and environmental resources online as well as launching ecological and environmental education campaigns. A dozen campaigns have featured on the website, including:

- Guangdong Ecology,
- Extreme Weather Disaster,
- News Information,
- Environmental Protection Publicity Education,
- Policy & Rules,
- Ecological Environment Science,
- Environment Governance,
- New Energy

These columns provide important resources to and raise awareness of library users; they promote the idea of ecological and environmental protection as well as drive the cultivation of ecological civilisation.



Figure 2: Column on the website “Ecological and Environmental Protection Library”. © Sun Yat-sen Library of Guangdong Province.

To promote awareness and knowledge of environmental protection which are according to information needs in different periods, the Ecological & Environmental Protection Library has developed more than ten databases, such as

- Friending Green Energy,
- Focus on Climate Change Worldwide,
- Guangdong Red Forest Wetland.

Efforts are made to collect all kinds of information about ecological and environmental protection, considering different points of view and varied approaches. There are databases of full-text, e-books, special videos and exhibitions online, as well as links to three hundred and eighty-three websites on environmental protection from various countries.

Since the website of Ecological & Environmental Protection Library was set up ten years ago it has been visited by more than two million people from over one hundred and fifteen countries, such as China, the USA, Japan, Singapore, the United Kingdom, Australia, Canada, Russia, Brazil, Kenya, Nigeria and South Africa.

Green Forums at Sun Yat-sen Library of Guangdong Province

Ecological Speeches

The library has held a number of large-scale and well attended speeches related to ecological and environmental protection, including:

- the famous Taiwanese author and ecological photographer Mr. Xu Renxiu was invited to give a speech titled *The Sense and Mission of Nature Education for Children*;
- Zhao Xikang from the Guangdong Academy of Social Sciences was invited to give two speeches, titled *How to Care for the Relationship Between Low Carbon and Development* and *Environment Rights and Laws for the Public*;
- Alstair Morgan, the General Consul of the Consulate General of the United Kingdom in Guangzhou, was invited to give a speech titled *Hand in Hand With the UK for the Low Carbon Lifestyle*;
- Su Yongshan, owner of the Earth Prizes in China, was invited to give a speech titled *Concern for Environmental Ecology While Enjoying an Excellent Life*;
- Dr. Klaus-Ulrich Werner, Director of the Philologische Bibliothek der Freien Universität Berlin, Germany, was invited to give a speech titled *The Sustainable Development of Library Buildings, Layout, and Running in Germany*, etc.



Figure 3: Poster of an Eco-Speech, given by Alastair Morgan, General Consul of the Consulate General of the UK in Guangzhou, on “Low Carbon Lifestyle Joining Hands with the UK”. © Sun Yat-sen Library of Guangdong Province.

Health, Dating and Charity Clinics

The library space includes both the natural and social environment. The library provides knowledge of how both natural and social environments affect human beings, which illustrates its improvement of the health quality of the entire country. Increasing numbers of people experience health problems as the pace of life and mental pressures increase alongside a decrease in physical exercise. In 2012, based on the idea of combining traditional Chinese medicine with environmental protection, Sun Yat-sen Library of Guangdong Province planned and launched a series of lectures and charity clinics titled “Health, Dating and Charity Clinics at Sun Yat-sen Library of Guangdong Province.” The lectures and clinics aim to promote the cultures of ecological and environmental protection, carry forward traditional Chinese medicine and popularise knowledge of healthcare.

The Health, Dating and Charity Clinics at Sun Yat-sen Library of Guangdong Province have been held monthly, comprising of over forty-eight sessions to date. Famous Chinese medical experts and scholars are invited to speak and hold free clinics where they explain the profound, deep, cultural essence in simple language. These individuals encourage the audience to focus on adopting and maintaining a healthy lifestyle, such as spending more time in natural settings, keeping in good shape and mind, eating healthy foods and exercising. These lectures, such as “Acupuncture Point Moxibustion for Health”, dynamically combine ecological and environmental protection with healthcare while also integrating the idea of Chinese medicine healthcare in modern daily life. Many citizens take

part in as well as benefit from these lectures and clinics as their health problems ease.



Figure 4: Poster of a health lecture “Acupuncture Point Moxibustion for Health” 2017. © Sun Yat-sen Library of Guangdong Province.



Figure 5: Another poster of the health lecture “Acupuncture Point Moxibustion for Health” 2017. © Sun Yat-sen Library of Guangdong Province.

Ecological Exhibitions at Sun Yat-sen Library of Guangdong Province

Holding an exhibition is one of the important ways to serve the library users; it is also a visually simple way to bring about ecological and environmental education. Topical issues about ecological and environmental protection which concern the public are selected, such as:

- “The Picture Shows of Endangered Wild Animals and Plants in China,”
- “The Common Homeland – Visit Around the Natural Protection Areas in China,”
- “Building Ecological Civilisation While Taking Care of the Earth”.

These popular science exhibitions consist of many visually interesting pictures, which promote readers’ observational ability and increase their awareness as well as knowledge of ecological and environmental protection. When finished, the exhibit is then moved to other libraries, schools and communities around the country to further increase awareness of the featured issue. This broadens the

range of dissemination and ensures the exhibition resources are saved, becoming an excellent example of energy-saving while also having good social effects.

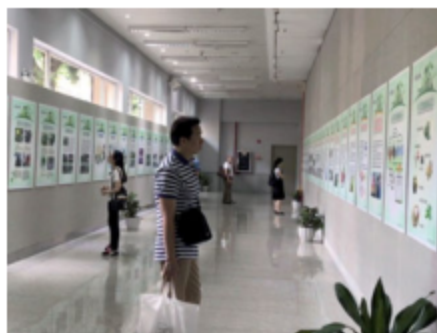


Figure 6: Popular science knowledge exhibition. © Sun Yat-sen Library of Guangdong Province.

Ecological Films at Sun Yat-sen Library of Guangdong Province

Film, as a traditional mass media of communication with a strong social educational function, has the advantage of combining artistry, entertainment and education. This media of communication is used to carry out ecological and environmental education, draw attention to the relationship between human beings and nature, advocate efficient ways of living and responsible consumption, as well as encourage behaviour to protect the environment. Since 2011, we have played over one hundred and fifty films and documentaries on weekends (Saturdays and Sundays) which feature the subjects of ecological and environmental protection, such as:

- *An Inconvenient Truth*, which explains how the earth is getting warmer,
- *Erin Brockovich*, which addresses how the environment is being polluted,
- *Earthflight*, which focuses on birds and nature,
- *The Forest Ranger*, which illustrates the forest being overcut,
- *Kekexili*, which focuses on endangered wild animals,
- *WALL.E*, which references the subject of trash,
- *The Day the Earth Stood Still*, which deals with ecological disaster,
- *Oceans*, which raises attention of the current plight of marine organisms,
- *The Cave/The Rising*, which focuses on dolphin killing,
- *Waterworld*, which features post-apocalyptic greenhouse effects,
- *Wild China*, which examines wild animals and plants as well as natural and cultural landscapes in China.

Library visitors were educated while watching the films. This enjoyable way of informing and educating while entertaining is very popular.



Figure 7: Poster announcing two eco-films: *Erin Brockovich* and *Waterworld*. © Sun Yat-sen Library of Guangdong Province.

Mini Libraries Launched by Sun Yat-sen Library of Guangdong Province

Simple, self-service mini libraries have emerged all over the world in recent years. Whether in the shape of a small cabin, telephone booth, bicycle or box, its basic rule is the free interchange of books; people bring in a book they no longer require and take away another book they need. The mini library model overcomes the limitations of traditional library buildings and encourages people to share books through the green idea of environmental protection; it also encourages people to take part in a new and innovative concept.

In September 2013, the authors of this article launched the project “Mini Libraries Book Drifting Activities.” By 2016, telephone-booth-looking mini libraries have been established in thirty-four middle and elementary schools in the province. This makes it possible for the students to share their used but valuable books in a green reading platform which allows for further communication. The book recycling illustrates the ideas of environment protecting, sharing, self-service and mutual assistance.



Figure 8: Telephone booth mini library. © Sun Yat-sen Library of Guangdong Province.

Plant Seeds Travelling Through Mini Libraries

Mini libraries resembling telephone booths are used to raise users' interest in ecological and environmental protection. Presented as a "Library of Plant Seeds," we provide seeds of different kinds of vegetables, flowers and other plants which users can take them home to grow while also donating seeds for others. Users can record the the growth of the seeds through pictures, videos or text and share on the website "Plant Seeds Travelling," which has been set up specially for sharing such information. Since the project was launched at the end of 2013 over eighteen and a half thousand small bags of seeds, of two hundred and forty-six species of different plants, have been sent to more than nine thousand users. Sharing the seeds and such planting practices has further publicised the ideas of green and low carbon usage.



Figure 9: Poster and website of "Plant Seeds Travelling". © Sun Yat-sen Library of Guangdong Province.

Conclusion

As detailed above, the Sun Yat-sen Library of Guangdong Province has been making efforts such as taking part in large-scale government-supported promotions, activities and cultural development community programmes; this aims for environmental protection promotions and services to reach more citizens both inside and outside the library. Intentions and practices have been centred on embodying effective ideas to continue upgrading the green library into a sustainable library.

One new idea combines the physical with the virtual library. While enjoying the comfortable, architectural spaces equipped with beautiful green surroundings as well as modern technologies for energy conservation and ecological protection, materials are gathered on the subjects of ecological and environmental protection as a key part of collections. Simultaneously, the website of “Ecological and Environmental Protection” is increasingly expanded, where e-resources are collected and online services are provided.

Another idea is combining the ordinary everyday library experience with significant events. It is possible to take advantage of certain dates which highlight the importance of environmental protection so as to plan relevant activities, such as the World Earth Day on 22nd April and World Environment Day on 5th June. This could be brought about alongside the library’s regular duties such as collecting daily materials, supplementing the e-resources supplement and answering questions, as well as regular activities such as exhibitions, lectures and films, held monthly, twice monthly or weekly. Such efforts contribute further in transforming the green library into a sustainable library.

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Tim Schumann

11 Urban Gardening, Foodsharing and Makerspaces

Best Practice in the Stadtbibliothek of Bad Oldesloe, Germany

Abstract: Public libraries in Germany are currently under pressure, with many closures recently due to reduced municipal budgets. Public libraries hence need to demonstrate relevance to their communities, sponsors and other accountable bodies to avoid the continuance of this trend. This paper shows how libraries can link into debates in society and politics by adopting the urban gardening trend as well as developing new services around this green movement.

Within the debate on public libraries' transformation, urban gardening and the idea of the green library provide an opportunity to develop new green and sustainable library services. By combining makerspaces and community building with urban gardening and foodsharing, the public library of Bad Oldesloe developed a series of events that turned the library into a modern and creative learning space. At the same time, the library offered its physical space as a community platform for networking, cooperation and creativity.

Keywords: Green libraries; Public libraries; Urban gardening; Makerspaces; Sharing; Food; Community development; Germany

Rethinking Roles and Spaces of Public Libraries

Public libraries are departing from the role of mere storage rooms for books. They are increasingly being treated as urban learning factories (urbane Werkstätten) (Schleh 2015) or agencies for competences (Befähigungsagentur) (Fansa 2015, 239). Different key words now describe the new roles and concepts related to public libraries as well as the focus on the library space within a community. Libraries are described as third spaces, civic spaces or low-intensive meeting-places, with the public library Stadtbibliothek Bad Oldesloe an exemplary model of these new roles. In combination with the urban gardening trend, the library set up a makerspace, acted as a platform for civic society around the issue and built up as well as strengthened the local community's knowledge on topics of sustainability.

Makerspaces

Makerspaces are experimental spaces that contribute to new forms of individual learning, often in a playful way. These spaces support collaboration, teamwork as well as knowledge transferring and are often manifest in a technical manner (such as 3D Printing). Through makerspaces, public libraries meet the demands of the information society in which trends such as Do-It-Yourself (DIY), Do-It-Together (DIT), sharing and the maker movement become more relevant (Vogt 2015, 444). As makerspaces can only run with people using them, they demonstrate how public libraries place people at the focus of their services. The centrality of people allows the library to react quickly to structural changes in society by supporting and highlighting new trends (Schuldt 2015, 54–55).

By offering a makerspace, a public library can act as an institution for extra-curricular learning and support learning in schools. They provide individual learning in combination with learning in groups and working on projects that are autonomously designed (Lüthi-Esposito 2016, 238). Clark (2014) asserts that “By creating those opportunities in libraries, we’re adopting to 21st century literacy”, which illustrates how a public library can fulfill its main goals as a modern learning facility.

Community Building

According to the English Wikipedia, “community building” is defined as

a field of practices directed toward the creation or enhancement of community among individuals within a regional area (such as a neighborhood) or with a common interest. It is sometimes encompassed under the field of community development. (Community building n.d.)

Scott (2011, 195) defines community building as a field of practices with the aim of creating or strengthening a sense of community. Identification with a region, city or particular common interest intensifies a community’s connections.

Feldman (2016, 265) points out that public libraries can clearly demonstrate their importance as institutions in a municipality through community building. By serving the interests of the community, libraries act as institutions for inclusion and collaboration. The public library thrives when it is a place where people congregate, work and learn together. In order to reach that goal, public libraries have to adapt to the interests and needs of communities and transform them into new library services (Sbaffi 2015, 104).

For this purpose, it is necessary that the public library is recognised as a partner in the evolution of the civil society. When a library offers its space to support its community's purposes it will be recognised as an important municipal institution (Jahl 2012, 503). When a public library connects itself with the engaged elements of the civil society, the result is its growing importance in the municipality and community (Müller 2017, 65). Interlinking civil society with the availability of library space transforms libraries into "public neighborhood spaces" (Scott 2011, 211). Social cohesion is built up or increased when maker-spaces allow people to work and learn together so as to become empowered (Scott 2011, 207).

Scott (2011, 196) highlights the significance of the library space for a successful community building. Only in an open library space can people meet and come into direct contact with one other. Aabo (2010, 20) points out the role of the library space as a "low-intensive meeting place"; libraries present themselves as places with low threshold access and free for anyone to use. Eigenbrodt (2007, 2) believes the library space must become a societal space that meets the needs of the society which must also be flexible enough to adapt to new trends and developments.

The Green Library – Ecology and Sustainability as Issues for Public Libraries

The development of ecological and sustainable societies is currently a political focus. To support this development, people must come in contact with one another and social cohesion improved. A. Barbakoff and B. Barbakoff (2012, 236) argue that public libraries are perfect institutions for reaching these aims. Elsewhere, Hauke (2014, 102) sees public libraries not simply responding to a trend when supporting the building of ecological and sustainable societies. Rather, there are concrete possibilities for libraries to present themselves as educational institutions taking direct responsibility for societal and ecological issues. Miller (2010) builds on such an idea, describing the original role of public libraries as contributing to the progress of a community and its municipality: "Now, in the twenty-first century, public libraries have the role of teaching environmental awareness through library programming and services" (2). The public library can strengthen ecological and sustainable issues in the community and municipality while connecting its users (Miller 2010, 4). Eigenbrodt (2013, 126–127) argues that public libraries can connect to political programmes such as the German strategy

for sustainability (Deutsche Nachhaltigkeitsstrategie) and focus on supporting social cohesion as well as intergenerational equity.

The significance of these issues for libraries is demonstrated through various activities, groups, programmes and declarations, such as:

- IFLA, *Lyon Declaration on Access to Information and Development*
- IFLA, *Environment, Sustainability and Libraries Special Interest Group*
- ALA, *Resolution on the Importance of Sustainable Libraries*
- Library services that tie into the *United Nations Sustainable Development Goals* and *United Nations 2030 Agenda for Sustainable Development*

The Green Library – Critics of the Movement

The green library movement is criticised for its limited focus on architecture and techniques, however “any library that promotes sustainability through education, operations and outreach” provides green library services (Aulisio 2013, 1). Eigenbrodt (2013, 123–125) sees the danger of greenwashing when sustainability simply highlights the technical and architectural aspects of a building. This limits the term sustainability and keeps it blind to social aspects; Beese (2016, 488–490) argues that sustainability can only work with a holistic approach, while ecological aspects must interlink with social, cultural and economic aspects.

Urban Gardening and Social and Ecological Sustainability

Urban gardening has had huge impacts in society in recent years with increased relevance in global, national and local politics. The United Nations (UN) proclaimed the *2011–2020 UN Decade on Biodiversity*. In Germany a programme for municipalities supporting biodiversity (Kommunen für biologische Vielfalt) was established in 2012 with *Essbare Städte* (eatable cities) in Andernach, for example, as well as *Essbare Bezirke* (eatable districts) in areas such as Berlin-Pankow and Berlin-Kreuzberg. There is even a competition between German municipalities for the most livable city for bees (Deutschland summt n.d.).



Figure 1: Workshops, photo exhibitions, lectures about urban gardening and a seed savers exchange in the public library.
© Stadtbibliothek Bad Odesloe.

On a social level, urban gardening is based on the idea of free knowledge sharing between gardeners. Furthermore, urban gardening and community gardens want to include their local neighbourhood; due to limited access to space, soil, tools and seeds, urban and community gardens aim to offer an open space to their neighbourhood for collaborative work and meeting (Müller 2012, 267–268). In their role as open meeting spaces and community-forging places, urban and community gardens help to build a local community and thus become local factors in community building (Baier 2013, 158).

Metzger (2014, 245) points out three main goals of urban gardening:

- New understanding of city and nature presents urban gardens as an integral component of ecological and sustainable cities of the future.
- Contribution to local food security and delivery of knowledge as well as criticism of industrial food production.
- Participation in urban democracy so people have more influence on the design and organisation of public spaces.

Community Gardens and Urban Gardening as Makerspaces

Comparing the definitions as well as practices of makerspaces and community building, we see ample parallels in both models, including:

- Shared resources
- Free as well as open learning and social spaces
- DIY and DIT
- Emancipation and empowerment of users
- Freedom from discrimination
- Freedom from the need for consumption
- Barrier-free participation

- Key institutions for local, social and ecological sustainability
- Open knowledge transfer
- Room for creativity and experimentation
- Room for collaborative work
- Urban and community learning factory

There are also parallels specific to community building:

- Inclusion of local neighbourhood
- Co-designing local public spaces
- Focus on communality and participation
- Empowerment of people
- Improved quality of living

These abundant parallels provide a theoretical background to develop new library services concerning the issues of sustainability and ecology in the public library of Bad Oldesloe.

Harvest Your City (Ernte Deine Stadt) at the Stadtbibliothek of Bad Oldesloe

Bad Oldesloe is a district town in the German Federal Land Schleswig-Holstein, with approximately twenty-five thousand inhabitants. The library contains approximately forty thousand items and one thousand fifty metres squared of space (including offices and room for events) with seven employees. An elementary school is in proximity to the library.

Bad Oldesloe is also home to strong local advocates for the environment, sustainability and a vital civil society, potential partners for the town's library. For example:

- OASE (information centre and meeting point for families)
- Inihaus (autonomous cultural centre for young people)
- JugendUmweltProjektwerkstatt (centre to educate young people on environmental issues)
- Offener Garten Bad Oldesloe (local community garden)
- BUND, NABU (environmental and conservation organisations)
- ADFC-Stormarn (local cyclist association)
- Bella Donna Haus (centre for issues on feminism and women's politics)

- Municipal politics with strong focus on sustainability and environmental protection
- Fair Trade Town

The Series of Events and their Aims

The main aim of the annual Harvest Your City programme is to merge ideas of the changing roles of libraries and green library with makerspaces and community building. The public library wanted to provide a broader context of its services to local society and politics while demonstrating how the aims of public libraries are interlinked with environmental and sustainability issues. In addition, the public library wanted to make people aware of new forms of learning as well as the need for open meeting places in a digital information society.

The series of events aimed to strengthen the idea of the green library in Germany through practical examples. Connecting social and political developments to new library services showed how the public library was trying out new ideas that are fundamental to a very vital civil society.

This series of events also allowed the public library to support new initiatives in the city and community. For example, the library can provide not just books and media but also rooms to connect initiatives to the community and its needs.

Harvest Your City 2015

The series of public events started in April 2015 with workshops, a photo exhibition about urban gardening, lecture about urban gardening worldwide and seed savers exchange. Children could participate in the contest The Quickest Bean in Town, books and media concerning urban gardening were displayed and the community garden in Bad Oldesloe gave a presentation; refreshments also added to the pleasant ambience. An immediate result of the event was the implementation of a makerspace with a class from the elementary school nearby. The class learned about the importance of insects in urban space as well as agriculture; they also built a large insect hotel for the nearby school garden and several small ones for their homes. Experts from environmental organisations BUND and NABU supported the children.



Figure 2: A class of the elementary school learned the importance of insects in urban space and agriculture, as well as building insect hotels. © Stadtbibliothek Bad Oldesloe.

Results of Harvest Your City 2015

The main event was well attended by sixty to eighty people. Some people only came for the seeds and left very early, while there were many requests for the books. The public library was featured heavily in the press and the media, including a radio interview, which improved its visibility as a possible partner for cooperation. The makerspace insect hotel strongly improved identification of the children's collaboration with the public library, as well as other numerous insect hotels visible throughout town. An unfortunate outcome was angry municipal gardeners who complained about seed bombs sprouting on the municipal green.

Other activities were adopted after the events in 2015 ended. An idea concerning the TRAFÖ programme that supports innovative cultural projects in rural disadvantaged regions was presented at the Kulturstiftung des Bundes (Federal Foundation for Culture). The public library facilitated cooperation between residents of a retirement home and children with multicultural backgrounds which saw both groups planting vegetables in raised garden beds.

Harvest Your City 2016

Harvest Your City 2016 aimed to continue the success of the previous year. A day of events about the issues of local food and nature in urban spaces tested new forms of library services as well as ways to get outside of the box. Media and information boards, including a presentation about medicinal herbs, were offered. The library space accommodated local initiatives such as the local foodsharing

group, community garden in Bad Oldesloe, local cyclist association and group planning the first Community Supported Agriculture (CSA) in the county; all groups presented their ideas which led to the creation of a network of interested people. The very uncommon aspect of the series was how the library went out of the box and turned the urban space into a learning environment. The library organised a guided walking tour about natural herbs in parks and on roadsides. A cycling tour centred on the *mundraub* initiative educated participants on how local trees and bushes in public domain can be harvested for their fruits; people later contacted each other about this issue and harvested.



Figure 3: The local foodsharing group presenting their rescued food at the public library.
© Stadtbibliothek Bad Oldesloe.

Results of Harvest Your City 2016

The public library became recognised as part of a local network dedicated to sustainability and environmental protection with its events becoming part of the Wandelwoche (a nationwide week for social and ecological change). The public library hence strengthened its position as a hub for local environmental and sustainability issues, seen as the head of the city department for environmental issues contacted the *mundraub* and agreed to work together in the future. The local CSA also found enough supporters in the community to start their business, another pleasing result.

Harvest Your City 2017

Harvest Your City 2017 extended to a whole weekend of action throughout the entire town. An exhibition, lecture, events for kids, seed savers exchange, food-

sharing (foodsharing n.d.), access to the local community garden, bicycle tour and guided walking tour for herbs was offered. This time, the public library worked with the local authority for environmental protection, municipal centre for culture and education (KuB), players of the civil society and local economy (the local CSA and Hanse-Obst, a project teaching citizens about pomiculture). The events were once embedded in the Wandelwoche in October 2017, with results and outcomes to be shared in future publications.

Conclusion

The public library of Bad Oldesloe is an excellent example of a public library that implements ecological, environmental and social solutions. Creativity and persistence combine the theoretical background of green and sustainable libraries with practical new services. The complex, human-centred, place-based aspects of the green library movement are apparent at the public library. Activities mentioned in this article illustrate the need for municipalities to protect and support their public libraries to improve civil society as well as care for the local environment. The many projects initiated and sustained by the public library in Bad Oldesloe offer a model for other public libraries to emulate their successes, which include:

- tying into debates in society and politics,
- initiating and following through on themes,
- adopting a new role in the municipality and community,
- trying new forms of collaboration,
- showing new purposes for the library space,
- presenting the library as a modern and creative learning space,
- improving the library's visibility as a potential partner,
- taking on the responsibility of caring for the local environment,
- supporting new initiatives,
- creating a link between the green library and the makerspace.

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Anja Seifert and Stefan Rogge

12 Green Library of the Neighbourhood

Collaborative Green Sustainable Library Strategies for Successful Urban Quarter Development in Berlin, Germany

Abstract: Located in the centre of Berlin, next to the Potsdamer Platz, is one of the smallest public libraries in Berlin, the Bibliothek Tiergarten Süd. Overcoming the threat of closing due to financial struggles, the library now finds itself in a process of transformation. Since 2013 neighbourhood volunteers have been working for the library to form a new focus based on the do-it-yourself philosophy, including urban gardening and other ecologically sustainable practices.

With EU-funded support, it is now possible to establish a new community centre for the urban quarter. The diversity of language, culture and income in this urban quarter is reflected in several activities that take place in the library, such as a Repair Café, literacy events and informative meetings about gardening topics. Supported by the first Leih-Sämerei in a public library in Germany, there is also a shelf with home-grown seeds from the surrounding gardens that patrons may borrow. This array of projects and programming shows the multiplicity of a small urban library.

Keywords: Public libraries; Green libraries; One-person libraries; Urban gardening; Sustainable development; Do-it-yourself work; Repairing; Germany

Introduction

Located in the centre of Berlin, next to the Potsdamer Platz, the Bibliothek Tiergarten Süd, a branch of the public district library Stadtbibliothek Berlin-Mitte, is one of the smallest public libraries in Berlin. The history of the library and the development of its focus have a strong connection to the neighbourhood.

Since 1962, the library has been situated in Tiergarten Süd, the geographical centre of Berlin. The neighbourhood is full of famous buildings and institutions including the Potsdamer Platz, Kulturforum, embassies from many countries and the Staatsbibliothek (State Library). Despite its geographical central position, events throughout history have transformed the area into an enclosed quarter.

At the beginning of the nineteenth century, this lively quarter, including the Potsdamer Straße, was one of the most important boulevards in Berlin. However, both the Second World War and proximity of the Berlin Wall from 1961 com-

pletely transformed the neighbourhood. Suddenly it was no longer the centre of West-Berlin but the dead end of the city, turning it into a place of subculture and prostitution, while social housing made the quarter attractive for families with low income.

After the fall of the Berlin Wall in 1989 and development of the Potsdamer Platz many ideas to support the development of this neighbourhood arose. However, most have failed leading to the founding of the Quartiersmanagement Magdeburger Platz (urban quarter management) in 1999. This politically supported financial programme strengthened the development of fifteen selected neighbourhoods. During this time, millions were invested into housing, social and cultural projects, initiatives which were designed to support the development of the Potsdamer Straße, handle the proliferation of prostitution and address the concentration of populations with low income and lack of educational opportunities. However, this financial support of the Berlin Senate ended in 2016.

The library project is based on the ideas and participation of the neighbourhood with the aim to improve living conditions, social support and occupational integration. Institutions were connected with each other and new forms of committees such as the urban quarter council (Quartiersrat) arose, with this base of networking still essential to the library's social-cultural work.

Partnerships With Neighbourhood Institutions

Two important parts of this network involve direct neighbours of the library. The first is the urban gardening project Familiengärten (family gardens), situated next to the library in the urban quarter centre Kiez Zentrum Villa Lützow. Gardens were planted in several corners of the estate through the Wachsenlassen project focused on urban gardening and green libraries. Families and other groups of people, for example a kindergarten class, cultivate their own small garden, with the project still existing and very important for the concept of a Green Library of the Neighbourhood (Grüne Bibliothek der Nachbarschaft).

The second important part of the network is the neighbours' meeting point (Nachbarschaftstreff), headed by Stadtteilverein Tiergarten e. V. that temporarily moved into an adjoining building of the library.

Development of the Green Library of the Neighbourhood

In 2013, the branch library Tiergarten Süd was under threat of closing. The poor financial situation of Berlin resulted in budget shortfalls of the main library of the district. Although small branch libraries had low borrowing rates and small numbers of library visits and participants at events, they were in total (and still are) highly frequented places of information, learning, speaking German as a new language and even shelter. Therefore, the existence of (small) libraries was (and is) very important, especially in parts of Berlin with many social challenges.



Figure 1: The public library Tiergarten Süd.
© Wachsenlassen.

In this period of struggle, the neighbourhood was determined to rescue their branch library. In 2014, a community of interest called the IG Bibliothek (Interessengemeinschaft Bibliothek) was founded. Together with the urban gardening project Wachsenlassen and in cooperation with the main library, the IG Bibliothek drafted a concept for the branch library. The group wanted to create a unique character for the library with a focus on urban gardening and sustainability in conjunction with literacy events.

The vision included a place for communication and consultation, where the neighbourhood could find information about gardening and sustainability. Professionals provided advice, helped to find information and offered workshops to apply this knowledge using practical examples. Thanks to the existing gardening project next to the library and their gardening equipment, events began immediately. The target audiences for the literacy events were children from three to eighteen years of age and their families.

The structure of the Green Library of the Neighbourhood brings together three elements: speaking, reading, building/creating. These elements find their

way into the library with the help of new books, literacy and gardening events as well as do-it-yourself workshops.

The Seed library (Saatgutbibliothek) is presented on this shelf structure in a special way:

1. **Building/Creating:** the shelf was built during a workshop. The seeds have their origin in the urban gardening projects of the neighbourhood.
2. **Reading:** the seeds were collected, washed and sorted during gardening workshops under the guidance of a gardener as well as using reference books.
3. **Speaking:** the shelf is an instrument of many events in the library. For example, children choose seeds, plant them and afterwards paint the plant. This process is undertaken while speaking/learning German.



Figure 2: The seed library.
© Wach senlassen.

The shelf represents not only the three major ideas of the project but also continuity and sustainability of the idea. Visitors can take seeds and educate themselves about the plants as well as their needs, while after planting and harvesting they are encouraged to bring seeds back. During special library events they can also learn how to collect and dry the seeds, presenting the project as an enclosed circle.

The EFRE-BIST II Period and the Current Project

For the development of the library's green focus it was essential to continue the programmes and acquire new books about gardening topics as well as do-it-yourself approaches to sewing. The re-using of old material and creating something with natural material was also prioritised, hence making it essential to also

acquire children's books as well as those focusing on sustainability, mindfulness, social responsibility and environment protection.

To support the development of the branch library, the main library made the courageous decision, despite the trend of centralisation, that Tiergarten Süd library branch should remain open. The filling of the librarian position meant the branch library could offer full services within the Berlin network of public libraries (VöBB, *Verbund der Öffentlichen Bibliotheken Berlins*). Furthermore, the branch library received a budget for new books to discontinue the development of second-class libraries in the district. A further indicator of such progress is equipment acquired, such as an e-book reader, media cases for special topics and a tablet for literacy events. These investments are evidence of countering the negative trend of closure of small libraries. However, it was crucial especially for the green focus and to offer attractive events to find new possibilities of financial support such as EFRE, a European fund supporting regional development. The EFRE-BIST programme is funded by the European Union and focuses on libraries as well as their role in the neighbourhoods.

Together with three other libraries of Berlin-Mitte, the authors of this article and staff of *Bibliothek Tiergarten Süd* were fortunate to have been awarded funding for their project *Bewusst Leben und Lesen* (live and read in a conscious way). During 2016–2018 the library received 105,000 Euro from the European Union; with this generous financial support, it is now possible to strengthen focus and establish a new community centre for community members. The diversity in this district with regard to language, culture and income is reflected in several activities that take place in the library.

A Repair Café, literacy events and informative meetings about gardening topics form the base of the new concept.



Figure 3: Sewing café.
© Wachsenlassen.

The Repair Café takes place twice a month. We offer a Sewing Café where people can repair their clothes or create a new skirt or shirt with professional help. This event unites several leading ideas of our concept, sustainability and communication.

- Based on the interests of the community, we offer a platform for information, support and exchange.
- A weekly gardening workshop for children (Kinder-Garten-Werkstatt) brings together mostly refugee families to create small objects for the garden using natural materials collected in the garden. Participants create, speak, read and learn indoors and outdoors, with the workshop uniting these main aims of the Green Library of the Neighbourhood.
- Another weekly event is the book workshop (Buch-Werkstatt). Children tell a story, paint the story and finally bind a book. Learning at their own pace, the children assimilate information and offer ideas, embodying exchange.
- Also featuring is the idea of Kamishibai, a similar concept to the book workshop where a story is not only told but also shown with pictures. The children are not only listeners but also creators of the pictures or figures of the story, which comes alive as the audience participates in the narrative.
- Techniques for harvesting seeds are explained. People from all over Berlin come to this library to acquire new knowledge and connect with other urban gardeners. Urban gardening topics such as the Allmende-Kontor project at the Tempelhofer Feld (former airport Berlin-Tempelhof) were also introduced.

Conclusion

The various engaging and educational programmes mentioned demonstrate and celebrate the concept of the Green Library of the Neighbourhood, rather than just the literal idea of painting everything green. Here the community comes together for reading and speaking, listening and creating as well as meeting and motivating.

To learn more please follow our progress on our homepage or visit our Green Library of the Neighbourhood.

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Ratka Vučkovič

13 The Green Story of the Public Library Užice, Serbia

Education for Sustainable Development Through Creative Workshops for Children

Abstract: This paper presents the activities and programmes through which the Public Library of Užice children's department promotes the goal of sustainable development and the importance of environmental protection. The ecological crisis is a key problem of society and therefore also for libraries; as cultural institutions, libraries share a legal and moral obligation to contribute to environmental education. The children's department can play a unique and significant role, with the aim of this paper to show how libraries can contribute to the development of children's interests in the period of personality formation by creating environmentally friendly habits that remain with them for their whole life. The goals of the programme were achieved and realised with few resources.

Keywords: Ecology; Education; Sustainable development; Children; Serbia

Introduction

The ecological crisis is one of the biggest problems facing the modern world. Soil, air and water resources, wildlife and fauna, agriculture and many other factors necessary for the existence of humankind as a natural and social being are endangered.

The causes that led to the ecological crisis are mainly attributed to people's activities on earth. Many authors view two of these causes as the most common processes of civilisation to bring about environmental disorders: demographic explosion and the extremely fast pace of industrialisation, both of which are respectively existing models of production and consumption. Both processes lead to a rapid depletion of natural resources and process disturbances in nature. However, the ecological crisis is not the only product of these processes; it is the fruit of humankind's spiritual downfall and moral crisis.

The cause of many mistakes concerning environmental pollution is rooted in ignorance, or insufficient and inadequate ecological education of earlier generations. Environmental education does not only involve basic knowledge of natural and social science to understand as well as solve environmental problems. It also

presupposes the building of moral principles in relationship to nature and the environment.

The key to the planet's salvation and survival of humankind can be found in the concept of sustainable development. This concept requires fundamental changes in consumption and production; it implies wise management of natural resources, the saving of non-renewable resources and energy as well as a special caution in the use of sensitive natural ecosystems. The precondition of a new relationship to nature is the formation of ecological awareness. Ecological education should also enable a change in people's relationship with nature and their behaviour towards it.

The basic principles of ecological policy in Serbia are based on the goals of sustainable development, with the necessity of ecological education translated into legal norms. The Law on Environmental Protection of Serbia, enacted in October 1991, stipulates that public institutions in the field of education, science, culture and information, in their programmes of work, incorporate content in order to acquire ecological knowledge and build an active relationship towards the protection as well as improvement of the environment (Todić and Vukasović 2003, 545).

The Role of Libraries in Education for Sustainable Development

The ecological crisis is a global problem that affects everyone, including libraries. Libraries are participating in some meaningful ways to reduce the negative impact on the environment. Developed countries build libraries at carefully selected site locations while in construction natural building materials and biodegradable products are used. Construction also includes systems for preserving resources such as water, energy and paper as well as responsible waste disposal (recycling).

The Public Library of Užice does not have a building with a green roof, solar panels or a system for rational use of water. However, resources may be lacking but this is not the case with desire.

Poverty does not interfere with the library's social role and responsibility for the goals of sustainable development. The Public Library Užice is forming its own green story through literature, services, activities, events and projects that promote the importance of environmental protection. It strives to be a leader in environmental education in the local community.

Environmental issues in Serbia are numerous, yet they are recorded by different sources and hence not always easily accessible. The primary activity of the library is therefore to find, gather, store, promote and provide this environmental information to their users.

Some users require books on ecology written by academic experts. Others, however, need books that are interesting and easy to read, yet rich with information and which encourage readers to take action.

A small number of people are directly involved in saving water or energy in the household by protecting and improving the environment, driving their cars rationally as well as managing waste with the future of children and their offspring in mind. Such behaviour requires some knowledge of environmentalism and it is necessary to offer this knowledge to as many people as possible. There is no more suitable mediator for this knowledge than a book or library.

Public information significantly contributes to the future development of the local community. Timely information and attention of citizens to ecological problems (primarily poor air and water quality in the city) is of great importance for the health of our population. If citizens are well informed they are able to undertake preventive measures, while information can also be a motivating tool for more active participation of citizens in the work of local self-government. The Public Library of Užice strives to provide information for its fellow citizens through literature as well as the organisation of public debates and lectures in the field of environmental protection and health.

It is not easy to change the awareness of adults. Despite accessible information, they rarely change poor habits, even when this does not require any significant effort. They will argue that water-savings, reasonable use of cars and recycling are obviously beneficial both for preserving the planet and home budget, but such individuals are simply not accustomed to such actions. Ecological awareness is therefore being developed at a far earlier stage; connecting with the youngest readers is investing in the future.

Ecological, Educational and Creative Workshops for Children

Since 2004, the Public Library of Užice has consistently organised educational and creative workshops for its youngest users. Children learn about their natural and social environment as well as develop the ability to live responsibly in this arena. Playing with a variety of materials enables them to develop creatively and experience self-exploration; this is an effective way to fill their free time, but also move them closer to the reading of books.

Ecological workshops such as “How to save the planet?” quickly gained popularity among pre-school children, while the number of library users also

increased significantly. Within these workshops, with the help of librarians, children discover some very important ideas, including:

- that the smallest insect is as equally important for life on the planet as the biggest elephant or smartest person, with all having a place in the world,
- how to draw butterflies in their courtyard,
- what happens when whales swallow a balloon floating in the ocean,
- why the elephants disappear in Africa,
- how to make compost.

The ecological concepts of children this age are unsurprisingly built on simple examples, with games the most appropriate learning activity. It is important to show children how they can perform many beneficial actions for the planet through the medium of the game. Through encouragement and a sense of importance children soon not only want to perform such beneficial actions but also become eager to complete their part of the overall task.

Discovering Human Effects on the Environment

For children of school age, the library organises creative workshops such as “Recycle – I Create”. At these workshops, children discover the common habitats of some plants and animals as well as their connection in food chains. Also focused on are the ways in which humans affect the environment and the consequences of doing so, alongside the ways that earth, water and air can be contaminated. Children also learn about the ways in which pollution is reduced or avoided, what people can use from the forest as well as ways to preserve and restore such material.



Figure 1: Creative workshops for children, using recycled materials. © Public Library Užice.

During these activities, librarians encourage children’s interests, questions, ideas and answers. In doing so, they allow discovery with the knowledge children learn so as to not burden participants with large amounts of information. They offer the children tasks and puzzles so as to integrate learners thoughtfully and allow

them to find the answers themselves. When a child finds the answer, a joy for such success arises, which paves the way for a loyal and devoted user(ship).

Recycle and Create

In addition to gaining basic theoretical and practical knowledge about various topics in the field of ecology and environmental protection, children also recycle in these workshops; this involves making handicrafts and artistic design, with painting and decorative objects used from natural and discarded materials. Playing with the most diverse materials, children develop the ability to transform and use different objects that were discarded and find new uses for them. Prominent psychologists cite this ability as one of the criteria by which creativity is recognised (Supek, Kroflin, and Posilović 1987, 47).

In these workshops, children make corn dummies, a Venetian plaster mask, cheerful apples from old shoes, dummy socks, sawdust dummies and ribbed cardboard boxes. Rejected boxes are transformed into cartoon characters and dried gourds are depicted.

What happens to these handicrafts? Some become mascots of the library, as is the case with a man of straw. Such handicrafts remain in the library, improve the space and enrich not only the life of the children but adult users as well. Some handicrafts inspired new activities such as the design of a puppet show, while others travel to art competitions or end up at exhibitions. Certain handicrafts are being sold, with the book fund being rebuilt from the incomes, while colours and other materials needed for the workshops are also bought from this revenue.



Figure 2: Handcraft library mascot. © Public Library Užice.

Ecological workshops also resulted in four exhibitions of children's handicrafts in 2004, 2006, 2011 and 2012. The library also participated in the competitions of the Festival of Humour for children in Lazarevac; at the nineteenth festival in 2007, the Public Library of Užice was declared the overall winner of the artistic part of the competition and awarded for inventive improvement of the festival with new techniques. A similar success was repeated in 2009, 2012 and 2015. In addition to receiving such flattering titles, the library was also awarded valuable books.

Teaching Values by Example

The children's department of the Public Library of Užice seeks to offer workshops for children to support their creative upbringing, but also direct them to values such as empathy, friendship, love and joy through giving. The Public Library of Užice organised two humanitarian exhibitions of children's handicrafts created in these workshops, with revenue from an exhibition in August 2011 used for the purchase of air conditioners in the children's department of the General Hospital in Užice. Elsewhere, the income raised through a sales exhibition in November 2012 was used for the purchase of clothing and school supplies for children from socially vulnerable families.

In addition to the exhibition, librarians of the children's department of the Public Library of Užice, with participants of creative workshops, organised various actions of a humanitarian character. One of these activities was the SMS flower where, during the summer of 2014, participants of the art workshop created flowers of various colours which were message holder but could also be a decorative element on the shelf or work desk. For each flower, children printed and attached one message, inspired by ideas such as personal hopes, faith, thoughts of influential people or famous sayings. On the plateau in front of the library, on August 19th, the children who spent their summer break at creative workshops in the library exchanged their work for a small contribution to the vulnerable areas in the floods that spring, with 1003 people purchasing flowers.

Of course, those humanitarian actions were modest in their contributions when compared to the needs of people who needed help. Its significance was primarily the creative upbringing of participating children who expressed great creative energy in their work, but also displayed understanding and compassion for those left without homes and livelihoods during the spring floods. The very idea of helping someone with their work was the children's inspiration and motivation at every stage of the flower making process.



Figure 3: Children creating SMS flowers, a contribution to the vulnerable areas in the floods 2014. © Public Library Užice.

Social Cooperation Between Young and Old

During 2014 participants of creative workshops of the children's department of the Public Library of Užice carried out another action with the help of librarians, a visit to the retirement home at the nearby town of Zabučje. They brought a mirror, decorated in the shape of the sun, made with the quilting technique and worked on for months, to gladden the residents of the retirement home. The children also gave residents a large decorative box filled with sweets, tea and snacks, with the contents purchased through the financial support of their parents.

During the visit, the children's department librarians organised a quiz and invited their hosts to participate. Although a little caught off guard by the interactive nature of the visit, tenants of the residential home responded positively. Together with the children, they formed teams (Do-gooders, "he Beauties, The Flowers and The Mirrors) and, very quickly, with cheering and bouncing on chairs, the hall turned into a competitive arena, with "Do worms make cheese?", "What do the daltonists not distinguish?" and "Is Alfred Hitchcock a writer, a painter, or a director?" some of the issues discussed rigorously.

The growing friendship of both parties progressed further as the hosts were willing to show the visitors the beautiful view from the terrace and the aquarium in which a small "shark" lives. The visit ended with consumption of cakes and juice, and it is certain that all experienced a day worth remembering.

These actions, carefully planned and prepared for months, have brought about very positive responses in the local community. Parents of the children

involved as well as many fellow citizens were unanimous in the assessment that, in addition to the usefully spent summer break, the humanitarian actions are a significant lesson about empathy and solidarity for the children.

Alter Ego Exhibition Supporting the Yugoslav Theater Festival

A number of other activities carried out by librarians of the children's department with participants of creative workshops were met with great support.

In November 2012, the children poured gypsum masks in another creative workshop. They also had the task of preparing a display of a favourite figure in literature or a book (detailing who this figure is; how they imagine them; what makes them special; how they felt while reading the book; would they act differently to the figure etc.). The masks were painted with enthusiasm during the task of exploring and analysing characters in literature. Finally, the painted masks were lacquered with boat lacquer.

The exhibition of the masks, called *Alter Ego*, was organised in the library hall and was a way to support the XVII Yugoslav Theatre Festival in Užice.

Knowledge in Ecology: Joint Summer Reading Programme with IBBY

The Joint Summer Reading Programme was implemented in the summer of 2013, which included all public libraries in the Zlatibor district. The project was financially supported by the International Committee for Literature for Children and Youth IBBY. This was the first time that the Serbian National Section IBBY Serbia received financial support and one project took place at regional level, including librarians working with children from ten public libraries in the Zlatibor district. In each library, librarians have implemented the Summer Reading Programme according to their own plans.

Workshops within the framework of the Summer Reading Programme at the children's section of the Public Library of Užice took place from July to August on a daily basis for two groups of children in two terms, with about one hundred children participating in the workshops per day. Each Monday, a quiz was organised where children could acquire and display knowledge in ecology, with quiz winners awarded with valuable and convenient books. Every Friday, a Summer

Cinema was organised where children could watch animated films targeted at children on the big screen, such as *Brave Merida*, *Ice Age* and *Ice Age 4*, *The Missing World* as well as *Survival*, so as to then reveal their impressions of the films. Elsewhere, there were also ecological, psychological and literary workshops, with various themes addressed through carefully selected stories and creative games. These included gender equality, tolerance, constructive ways of expressing anger, positive evaluation of oneself, respect for the other, emotions of sorrow, jealousy, anger, fear as well as how to deal with such experiences.

Studying Birds

The year 2013 was dedicated to the study of birds. Children focused on media stories about the disappearance of the shopkeeper's sparrows in Belgrade. The workshops, with the help of librarians and literature, developed theories about the causes of the disappearance as well as how to help birds; these theories were then transformed into practical action, such as making spit feeders. Dried pumpkins were clenched, crinkled as well as painted with tempera or napkins and lacquered with a lacquer for boats. Librarians cut openings in them with a scalpel, while painted feeders were hung on the conifers in front of the library.



Figure 4: An upcycled dried pumpkin.
© Public Library Užice.

Organising educational and creative workshops for children during the summer months is an unwritten rule for librarians. Children have too much free time during this period and there are no alternative activities offered in the community. The children's department provides free access to educational and creative content for all children, which is of great importance for those whose parents, due to material circumstances, are not able to afford similar activities.

Such activities require few financial resources. Many useful materials can be found in the fields and woods near the city, such as various forms of wood, corn, broken twigs and pebbles. Every family in the town has old cardboard boxes, newspapers and clothes they want to get rid of, which only have to be found and collected. Children can be provided with glue, colours and other tools that are not harmful and allow creativity to occur.

Often, fellow citizens donate gifts for the workshops such as paints, lacquers and accessories for various activities. The city press regularly supplies workshops with quality paper; a waste for the press room is a small fortune for librarians and children in the workshops.

Cooperation With Schools and Kindergartens

The children's department has consistent collective visits from children during the school year due to continued cooperation with primary schools and kindergartens. Librarians prepare and organise special educational as well as creative workshops in which various topics are addressed through interactive and creative activities or important dates during the year: Planet Earth Day, World Food Day, World Health Day and World Animal Protection Day.

Each year, at the end of December, the library, in cooperation with the elementary school Dušan Jerković, organises a costume ball called "On the Wings of Imagination" for third grade students, whose costume must match the theme and be made of discarded materials. So as to continue developing children's reading habits and ecological awareness, the theme of the costume ball is always the main character of a certain book. Those with the most creative and inspiring costumes receive prizes of valuable and attractive books. The costume ball brings more than one hundred and fifty competitors together every year.



Figure 5: Children dress up for a costume ball.
© Public Library Užice.

Conclusion

Libraries can encourage and contribute to ecological education and upbringing. The Public Library of Užice does so through its main activity (collecting, storing and publishing books) as well as organising public debates. The children's library division created awareness for environmental education through organising ecological, educational and creative workshops for young people of all ages.

Practice shows that educational and creative workshops are of great interest to children. The goal is to significantly contribute to the development of value and respect for the environment as well as realise the everyday need to preserve and restore one's natural surroundings. These workshops aim to motivate children to contribute to the protection of the environment through personal engagement.

It is significant that such activities are organised with very modest means and do not require engagement of experts in natural science. Librarians interested in ecology and environmental protection are well equipped and have necessary resources in the library; their devising of and organising workshops will hence contribute significantly to sustainable environment development.

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Louise Jones and Winky Wong

14 More Than Just a Green Building

Developing Green Strategies at the Chinese University of Hong Kong Library

Abstract: The slogan “Go Green” has been embraced by a range of organisations including businesses and universities in recent decades. Within higher education, academic libraries are key service units in their parent institutions and have an important role to play in supporting their missions. We have seen many academic libraries striving to go green by designing a green library, whether a new build or renovation. However, there are very few academic libraries in the United States that are LEED (Leadership in Energy and Environmental Design) certified. We argue that pursuing a green building may not be the strategic focus for many academic libraries; in taking a more holistic approach to sustainability through practical measures, academic libraries need to formulate and develop wider green strategies beyond a green building. Going green impacts not only our attitudes towards the environment but also changes the way academic libraries serve their users and the community.

This paper discusses how the Chinese University of Hong Kong (CUHK) Library formulates, develops and implements its green strategy as well as how the strategy has gradually reshaped its services. First we consider how the concept of sustainability has affected services provided by academic libraries, as well as why green strategies are a practical and feasible approach. We then use CUHK Library as a case study, siting the development of its green strategies in the context of the university’s approach to sustainability in the wider CUHK community and ultimately the library’s overall strategic plan. The third section describes how the library implements its green strategies in different areas, from the daily operation of library offices and services offered to users to the planning of a library extension and broader sustainability initiatives. Issues of evaluation are discussed and we conclude the paper with future plans.

Keywords: Green libraries; Library buildings; Hong Kong; Sustainability; Recycling (Waste etc.); Waste minimization; Roof gardening

© Emerald Publishing 2016, republished from: Jones, L., and W. Wong. 2016. “More Than Just a Green Building: Developing Green Strategies at the Chinese University of Hong Kong Library”, *Library Management* 37 (6–7): 373–384.

Introduction

The slogan “Go Green” has been embraced by a range of organisations including business enterprises and universities in recent decades. Within higher education, academic libraries, as a key service unit in their parent institution, have an important role to play in supporting this mission. We have seen many academic libraries strive to go green by designing a Green Library, whether a new build or renovation. The gold standard is to achieve accreditation with one of the major green building standards around the world, be it BREEAM (Building Research Establishment Environmental Assessment Method) in the United Kingdom, LEED (Leadership in Energy and Environmental Design) in the United States and much of Asia (Edwards 2011), or Hong Kong’s BEAM (Building Environmental Assessment Method).

However, it has been pointed out that even in the United States there are very few academic libraries that are LEED certified (Aulisio 2013). We argue that due to various limitations, either financial or in terms of space, it may not be easy for an academic library to fund a new build or major overhaul of their existing building. In this case, pursuing a green building cannot be the focus of a sustainability approach for many academic libraries. Embracing a holistic approach to sustainability practices may be a way forward.

Green Strategy and Sustainability

A frequently used definition of sustainability, from the United Nations World Commission on Environment and Development, is “to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations 1987). For the United States Environmental Protection Agency (EPA), to be sustainable is

to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations

(United States Environmental Protection Agency 2016).

From these definitions, three forms of sustainability are defined:

1. Economic sustainability
2. Social sustainability
3. Environmental sustainability (Chowdhury 2014)

There is some debate about the need for a fourth dimension of cultural sustainability, particularly in urban settings such as Hong Kong; however, we have chosen to subsume this within social sustainability.

Another definitional aspect that we believe is important to libraries is that “[t]he heart of sustainability is not data on CO₂ emissions, but a spirit of action, a state of mind” (Clark 2014, 23). Le Ber and Gregory (2004) write that “greening is a process, as well as a state of mind, and it calls for taking action” (266). This is reflected in library literature with Jankowska and Marcum (2010) commenting that since the 1990s the trend has been to move from terms such as “green librarian” or “green librarianship,” to more action oriented terminology such as “go green,” and “green library movement”. Aulisio (2013) proposed not to restrict the term green library to the very few LEED certified libraries but include “any library that promotes sustainability” and that “a true green library is one that promotes sustainability by leading by example and attempts to incorporate sustainability into all aspects of academic librarianship”.

Embracing a holistic and action-oriented approach to sustainability will have significant impact on the development of a sustainability strategy. Jankowska and Marcum (2010) suggest sustainability strategies should be integrated into library operations, saying

Sustainable strategies need to be integrated into a platform for guiding future decisions about collections, library buildings, and the scale of preservation, digitalization, equipment, products, and library networking service efforts. Such decisions need to take into account not only the cost of collection, equipment, and labor but also the cost of generated waste measured by the size of “ecological footprint” resulting from library operations and services. (167)

Olson (2008), though targeted at business enterprises, provided a model for a green strategy that can be applied to academic libraries who endeavour to establish a sustainability strategy. He argued a green strategy complements other strategies implemented by an enterprise and helps an enterprise make business decisions that “have a positive impact on the environment” which are based on “solid business logic”.

Three principles in a green strategy were highlighted:

- It “fosters a common culture of awareness and action”.
- It “facilitates decisions and transformation initiatives that improve the environment”.
- It should “have attractive value propositions that are cost effective”.

Olson’s view is that a green strategy should aim to cultivate a green culture that can reinforce people’s behaviour, as well as provide appropriate tools and

training in order to encourage change. Current and best practices to cultivate a common culture may include: leading by example, providing training, installing appropriate tools, measuring and reporting performance, making it everyone's responsibility as well as creating a communication and change management plan. A green strategy should thus affect decisions made across the whole enterprise. Olson also offered a model for assessing the maturity level of a green strategy which we will apply to the CUHK Library.

CUHK Library Green Strategy in Context

Hong Kong is a highly urbanised, high-density, high consumption, business-oriented city as well as a society facing tensions around the sustainability of its language and culture. It is also highly vulnerable to the consequences of climate change (Francesch-Huidobro 2014) and according to the same author Hong Kong's solutions are "by and large limping behind developments elsewhere".

Against this background socially responsible universities must play a leadership role, with CUHK committed to "being a leader in the research, teaching and institutional practice of environmental sustainability". CUHK has a history of support for sustainability dating back to the 1990s (Chinese University of Hong Kong 2017c). Its 2012 sustainability policy states it is

committed to adopting sustainable development in education, research and knowledge transfer, to building a sustainable campus by integrating sustainability in its planning, decision-making and day-to-day operations, and to providing leadership in sustainability for the enhancement of the well-being of all peoples.

(Chinese University of Hong Kong 2012a)

CUHK is blessed with the largest and greenest campus in Hong Kong, 137.3 ha overlooking Tolo Harbour. Given the beautiful site a key goal for the university is "to conserve, protect and enhance places of high ecological, landscape and cultural heritage value on campus" (Chinese University of Hong Kong 2008a). The Campus Master Plan for campus development until 2021 (Chinese University of Hong Kong 2008b) is based on the principle of sustainable development and pledges to reduce energy consumption as well as greenhouse gas emission.

Green Governance

A Committee on Campus Sustainability formulates policies as well as guidelines for action plans and oversees implementation (Figure 1).

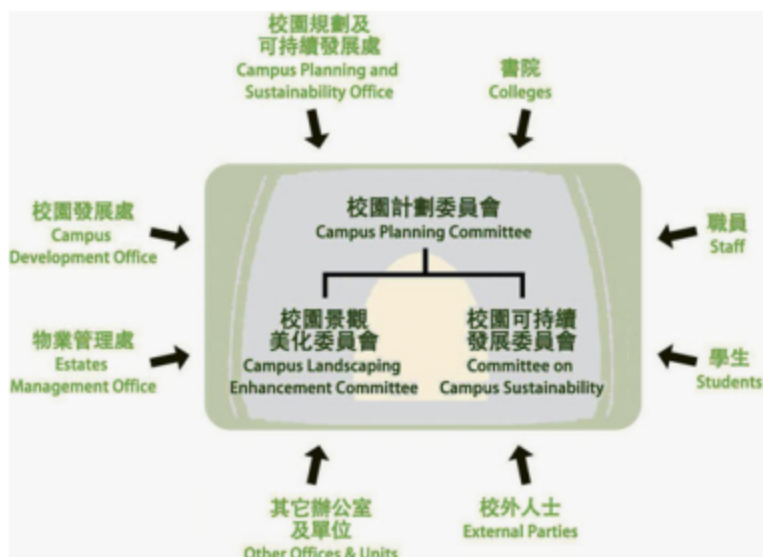


Figure 1: CUHK's Green Governance Framework (Chinese University of Hong Kong 2017d).

The committee is supported by a green team comprising the Campus Planning and Sustainability Office (CPSO), Estates Management Office (EMO) and Campus Development Office (CDO). The university's nine colleges and various student organisations also play an important role in building the sustainable campus. At a departmental level, each office is required to nominate at least one staff member to serve as energy warden to facilitate the implementation of energy conservation measures and encourage colleagues to achieve targets on energy consumption and greenhouse gas emission. Five CUHK Library staff serve as energy wardens.

Green Policies and Targets

CUHK has green policies ranging from energy conservation and green purchasing to a "no shark's fin" policy. Implementation of the policies is increasingly target driven with clear performance indicators. Overall targets such as a 25% reduction in total energy consumption per capita by 2025 are ambitious, with this target

higher than that of the government of Hong Kong. Medium-term sustainability targets to 2017 are aiming to:

- Achieve a further 8% reduction in energy consumption per capita and 10% per capita reduction in greenhouse gas emissions
- Reduce waste to landfill further by 12% per capita
- Reduce water usage further by 15% per capita
- Reduce the use of paper by 50%, with particular reference to committee papers (Chinese University of Hong Kong 2012b)

Initiatives to promote behavioural change within the staff and student body are abundant. The Green Office Programme GO! impacts daily operations in all university offices with its core mechanism the “GO! Checklist” where thirty-two action items are listed (Chinese University of Hong Kong 2012c). Participating offices pledge to undertake at least half of the action items annually, with the programme launched in 2012 on a voluntary basis and becoming compulsory in 2014. Other activities to raise environmental awareness as well as promote sustainable lifestyles among students and staff include, for example, a farmer’s market on campus and a campaign to encourage walking. Many of these are student-led, such as the latest campaign to abandon the graduation bouquet and soft toy, or at least donate the latter to charity.

These soft approaches are used alongside much harder edged tactics including financial incentives to achieve targets. Aimed initially at the top 20 buildings with the highest energy consumption, the 2014 Energy Conservation Incentive Scheme aims to achieve a 4% reduction in baseline electricity consumption in each of the first two years, with 8% in the third and fourth years. To encourage participating offices, 80% of the electricity cost saved will be given to building users, with no penalty for those who cannot reach the target reduction in the first two years. However, if the building users fail to achieve the target reduction in the third and fourth years, they will have to share half of the cost with a cap set at 4% of the baseline consumption. This scheme gives some indication of the seriousness with which the university approaches sustainability.

Ultimately central to any university’s sustainability approach is teaching and research. CUHK currently has over one hundred and fifty sustainability-related research projects and has incorporated sustainability principles into its curriculum. Education in environment, energy and sustainability spreads across almost all faculties, colleges and general education programmes. This includes highly targeted degrees such as a Master of Social Science in Sustainable Tourism to the common General Education programme for all undergraduates, which examines aspects of fundamental human concerns, such human’s relationship with nature, through reading of classic texts.

CUHK Library and Sustainability

CUHK Library Strategic Plan

When CUHK Library developed a new strategic plan in 2013, it conducted an environmental scan, including at an institutional level, to inform the planning process. Given CUHK's strong commitment to sustainability, the library felt it necessary to explicitly embrace sustainability for the first time in its own strategy, to support and complement the university's approach. The library's internal strategy, *Partnering for Success 2013–2016*, includes a vision statement that says the library wishes to be recognised for “engaging with our students, faculty and the wider university community to design and deliver user-centred, sustainable services and spaces”.

In addition, the plan is structured around five strategic themes with objectives underlying each theme. Sustainability is one of the five strategic themes, under which are four objectives:

- Progress towards environmental sustainability wherever possible
- Deliver and demonstrate value and fiscal responsibility
- Optimise collection space, storage and preservation
- Secure the organisational structure and staff skills needed to deliver the CUHK Library mission and vision (Chinese University of Hong Kong Library 2013)

The strategy not only includes environmental and economic sustainability but also social sustainability, with a vision statement highlighting the library's enduring commitment to reflect the university's bilingual and bicultural environment in its collections, services and collaborations. The objectives also include issues specific to the library that need addressing, specifically collections and services.

Green Strategy in Action at the CUHK Library

We believe that greening “is a process, as well as a state of mind, and it calls for taking action” (Le Ber and Gregory 2004, 266). In this section we outline some of the actions taken by the library as a result of its own strategic plan and in response to both the CUHK institutional environment as well as the wider Hong Kong situation.

Social: Raising Awareness of Sustainability Issues

Levels of awareness and commitment to sustainability issues in Hong Kong society are relatively low. There is no functioning green political party and a recent survey by CUHK journalism students found many people unwilling or unable to turn environmental issues into action. A Hong Kong-wide “Food Wise” campaign to reduce food waste was cited as an example, with 90% of respondents aware of the campaign but less than half motivated to reduce food waste (Ho 2016).

Given this background we believe it is important to work on raising awareness of sustainability issues among library staff. Sustainability is a standing agenda item on the library’s management team meetings with notes circulated to all staff. Monthly statistics from EMO on electricity and water consumption by the library are shared with all library managers, while sustainability work is also a section in the library’s annual report. Co-organising the “Academic Librarian 4” Conference in 2016, entitled “Sustainable Academic Libraries: Now and Beyond”, was another opportunity to engage a group of staff with the issues.

One of the most successful awareness raising initiatives has been the rooftop organic vegetable garden set up on the new library extension roof in 2014. A green roof was part of the design of our extension but became a neglected lawn that was not used. With a generous donation from the C. C. Wu Cultural and Education Foundation, as well as assistance from EMO and advice from two organic farming organisations in Hong Kong, O-Farm and the Permaculture Institute, the idea to create an organic rooftop garden became reality. Food is central to Chinese culture and food quality a concern to all. The library offered training and support to over forty library staff volunteers who have become organic gardeners. Several hands-on training sessions were run to help library staff interested in gardening, as many had never done so before, who now garden together in teams of three with their own section of the garden. A wide range of herbs as well as vegetables such as gourd, bush bean, cucumber, radish, lettuce and tomato are grown. Vegetable growing is a great opportunity for staff to learn more about sustainability and work together for a healthier lifestyle. The organic rooftop garden is also a catalyst for team building, skills development and fostering staff morale with harvest celebrations.

An evaluation of the rooftop garden was conducted in January 2016 (Table 1) when a survey was sent to all gardeners. The response rate was 82%.

Table 1: Rooftop gardening survey, 2016.

	Strongly Agree	Agree	No Comment	Disagree	Strongly Disagree
Participation in rooftop gardening raises my awareness of the importance of a green life	39%	61%	0%	0%	0%
Participation in rooftop gardening increases my knowledge of fresh and healthy local produce	58%	42%	0%	0%	0%
Participation in rooftop gardening enhances teamwork building among library colleagues	51%	39%	10%	0%	0%
Participation in rooftop gardening increases training opportunities for leadership	26%	48%	16%	6%	3%
Participation in rooftop gardening helps me to learn about organic farming	71%	29%	0%	0%	0%
The rooftop garden transforms a vacant space into one that is beautiful and productive	81%	19%	0%	0%	0%

The most encouraging signs of the impact of the garden is that it is still being very well tended to after 18 months, as well as the lack of difficulty in filling vacancies with new gardeners when staff leave.

Social: The CUHK and Beyond

CUHK Library is not alone in implementing its green strategy on sustainability. The successful implementation of its green strategy is through close partnership with partners from the CUHK community and beyond.

The library works closely with the university's green team, namely CDO, EMO and CPSO. Other units, especially students' green organisations, also provide recommendations to the library for promoting awareness on sustainability. The library listens to their suggestions and does its best to integrate their recommendations into its daily operation and services if possible.

Beyond CUHK

The library believes that partnership with organisations beyond CUHK community will expand and enrich library staff's experience and practice on sustainability. The collaboration with O-Farm training our gardeners is an example of how the library cannot work in isolation.

Considering, as the ALA Sustainability Round Table does, that there is a relationship between culture and sustainable development, and that libraries have a role to play in cultural sustainability and cultural diversity, there are implications for what is collected and how to make this accessible. CUHK Library has always collected material to support Hong Kong studies and has a particularly strong Hong Kong literature collection. Public exhibitions and related talks, such as our recent "Fun with Cantonese" exhibition, or the 2016 exhibition highlighting art therapy and the talents of autistic children, have not explicitly formed part of our sustainability strategy but can be viewed as helping to fostering a resilient community.

Green Library Services

CUHK Library endeavours to implement green practices in its services and daily operations, especially the effort to reduce the consumption of paper, another university target, by converting services to online. Progress has been gradual and ongoing as some users preferred paper formats and non-electronic communication.

The library had to implement the move from paper in various ways as well as give faculty and staff sufficient time to adopt these changes. Table 2 is a timeline of services that have moved online:

Table 2: Timeline for moving to green services.

1999	Online request for electronic reserve service
Jan 2000	Online request for inter-library loan service
Sept 2002	Personalised electronic services – bi-weekly new additions list; publishers/vendors alert services CUHK ILLiad – Web-based inter-library loan service
Nov 2005	Online application for alumni library services – library card and digital library service
Jan 2008	Online library room booking system
Mar 2009	Self check-out station – users can decide whether to print the receipt
Apr 2009	Online form for requesting inter-branch book delivery
Aug 2009	Online registration/update of email address service – to receive all important notifications from the library, including coming due alert, hold pickup, recall or overdue notices
June 2010	Discontinue the use of "date due" slips

Jan 2011	All library notices sent out by email only
Jan 2012	Alumni library card online renewal introduced
Mar 2014	Online booking system for faculty study rooms
May 2014	Online registration for a JULAC card, allowing reciprocal access to other university libraries in Hong Kong

Printing Service

To reduce paper consumption, a duplex printing option was made available as early as 2002. Eventually, double-sided printing was set as a default mechanism for all printing in September 2011. To encourage recycling of unwanted paper produced from photocopiers and printers, recycling bins are placed near photocopiers and printers. Library staff collect unwanted paper printed on one side for public reuse as drafting paper.

Scanning Service

The library also reviewed the provision of multi-function photocopiers (MFPs) and significantly increased scanning provision in 2013–14. The charge for the scanning service is cheaper than for printing and the library hopes this will convince users to use scanning more than printing so as to reduce paper consumption; the consumption of paper was found to have reduced by 1% in 2015, as compared to 2014.

Sustainable Collection Services

Space is at premium in Hong Kong and in its 2015 Collection Development Policy the library implemented an e-preferred policy for both journals and books to provide greater access to library resources and reduce the need for storage space. The policy states:

Web based electronic format will be preferred for all types of information resources for advantages such as convenient 24x7 access, multiple usage, options to use on mobile devices, and easy integration into course management system or e-learning platforms.

Electronic books and journals do not require a controlled environment; Hong Kong's tropical climate where humidity quickly damages print books means air conditioning is the major source of the library's electricity consumption.

The library has also been working through JULAC with its seven sister university libraries in Hong Kong to take a sustainable approach to print collections.

JULAC has for over eleven years been working with funders and the Hong Kong administration to build a shared remote storage facility for low-use print material. The land has been allocated and the design, including an Automated Storage Retrieval System (ASRS), has been completed but unfortunately funding to build is not yet forthcoming. As an interim measure in 2014 the eight JULAC libraries committed to a distributed print journal storage scheme whereby a single copy of a print journal is kept by one library for all to use when an electronic version is available. JSTOR titles were the first to be included in the scheme, with STEM titles next, while there is current work underway on business studies titles.

Green Operations

Green Office Programme

The library joined the Green Office Programme in its first phase (2012); it has also fulfilled the requirements of "GO!" and is acknowledged as a "Competent Green Office" since 2012 (Chinese University of Hong Kong 2017b). The Green Office badge is displayed on the library's website as a means of publicising the scheme and commitment to such.

Energy-Saving

With the university energy-saving targets explicitly in mind, the library has undertaken action to try and reduce electricity consumption. This is a particular challenge, not just because of the library's long service hours but also the need for air conditioning. Working with EMO, the university's Estates Management Office, lux levels, a measure of the intensity of light, were measured throughout the university library and as a result substantial de-lamping took place. Additional motion sensors were installed not just between the stacks but in all group study rooms, while the time the lights stay on after a user has moved away was reduced. Shutting off computers, photocopiers and printers when libraries close has been a long-standing practice. Now library staff no longer turn computers on every morning when libraries open; the first user is expected to do so. These changes are paying off; the annual electricity consumption of the university library complex for 2014 was reduced by over 8% as compared with the baseline.

Waste Management

In order to collect waste paper more effectively and avoid contamination of high-quality office paper waste, the university invited two waste recycling com-

panies to tender to offer a collection service for general paper and confidential paper waste to university offices and departments (Chinese University of Hong Kong 2012d). CUHK Library joined this service in 2014, whereby the company provides a green bag for general paper waste and red bag for confidential paper waste. They collect the bags directly from library offices as well as provide a monthly report on the number of bags and weight of paper waste collected, as well as the carbon reduction through paper recycling. The library also uses recycling waste separation bins for offices and public areas in the libraries. In 2015, the weight of non-confidential paper recycled was 12,792.1 kg, which accounts for a reduction of 61,508 kg greenhouse gas.

Furthermore, the library also disposes of its redundant IT equipment and furniture with care. All print cartridges are recycled by arrangement with EMO. Obsolete IT equipment is reused in other departments or distributed to charities. A list of unwanted furniture is compiled and sent to all university offices via mass mailing to seek new owners before sending to recycling sites.

Green Building

At the start of this paper it was stated that the authors do not believe a green building is a prerequisite for becoming a green library. However, at CUHK staff completed a major building project which created an opportunity to integrate sustainable design. To accommodate an additional three thousand students resulting from Hong Kong's tertiary education move from a three to four-year undergraduate degree in 2012, it was decided to extend the existing university library, the main library on campus. In 2005 funding was approved for an extra six thousand one hundred metres squared of library space, and a new wing as well as extended basement beneath University Square at the front of the library opened in September 2012. In 2012 there was also an internal spatial reorganisation of the original 1970s main library, with its 1980s annex undertaken to try and create one coherent whole, seamlessly merging all three buildings with the new extension.

Integral to the project was sustainable design and the challenge of preservation concerns. The original library sits at one end of the iconic university mall and square, which includes "The Beacon", a significant sculpture by a world-renowned Taiwanese sculptor. The square is an important venue for major campus events and has become an iconic symbol for student movements and the memories of CUHK alumni. The university library is also home to the largest house swift colony in Hong Kong, housing around 30% of Hong Kong's house swifts. Over one hundred and fifty nests could be found under the concrete eaves along

the eastern and southern walls of the university library which needed protection during and after construction.

The design outcome was a minimalist, glass façade five-storey extension, two large atria and a learning commons basement with two skylights from ponds to maximise daylight penetration in a building with a deep floor plate. One of the skylights, which has become a key architectural feature of the library, re-instated an existing skylight that had been blocked for many years. In the extension considerable use was made of environmental sensors to monitor lighting and air conditioning. Green roof design for the new extension roof was included to reduce heat gain; the glass façade used low emissivity, or low-E double glazing, to help reduce heat gain, while a dot-pattern was used to stop swifts flying into the glass. To better protect them, the university commissioned a seventeen month study of the swifts from June 2007 and undertook ongoing monthly monitoring. In 2009 CUHK-designed artificial nest boxes were installed on the library's southern eaves to encourage the swifts to move from the library's north façade which was being incorporated into the extension as an internal feature wall. A review after the completion of the project at the end of 2012 proved the house swift preservation effort has been a great success (Chinese University of Hong Kong 2017a). Since completion the library extension has received various environmental awards attesting to CDO's and library's commitment to sustainable design which include:

- Hong Kong BEAM Platinum Award, its highest rating. The assessment showed a 32% saving on A/C electricity consumption and 19.8% saving of maximum electricity demand due to sustainable design.
- An Indoor Air Quality Certificate (Excellent Class) from Hong Kong Environmental Protection Department. The award covers the levels of carbon dioxide, carbon monoxide, respirable suspended particulates, ozone, formaldehyde, volatile organic compounds and various other substances in indoor air.
- A Merit Award from “Excellence in Sustainable Built Environment – Green Building Award 2014” organised by the Hong Kong Green Building Council.
- A Silver Certificate from the “Quality Water Recognition Scheme for Buildings” in 2013 from the Hong Kong Water Supplies Department.
- A FuturArc Green Leadership Award 2016 (Merit Award – Institutional) in 2016.

Conclusion

If greening is a process and must be actionable it is fair to say that the library is having some success as outlined above. Olson (2008) posited a green strategy maturity model and assessment framework (Figure 2):

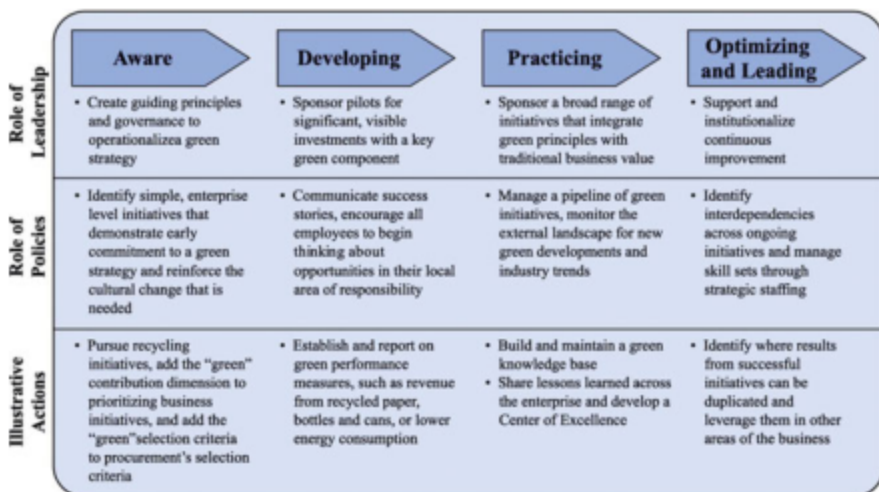


Figure 2: Green strategy maturity model and assessment framework (Olson 2008).

Analysis based on this article details how the library is moving from the developing stage to the practicing stage, but more has to be done to integrate green principles into the traditional business or service model, while building and maintaining a green knowledge base has not yet begun. CUHK has laid down "Medium-Term Sustainability Targets" as performance indicators for objective measurement of campuswide sustainability practices. EMO has started providing relevant data to the library but data covering a longer period is needed to make any meaningful comparison. Moreover, as Jankowska (2010) points out, libraries "need hard data on how much energy and money goes to making and storing their print collections versus how much goes to creating and storing their electronic resources" (31).

The traditional service model is changing as digital library and green computing have an increasing impact. However, the financial cost, energy intensity and their carbon footprint have not yet been objectively evaluated. With the recent launch of a Digital Scholarship Lab at CUHK Library, which is equipped with a large high-resolution digital display wall for research data visualisation as well

as PCs and iMacs, the library needs to monitor the impact of such technology-rich spaces on energy consumption. Furthermore, in addition to the possible increasing energy costs, the rapid technology development can make this equipment obsolete at a fast pace. Alongside its e-preferred collection development policy the library is about to replace its library management system with a cloud-based system shared with sister libraries. It is just beginning to move towards cloud-based IT on the assumption it is green but without firm evidence. Becken (2009) is of the opinion that “more energy is spent per online user, if not per unit of online productivity – even if one is working aloft in the ‘cloud’ of today’s expanding, robust, online apps”.

The authors are concerned that continued reduction in electricity consumption will be challenging. The library is about to participate in a university trial project on waste charging and waste auditing to improve waste management efforts and help it understand the impact of the “polluter pays” model which the university is likely to adopt in the future. There will be firm indicators and the library will need to relay these indicators to staff and students, alerting them to the effectiveness and efficiency of waste management efforts. Given the vast majority of waste is created by users it is an example of where all efforts will have to be put into winning hearts and changing behaviours, working in partnership with our student organisations and CUHK colleagues. Bringing users along during this change will be crucial.

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Simon Jules Koudjam Yameni

15 The Awareness of Young African Students to Protection of the Environment

Case of the Main Library of the University of Douala in Cameroon

Abstract: With regards to the UN 2030 Agenda for Sustainable Development and Sustainable Development Goals, the Main Library of the University of Douala has developed a permanent programme entitled the “Library Day”. This programme consists of information on the various World Days launched by the United Nations, the African Days of the African Union and National Days by the Cameroonian government. The programme presents the different official rulers’ declarations, treaties, conventions and agreements adopted at the COP 21 and COP 22 summits (Conference of the Parties n.d.) relating to protection of the environment. During the day as well as throughout the following week, an exhibition of library books and publications relating to the theme of the day is placed in a dedicated space. This programme was appreciated by our students and has contributed, thanks to several presentations on environmental aspects, to positive modification of their behaviour within the library in particular (such as with reduction of printed matter and photocopying) and university campus in general, seen with the putting of waste materials into garbage cans as well as protection of lawns and other green areas.

Keywords: Poverty; Environmental protection; Climatic change; Universities and colleges – Libraries; Sustainable development; Cameroon

Information and Educational Strategies for Environmental Protection

Definition of Information

The information concept is not easy to define because of its polysemous nature. According to the *Dictionnaire de l'Information* (Cacaly, Le Coadic, Pomart and Sutter 2008), this term refers to knowledge conveyed by a message transmitted from an individual to another. For some authors, information is an element of knowledge likely to be represented by conventions to be preserved, processed

or communicated. There is a constancy amongst these two definitions, “knowledge” meaning that the uninformed individual is ignorant, a state of mind which can predispose individuals to asocial characteristics and behaviours. Generically speaking, the term “Information” is perceived as a didactic fact aimed at modifying the cognitive state of the person who receives or uses it. It is generally a more or less concrete datum, a fact or a concept that can be a figure, statement, fixed or animated image or sound.

From this point of view, information can be considered as an instrument of training and education. In this last definition, the information training dyad finds all its meaning as well as significance and thus restores all information usefulness.

Usefulness of Information

Information is primarily used to reduce uncertainty about an event or a situation, while also an essential part of decision-making. In the university library, information disseminated is generally called the STI (Scientific and Technical Information); this refers to “information knowledge” which is different from information opinion and pleasure. To be efficient and attractive to users, academic libraries should reconcile these types of information. This implies that, while providing knowledge, libraries should enable their users to enjoy and integrate themselves into the society to which they belong. For example, a university library in Africa should provide students with information that could enable them to face the continent’s many challenges, including climate change. Our libraries should encourage students to interact with information that will enable them to become autonomous and therefore develop citizenship attitudes for environmental protection.

Environmental Protection Concept

What is Environmental Protection About?

The concept of environmental protection can be defined as a set of positive practices and behaviours that an individual adopts for the preservation of, for example, the ozone layer, oceans and human well-being. It is a matter of implementing daily actions at the university so as to reduce waste, limit pollution and save resources. Whether in the university campus’ rooms, restaurant, courtyard where students discard rubbish and mostly non-biodegradable material despite

the existence of dustbins, or in the library where documents are photocopied in abundance, university campuses in Africa constitute great polluted environments with their high concentration of students.

The Environmental Crisis in Africa

Even though Africa is not listed among the major polluting continents, the absence of an environmental protection culture is a real scourge for this continent along with other factors such as corruption, HIV/AIDS, poor governance as well as fratricidal and civil wars. These hindrances to African progress come from the apathy of states who should be the guarantors of social cohesion against such issues. These states should be first and foremost respectful of the environment; however, it is clear that African nations do not play their part, with the fight against pollution not their major concern.

The Imperative Need to Educate African Youth About Environmental Protection

Education aimed at protecting nature should always be the concern of all partners and African development leaders, as well as all components of African society, as it seems that the true sustainable development of Africa will depend on the degree of civility and culture of its populations. As the UNESCO preamble stipulates, “that since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed” (1945). For this reason, Africa’s donors (World Bank, International Monetary Fund and others) should place much emphasis on this issue if they truly want to help Africa in funding programmes to train people in environmental protection and climate change. Schools and academic institutions should include these topics in their curricula, such as the Main Library of the University of Douala in Cameroon which perceived the need to inculcate these notions in young users by using some stratagems to raise environmental awareness in students.

Contribution of the University of Douala to Students' Environmental Awareness

Brief Description of the University of Douala

The University of Douala is one of Cameroon's eight state universities, created in 1993 by a decree of the Head of State. The Cameroonian government needed to reduce the pressure on the only state university which at that time had about 50,000 students. The University of Douala is located in the Douala metropolis, the economic capital of Cameroon. It comprises of 11 faculties and vocational schools and has nearly 45,000 students who are served by a staff of about 700 lecturers and 700 administrative staff as well as main library with three professional staff and 26 non-professional staff.

The university information service consists of a main library, a doctorate-level school library and 11 specialised libraries in faculties and vocational schools. On the technical side, the main library, located on the main campus at the University of Douala, coordinates other libraries' activities. It can now accommodate 300 people, while the construction of a 1,500 seat university library is being completed at the time of this article's composition. The library is administered by a team which comprises of:

- A director
- A deputy director
- Three heads of sections (public relations, acquisition and cataloguing, inter-library cooperation)
- Four heads of office

The daily attendance of users is as follows:

- Lecturers (20 per day on average)
- Levels 1, 2, and 3 students (300 per day on average)
- Postgraduate students (70 per day on average)
- Doctoral level students (20 per day on average as there is a specialised library for such students)

The collection is estimated at about 25,000 volumes. However, advice and guidance are given to lecturer researchers on how to exploit documents as well as electronic journals available on Open Access.

The library is still relatively new as the university was only created in 1993. Young students, namely those at bachelor's degree level, are the most common

users of the library; it is this observation that led to the idea to train such individuals to adopt a positive approach to living in society.

Citizenship Education at the Main Library of the University of Douala

It was observed over a number of years that students who attend the library are mostly young people with little concern for preservation and environmental protection issues. Staff at the library, together with the Public Relations department, thought it necessary to train and educate such users about preservation of the environment. Instructions were given to the staff in charge to make them more aware about pollution.

Attempts to raise awareness about pollution through verbal communication with students by library staff only brought about slight changes in students' behaviour; this was not effective as this regularly turned into a debate or argument between library staff and students. During the meetings, staff felt it was essential to use information-based evidence and persuasion to influence students' behaviour.

A programme called "Library Day" was hence implemented, with a large glass bulletin board set up at the entrance of the library with a sign of the same name. A team of three people was trained to regularly monitor this bulletin board; they had a computer connected to the Internet and were responsible for constantly monitoring the websites of the United Nations, African Union and World Days as well as listening to the National Radio's news to glean information on National Days' topics. To achieve this goal and the desired results, the team subscribed to the RSS (Rich Site Summary) of the above-mentioned sites and regularly retrieved up to date information. Once such information was acquired, the team made an announcement on the panel announcing a particular event, such as: "Tomorrow is 'World Environment Day.'" The team subsequently downloaded the Chief Executive's statement related to the announcement; for instance, enlarging the statement of the Secretary General of the United Nations in an A5 format after announcing an event connected to the organisation. As the library subscribed to the government daily newspaper, "Cameroon Tribune," the team also had to collect the comments of the minister in charge of a given activity or sector on the relevant day. For example, the Environment's Protection Day would be examined in the Cameroonian context, with the comments of the Minister in charge of Environment and Protection of Nature quoted from the daily newspaper.

When such details were gathered, workers were instructed to write a short comment relating to the theme of the day and display all relevant components,

under the supervision of the library's leadership team, such as statements from authorities as well as comments from the library's managers. A display was also set up at the bottom of the panel, showing all publications (such as books, journals and brochures) available in the library related to the theme of certain days. As well as the Environment's Protection Day, other days focused on included:

- The Child's Rights Day (November 20)
- The World Day for the Fight against HIV/AIDS (December 1)
- The Cameroonian Week against AIDS (last week of November)
- The International Day for the Abolition of Slavery (December 2)
- The World Day for Human Rights (December 10)
- The International Day of Women's Rights (March 8)
- The World Day of Bilingualism (January 30)
- The World Day of Book and Intellectual Property (April 23)
- World Malaria Day (April 25)
- International Labor Day (May 1)

Influence of This Programme on the Attendance Rate

Set up in the 2008–2009 academic year, this programme has profoundly changed behaviour not just within the library but also the entire campus. It is very popular with students with details spreading around campus, resulting in a remarkable increase in the library's attendance rate, illustrated by the table below.

Table 1: Attendance rate per faculty at the main library 2014–15 (Library Activity Reports 2014–15). Retrieved from <http://www.univ-douala.com/>

Faculties and vocational schools	Number of students	Attendance	Rate %
FLSH	5126	564	11
FSJP	6513	1246	19.13
FSEGA	10 230	1432	13.99
FS	5421	2156	39.77
FMSP	654	25	3.82
FGI	687	54	7.86
IUT	2956	09	0.30
ESSEC	1752	879	50.17
ENSET	3857	498	12.91
IBA	31	0	0
ISH	59	0	0

The University of Douala's library has limited capacity, with the ratio between the number of seats and number of university students as well as lecturers extremely

low, that is, around 300/45,000. This is one of the reasons that prevent students coming to the library, as they know seats are extremely limited. The last two faculties (IBA and ISH) do not come to the Main Library as they are located further away from the Douala metropolis, in Nkongsamba and Yabassi respectively.

Table 2: Attendance rate per faculty at the main library 2015–16 (Library Activity Reports 2015–16). Retrieved from <http://www.univ-douala.com>

Faculties and vocational schools*	Number of students	Attendance	Rate %
FLSH	6418	564	16.26
FSJP	7055	2982	42.26
FSEGA	11138	2544	22.84
FS	6536	3024	46.26
FMSP	706	42	5.94
FGI	791	108	13.65
IUT	3462	18	0.51
ESSEC	1872	1452	77.56
ENSET	4381	708	16.16
IBA	63	0	0
ISH	112	0	0

This renewed enthusiasm, reflected in the increase in the attendance rate, is due in part to the introduction of the “Library Day” programme which attracts many students.

Influence of this Programme on Students’ Behaviors

Since the implementation of the “Library Day,” students have become increasingly responsible and more polite. They no longer drop rubbish carelessly as they have been made aware of waste’s effects on the environment as well as the dangers of climate change throughout the world. A practical example is that of the Red Cross Club of the University of Douala whose members, together with the library’s authorities, have recently organised an operation called “Campus Without Plastic.” Plastic refers to the plastic packaging widely used in Cameroon by shops owners and other traders.

In addition to a Library Day on Environmental Awareness, many other days are held highlighting other issues. This has had the result that students generally behave better, dress better and are more aware of issues such as diseases including AIDS. They also respect their fellow disabled students in the library. Since the

celebration of the day dedicated to the disabled, for example, it is very common to see students helping to get books for their disabled companions. Likewise, they have much more respect for their female colleagues, respect the library staff and often help them to shelve books. Students regularly draw inspiration from themes on the library bulletin board to organise conferences in their clubs and associations within the university. This bulletin board is a reference for our university, which informs the entire university community, not just the students.

Conclusion

The experience gained from the programme in the Main Library of the University of Douala allowed an understanding of the fundamental role that a documentation centre can play in training and education in its local context as well as for greater society. It is therefore imperative for African information professionals to use knowledge and expertise to transform thinking and thus allow a harmonious development of society, particularly African countries whose economic and social development are suffering from climate change effects. This should be the credo of the “information society” that is called for in this article

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Christopher Landes

16 Challenges and Opportunities in Implementing a Sustainable Approach at Academic Libraries

Fields of Action at the Freie Universität Berlin, Germany

Abstract: What sustainable measures are there for academic libraries? In which areas can academic libraries be active? Furthermore, what are the challenges and opportunities of implementing ecologically sustainable action? These are the research questions of an empirical study conducted at the Freie Universität Berlin.¹ The results of the qualitative research show the practical skills required and estimate the scope for action when it comes to promoting sustainable action at an academic library. In this article, the study is presented and three fields of action are examined as an example of sustainable measures in academic libraries: paper-saving workplace design, the removal of plastic bags and use of energy-saving IT equipment. It is not that there are simply transferable best practice cases in the area of sustainable library management; however, the examples presented here can draw attention to fields of action. They create awareness of the opportunities while, at the same time, highlighting the challenges and difficulties that can arise when changing to more sustainable library management.

Keywords: Sustainability; Academic libraries; Library administration; Nature – Effect of human beings on; Green libraries; Germany

Introduction

The literature on the topics of green libraries and environmental sustainability in libraries is very extensive and has increased considerably over the past fifteen years (Antonelli 2008; Armstrong 1971; Hauke, Latimer and Werner 2013; Jankowska 2013; Shah, Kumar and Kumar Shah 2015). Two observations become clear: on the one hand, from a national perspective, it is striking that the USA is strongly represented in this field, whereas, for example, there are comparatively few pub-

¹ The study is based on the results of a thesis written at the Humboldt-Universität zu Berlin within the framework of a master's programme in Library and Information Science. For reasons of anonymisation, the personal details and quotations from the data were not given. The Freie Universität Berlin, the object of the research, was the host for the ENSULIB Satellite Meeting 2017.

lications on the concept of the green library in Germany (Hauke, Grunwald and Wilde 2014; Williams, Charney and Smith 2015). On the other hand, on a general, global scale, descriptions of best practice cases or model libraries are predominant in the relevant literature, both printed and online, such as in numerous websites and blogs; see, for example, the *Green Libraries LibGuide* (Barnes n.d.) or *GoingGreen@yourlibrary* on WordPress.com. Methodical reflections and theory-based approaches to the topic, consequently, are rarely to be found (Chowdhury 2012; Karioja and Niemitalo 2013; Linden, Reilly and Herzog 2012; Payne, Blakey, Horsfall and Young 2007; Sánchez, Geada, Rodriguez and Marraud 2014; Schrammel 2010; Rowley 2006). Instead, the focus of most publications seems to be to provide readers with examples of existing green libraries or give practical recommendations for implementing sustainable concepts. One could conclude, therefore, that libraries should be innovative, resource-conserving and ecologically responsible, while increasing environmental awareness among users, employees and the communities they serve. Furthermore, the negative impact on the environment (footprint) should be reduced and environmental quality in libraries maximised. Not surprisingly, library buildings, construction and renovation are the most publication-intensive fields (Aldrich, Benton, Schaper and Scherer 2013; Brown 2003; Edwards 2011; Flannery and Smith 2014; Hauke and Werner 2012; Latimer 2013). However, there are authors who emphasise the need “to evaluate a library system as a whole and to include sustainable practices in all aspects of library operations” (Jones 2013, 31). In 2003, Philip Ephraim took up the idea that “green management” should be understood as a holistic task and implemented into all kinds of library management processes. This approach involves the use of environmentally friendly and renewable raw materials as well as regenerative energies, the purchase of ecologically sustainable products and recycling of consumer goods. According to Aldrich et al., it is also about the establishment of a “daily green culture” (2013, 21). Sustainability can and should affect all library areas.

This broad understanding of green library inevitably has a strong normative dimension. For this reason, reflecting on a suitable theory and appropriate research methods is particularly important, as is the discussion of the results. Such an approach also involves the embedding of theoretical concepts into the broader framework of sustainability science (Lang, Rode and Wehrden 2014; Vries 2013). A reflected approach includes contextualisation and a comparison of the conditions under which sustainable measures can be successfully introduced. A reflected approach also deals extensively with the whole product life circle, beginning with the manufacturing process while including working conditions and the disposal routes of products (Poggiali 2015). The aspect of optimal use of resources can play a previously unimagined key role in this respect (Jones

2013). Ultimately, it also means to openly communicate the “limits of green consumerism” (Hudson 2012). These topics, briefly discussed here, point to the challenges that can be expected when libraries choose to act in a consistent, sustainable way. The considerations have to include, for example, the possibilities (and limits) of employee engagement as well as structural conditions of the university administration. Moreover, it is important to take into account the financial viability of libraries as well as the reasonableness of sustainable actions, especially when they affect user services and employees’ routines.

Based on these considerations, a study of the library system was carried out at the Freie Universität Berlin. Its aim was to supplement the discussion about the concept of the green library with empirically-supported research and draw more attention to structural factors mentioned. Areas of action and the possibilities for sustainable development in academic libraries were to be identified, while challenges, opportunities and ways of implementing sustainable methods were also part of the focus. In particular, the question has been asked about how sustainable measures have to be introduced in order to be successful as well as which aspects must be taken into account when used in a larger dimension and applied to new situations.

Research Context and Research Design

The focus of the study was put on those aspects of library management that are affected by the consumption of natural resources or cause environmental pollution; the use of energy, paper, water and plastics were therefore central to the research. The library system of the Freie Universität Berlin was chosen as the research context.

The discussion of the concept of the green library is at an early stage in Germany. In the academic library world, especially, the topic has so far been poorly received. However, this does not take away from academic libraries in Germany being quite active in the field of sustainability. Many of the sustainable measures are made by law or for economic reasons: requirements and guidelines on construction as well as efficient energy supply or the economical use of consumables show that many aspects of a green library have already been realised. However, little is reported publicly about this (Hauke and Werner 2012). Sustainability is more an implicit part of the administrative action than part of an explicit strategy.

The libraries of the Freie Universität Berlin vary considerably in terms of size, equipment, number of employees and budget (Freie Universität Berlin n.d.), with

this range of variety very useful for the research question. The cooperative library system has components of a single-tier and two-tier library system. Smaller institutional libraries were grouped into nine library departments spread over thirteen sites. The entire library system employs about two hundred and fifty people, provides over three thousand three hundred work places and has a total stock of approximately eight and a half million printed media units, sixty thousand e-journals, over six hundred thousand e-books and one thousand six hundred databases. The university library takes on central and coordinating tasks for the entire library system which include, for example, the library-related IT services. These structural parameters must be taken into account when considering the scope of action. The issue of sustainability could thus be analysed at various levels: at the level of a small institute library, library departments and overall management. It is also important to mention the university administration that is able to exert influence on the libraries through its sustainability strategy and sustainability office (Wanke 2017). The results gained from the research can be generalised to a certain extent as representative examples for the academic librarianship in Germany.

Libraries have complex work environments, with clearly structured organisational forms and decision-making processes. The characteristics and interrelationships make it possible to speak of a subsystem within the university environment that involves different social, technical and legal levels. The study was based on a sociological-institutional perspective; on the one hand, attitudes and interrelations within the library system were examined while, on the other hand, the implementation of sustainable measures was analysed. These measures usually were a result of decisions reached after a period of negotiations and often affected by system-regulating processes. Technical, economic and service-related aspects also played a significant role, which are important when it comes to calculating the ecological value of a certain action. The question of whether and how sustainable measures are successful or not is not always easy to answer; the aim of the research was to identify possible areas of change and point out the challenges and uncertainties of implementing a sustainable approach at academic libraries.

In order to obtain the empirical data, interviews were carried out. Twelve people were consulted: the library director, heads of the library departments, head of the library's internal IT department and head of the university's sustainability office. In this way all contact persons for conceptual and strategic issues of the libraries were involved. The management staff is responsible for space and resource management, procurement, acquisition as well as the budget and thus for all areas related to sustainability issues. The interviews took the practical experience and knowledge of the librarians into consideration while the study

was thus able to systematically reveal relevant topics of sustainability in the context of academic libraries. In this way, technical and process-related knowledge was also produced and shared.

The empirical data obtained through the survey was transcribed and the content analysed using coding guidelines and the software MAXQDA. The analysis could also make use of further data on the procurement and consumption of materials as well as resources in the libraries. These were quantitative data collected by the libraries as well as the university on a standard basis.

After analytical evaluation of the data, a list of various sustainable measures was drawn up and presented or discussed in the library system. Each of the measures was analysed to determine the extent to which sustainability issues were concerned. It was necessary to clarify which resource was affected and how the analysed sustainable measure was to be implemented technically and organisationally; in this way, the value and the impact of a sustainable measure were evaluated. Finally, a result was also whether the measure was applicable on a larger scale and what challenges could be expected on transferring it to another context.

In the following, some general observations of the data analysis will be presented. Subsequently, three concrete examples of sustainable measures in academic libraries will then be discussed.

Dealing With Sustainability in Academic Libraries

General Observations

Most of the topics and fields of application discussed in the literature on the concept of the green library are also the subject of the Freie Universität Berlin. The aspect of ecological sustainability is relevant in the construction, IT infrastructure, public-service areas and administration of libraries.

The structural framework of the library system and specific logic of the German library system can be cited as crucial parameters for dealing with sustainability. On the one hand, legalisation, standardisation and (technical) modernisation favour many sustainable developments (Brown 2003; Eigenbrodt 2013; Sommer 2013). Public discourse in Germany is also characterised by sensitivity to ecological questions and this contributes to an *implicit* treatment of the topic in academic libraries. On the other hand, academic libraries in Germany are primarily seen as service providers for users and the university, meaning that ecological issues do not play a prominent role. This makes it possible to confirm that

sustainability is implemented in many areas without this being explicitly communicated. Hence, there is no defined and publicly communicated sustainability strategy in the library system of the Freie Universität Berlin and none, as far as the author is aware, in any other German academic library either. Even when there are existing university sustainability policies these are not automatically applied for the libraries.

With regard to the scope for action available to libraries for sustainable action, the study revealed a mixed picture. In each of the examined libraries there is a framework of specific structural and legal conditions. The involvement of the library administration in the decision-making processes of the university limits the possibility of independently carrying out sustainable measures on a large scale. However, these conditions are often – but not always – precisely those in which sustainability is automatically taken into account by legal requirements and framework agreements. The construction of libraries and energy or waste management can be cited as examples.

However, the green library concept goes beyond constructional and technical questions. The study revealed numerous fields of action where academic libraries can consider and independently realise sustainable aspects. These sustainable measures include a number of areas from workplace organisation, procurement of equipment and office materials, development of workflows, personnel management, equipment and organisation of the public service areas to everything related to IT management, space management and controlling. The measures are aimed at either saving energy or minimising the consumption of paper, plastic or water and thus reducing the ecological footprint of the libraries. The study also underlines the fact that libraries can, by definition, be designated as sustainable institutions. For this reason, all interview partners also supported the idea of making the topic more visible to the public.

Whenever legal or administrative regulations do not automatically require sustainable aspects, general trends can be seen with regard to the likelihood of implementing a sustainable approach at the library management. In general, it may be stated that sustainable measures are more likely to be successfully introduced when certain conflicts of interests are absent. Conflicts occur when negative effects are created for the library management. These challenges to sustainable action are particularly serious if they lead to permanent costs, restrict services or require high conversion efforts. In contrast, the introduction of a sustainable measure can be successful if it shows advantages for at least one of the following: finance, public services, saving of labour or public relations.

Furthermore, the study shows that sustainable action is initiated in many librarian-working areas due to technical innovation. Modernisation, especially in the IT-supported library administration, is advantageous from a sustainable

perspective. A further outcome is that the support as well as influence of stakeholders and partners, for instance the university departments or, as in the case of the Freie Universität Berlin, the Sustainability Office, have a positive effect on sustainable measures. Nevertheless, the personal commitment and support of the library staff are the most decisive factors in the successful implementation of sustainable measures at the examined libraries. This is especially the case when an ecologically sustainable innovation interferes with the management of public-service areas and when it comes to prioritising this over other tasks.

As far as the transfer and use of sustainable measures on a larger scale are concerned, few generalised statements can be made while easily transferable best-practice cases cannot be presented. One concept cannot be implemented in two different institutions, since libraries, their structures and framework conditions, employees and specific decision-making processes differ. However, the examples examined here can draw attention to different fields of action. They develop an awareness of the opportunities of sustainability management, while highlighting the challenges and difficulties that may arise when introducing sustainable measures. In the following, three examples of sustainable action will be discussed.

Paper-Saving Workplace Design

In the field of individual or collective workplace organisation, the majority of respondents could immediately give examples of sustainable action. In the administrative area of the libraries and all kinds of communication processes, the use of paper can be greatly reduced. The savings achieved are realised through intelligent digital storage systems, elimination of paper-based administration, avoidance of printing, reduction of manual documentation, realisation of exclusively electronic communication and correspondence, the collection of and finally use of waste paper as well as double-sided printing. The notion of a green or paperless office plays an important role; in one of the examined libraries, for example, all the meeting documents are electronically viewed and virtually processed using hard disks. The use of the internal library wiki also aims at this functionality. The electronic accounting system is also to be used with company software, which enables standard administrative processes without making use of print.

There are two levels of distinction: sustainable actions enforced by external systemic changes or sustainable actions made by employees on their own initiative. With respect to the former, it can be said that change to a technical system, such as the introduction of a new administrative software but also the spatial

relocations and mergers of libraries, as well as other rationalisation measures initiated, for example, by the university administration, usually entail a great ecological advantage. For example, the introduction of an electronic administrative portal means that remuneration records no longer need to be sent by post. This form of saving is not primarily due to a sustainability strategy, but is also a desired side effect of the digital strategy of the university. The library management usually has little influence on the introduction of a new administrative system for the whole university. However, all interviewees saw a great potential for sustainable action on the level of personal workplace design and office communication.

In the case of digital data storage, the library management must be aware that saving paper will potentially mean an increase in energy consumption. Another difficult issue is control, as many libraries do not record their paper consumption, or at least not in a differentiated way. In many cases, there is no distinction between paper consumption in the public-service areas and library administration. Nevertheless, the value of the saving of paper due to technical changes was revealed by the study.

The following advantages are created by the primary use of electronic data processing (EDP) in library management instead of paper-based systems: the avoidance of media breaks, simultaneous access by employees, efficiency enhancement, the possibility of teamwork on the network and space gain, achieved by the removal of files. Disadvantages also arise, such as how some library staff prefer working with paper. Some employees also complained that they could not read well on computer screens, while it was also criticised that permanent working and reading on the computer causes headaches and neck pain; it was also said that it was still unusual to arrive at a meeting without handing in printed material. These are the specific challenges of a paper-saving workplace organisation where it is important to achieve a high level of personal involvement and, at the same time, overcome outdated habits. For health problems caused by reading on the screen, relief is available in the form of regular work breaks and work variety, while the acquisition of eyesight-protecting e-readers is also conceivable. The successful introduction of a paperless office is also characterised by the willingness of those involved to deal with the technical and ecological advantages of electronic documentation. Professional support by already competent employees can have a positive effect.

Despite these challenges, all interviewees see a great potential in the field of workplace organisation. A rethinking of all library workflows, the promotion of digital communication and idea of the paperless office were suggested: "(...) an easy and low-budget approach to managing the workflows and everyday routines of the library administration" (Hauke and Werner 2013, 4).

Removal of Plastic Bags

The removal of plastic bags in the public-service areas can be defined as a sustainable measure. In the library system of the Freie Universität Berlin it was discussed whether the use of plastic bags could be reduced or completely eliminated. As a consequence, the libraries decided to replace them with plastic baskets.

Plastic bags are responsible for environmental and, especially, marine pollution (The Ocean Cleanup n.d.). Irrespective of how many are used, plastic bags are seen as a symbol of the sustainability discourse as such, since their recycling capacity is very low. Plastic bags are forbidden in some countries (Freytas-Tamura 2017), while the retail and supermarket chains in Germany have reduced the use of plastic bags as part of a voluntary agreement. Libraries use a comparatively manageable number of plastic bags. The symbolic effect of removing them is, therefore, higher than the measurable effect. The objective of removing plastic bags – in addition to the reduction of plastic – lies in the ecological statement and image gain. The question of how to deal with the topic has also concerned other libraries (Krause 2015; Ybañez 2016). The study has shown that there are many different solutions and approaches on how to consider the use of plastic bags.

Transparent plastic bags are used in the public-service areas for two main reasons. On the one hand, libraries want to facilitate the transport of books within the library and thus in an area where users may not use their own for reasons of protection against theft. On the other hand, it is a question of the protection of the media in the library but also, in particular, outside the library. The advantages of plastic bags are obvious: they are water-impermeable, robust, transparent and allow the corporate identity image to be displayed. Above all, they enable books to be safely transported.

There are several alternatives to the use of plastic bags: the complete removal of plastic bags, replacement of plastic bags by other carrying bags or use of baskets. Charging a fee for plastic bags is problematic in public facilities for administrative and procedural reasons. The removal or reduction is contradictory to the idea of replacing plastic bags with baskets, which are used in many libraries. The Freie Universität library system has chosen the reduction of plastic bags (handed in by voluntary donations) and at the same time purchase of transparent, non-recyclable baskets; however, libraries may come to another decision in different contexts. The majority of interviewees were confronted with a considerable target conflict, since the requirements of a user- and service-oriented facility are affected. The question is whether it is reasonable to carry books, laptops and other materials without a bag. The complete abolition of this service was therefore not preferred by all librarians. It should be emphasised, however, that, due

to their size, appropriate user behaviour and intensity of use, libraries, of course, vary in evaluating this question.

Another aspect concerns the issue of stock conservation and thus a further core concern of libraries. For example, linen or paper bags are disadvantageous as they are water-permeable while the materials lack transparency. For these reasons, it is recommended, among other suggestions, to offer emergency plastic bags in the case that users have not taken appropriate precautions. One of the investigated libraries used the removal of the plastic bags, however, in order to rethink their rules for users in general. According to recent trends in some academic libraries, it is possible to carry sustainable fabric bags and even to take jackets into the reading rooms and workplaces. The procurement of fabric bags can also be realised in cooperation with sponsoring associations or student groups. This measure illustrates that sustainability is both a restriction and benefit for new services.

A recommendation for replacing plastic bags with plastic baskets cannot be given without further considerations. A central question is what type of baskets should be used to meet the requirements of the public-service areas, conservation of stacks and cost-benefit efficiency of the library. From the ecological point of view, libraries should prefer recyclable plastic baskets. However, those baskets not produced from environmentally harmful polyethylene are not transparent. If transparent baskets are purchased which are not recyclable, the question arises as to how many plastic bags can be used for the production of one basket. According to the weight calculation, about thirty plastic bags (twenty-five grams) correspond to one plastic basket (considering a model that weighs six hundred and ninety grams). The plastic baskets require more plastic but control of the material is better insofar as the baskets are used exclusively within the libraries and their proper disposal can also be ensured. Regarding the durability of the baskets compared to that of plastic bags, there is no reliable data. It becomes clear that, in the case of a decision, the symbolic effect is predominant – assuming that plastic bags have a far more negative image than plastic baskets. It is also necessary to collect reliable data on such use and examine the substitutability in the individual case.

From a higher level perspective, implementing sustainable measures can be characterised as a complex process which will be resisted, especially if negative effects in the service area of libraries are to be expected. Decisions in favor of sustainability affect stack protection, desired service orientation and user behaviour. A communal decision by all stakeholders is advantageous here; for example, one of the researched libraries reported that the reduction of bags and purchase of baskets was not originally seen as an option but is now successfully in use. At the same time, it is important to mention that the whole process of negotiating

and implementing a new system is challenging. The purchase of plastic baskets requires much information and organisation. Libraries need to determine their needs, find proper products and vendors as well as allocate time and resources as necessary for the employees working in the public service areas to store the baskets.

Overall, it can be said that removing plastic bags makes sense from a sustainable perspective, or, in the case of replacing them by plastic baskets, is at least a considerable symbolic contribution. Communicating the goals and difficulties in a transparent and open way facilitates the successful implementation of this measure and increases the understanding among users; this is similar to the way it worked in supermarkets. Employees should be involved in the decision-making process. Users can also be involved through a survey or other participatory elements.

Energy-Saving IT Equipment

The increased usage of electronic devices generally leads to higher power consumption in work processes as well as the public service areas of a library. The steady expansion of server infrastructure is linked to the rapidly increasing volume of data produced in libraries. Apart from the energy, water and use of health-damaging chemicals, there are also rare earth resources such as gold, lithium, cobalt as well as crystals used in larger quantities in the production and use of electronic equipment such as in servers and computers, printers, photocopiers and scanners. In addition, the global transport routes involved and production in low-wage countries are problematic. This is the downside of a development that comes with reducing paper, with the challenge countered by the use of more efficient equipment and electricity generated through renewable energy sources. While the latter is a political issue, the individual library has influence on the purchasing, use and disposal of electronic devices.

Procurement of electronic equipment must therefore be based on efficient and certified technology. All devices should have a long lifetime and low energy consumption. The Freie Universität has become aware of this procurement policy and made corresponding requirements for the central tenders. The use of energy-saving devices often results in a clear economic gain which can be measured after a certain period, while the procurement process also requires a time-consuming test of products. The sustainable procurement approach also considers the whole life cycle of a device and goes even one step further. The question is not only how much electricity a computer consumes, but also how big the proportion of recycled material is, whether the company also accepts the return of equip-

ment and if sustainable disposal routes are regulated by contract. Old devices which no longer meet the requirements of the library still can be used. There are initiatives, for example, to make such equipment available to employees, schools and other institutions or even developing countries for further use. The benefit from the sustainability perspective is obvious and the time spent on this ecological engagement naturally has to be taken into account.

From the ecological point of view, the replacement of computers in public service areas by thin clients has proved to be successful. The introduction of these devices at the university has brought a number of advantages. Thin clients last for up to 10 years and require less power than conventional computers. Furthermore, the amount of heat produced is reduced, they can be monitored and controlled centrally and have a 20% price advantage over traditional computers. As a result of the power-saving and lower heat radiation, thin clients are an example of a sustainable measure that has no significant disadvantages.

Central data management and server infrastructure is essential when using thin clients. Centralisation can be seen as a sustainable measure, since centralised servers are usually installed in modern, air-conditioned rooms as well as operated with less energy and at a lower cost than in a decentralised infrastructure. One of the examined libraries reported that the process of transferring the server infrastructure into the central university institution was quite cumbersome. The advantage of libraries having their own decentralised servers was that they can react more flexibly to user needs; the changeover to centralised services was partly perceived as disadvantageous and involving a lot of work from this point of view. It must be expected that administrative centralisation and the dissolution or integration of existing structures will not proceed smoothly. A good communication policy is crucial to the acceptance of this kind of sustainable measure.

Conclusion

As a conclusion there are several options for the introduction of energy-saving electronic devices. Ideally, as little technical equipment should be used as possible which still provides the necessary services. However, the concept of sustainability cannot always be realised easily because of study conditions and external factors. One of the interviewed librarians, for example, reported the necessity of having a large number of PCs since licensing regulations do not allow study-relevant sources and databases to be viewed from students' private devices.

Energy-saving also means that thin clients and PCs in the user departments must always be switched off or to standby mode. Regular and comprehensive controls are not always feasible and it can be reasonably assumed that many devices are switched on in libraries without being in use. From the viewpoint of the users and employees, it is regarded as more pleasant and time-saving to be able to use the devices directly. At this point it is necessary to negotiate the priority of a more sustainable or more service-oriented concept.

Finally, it can be said that in the IT sector, a phenomenon is even more evident than in other examined library-specific areas: economic pressures and technical modernisation generally lead to a more sustainable use of resources.

Outlook

The results of the research and the three examples discussed here illustrate two things. On the one hand, it is shown how important empirical work and methodologically-based studies can be for implementing a sustainable approach at libraries. Empirical studies can objectively identify fields of action and realistically assess the opportunities and challenges of sustainable action. On the other hand, it is clear that easily transferable best practice cases are rare in this area. Instead, organisational and legal framework conditions, structural specifications, concealed costs or the disposition of employees must be considered. Once more it becomes clear that no library is like any other.

Finally, the critical approach to sustainability in academic libraries must not be silent about the fact that the ecological footprint of many libraries can only be reduced with great commitment. Even if libraries can be regarded as exemplary institutions in many respects, it is important to note that more and more public service areas and stack rooms are emerging. Libraries are often found in large and often older, energy-intensive buildings, with many open for twenty-four hours (Becken 2009; Hardesty 2011). In addition, more electronic devices are being used as mobility and travel increase, not only among users but also librarians. This makes it important to look at the symbolic desired external impact of libraries. The study shows that academic libraries are quite active in the field of sustainability and can also act successfully in many areas if they identify with the topic of ecology and are prepared to act accordingly.

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Onan Mulumba and Winny Nekesa Akullo

17 Information Dissemination is Not Enough

Preparing Librarians for Effective Climate Change Effects Mitigation in Uganda

Abstract: The major role of most libraries is to collect, process, store, retrieve and disseminate information. However, this routine demotivates many librarians who have the potential and enthusiasm to make an impact on national development. Climate change is one of the most challenging global occurrences. It greatly affects many developmental activities such as agriculture, on which over 80% of Uganda's population thrives. The aim of this paper is to assess and recommend innovative ways through which librarians can practically participate in the mitigation of climate change effects in the country in addition to information dissemination. The study used a cross-sectional survey of librarians in Uganda and realised a response rate of 95.5%, with most respondents from academic institutions and their primary role mainly (83.7%) as librarians. It was established that the majority (55.8%) was aware of the 2030 United Nations (UN) Agenda and the Sustainable Development Goals (SDGs). Also observed was that air pollution, toxic pollutants and deforestation are the key causes of environmental degradation in Uganda. Librarians should be repositioned to promote products and services which assist in reducing waste as well as promoting awareness campaigns for waste reduction and education. This initiative, however, is expected to be affected by challenges such as poverty and the subsistence needs of the communities as well as conflicting priorities of the people and government.

Keywords: Climatic changes; Environmental protection; Uganda; Sustainable Development

Introduction

The main role of librarians is information processing and dissemination. However, the evolving needs of society require a revolution in the roles of librarians to include supporting other functional activities in the community. The working environment of librarians has changed in recent years. This includes societal demands, characteristics of the clientele, impact of technology and literacy levels of the librarians. These changes require innovative ways of delivering information and other services to the community. The rapid technological progress has had a

major influence on the working methods of librarians. They integrated technical developments (including instant messaging, blogs, social networking and wikis) into their daily work and private lives (Arif and Mahmood 2012, 469).

A report by Griggs et al. (2013) highlights a set of six Sustainable Development Goals (SDG) which resulted from combining the Millennium Development Goals (MDG) with conditions necessary to assure the stability of earth's systems. The redefined SDGs, "thriving lives and livelihoods, sustainable food security, sustainable water security, universal clean energy, healthy and productive ecosystems, and the governance for sustainable societies" (Griggs et al. 2013, 307), shall replace the 2030 United Nations (UN) Agenda concerning the ending of poverty and hunger, universal education, gender equality, health environmental sustainability and global partnership (306).

As stated in Environmental Alert (2010):

Already, countries like Uganda have borne the effects of climate with clear changes in precipitation (rainfall), water availability, length of seasons, incidents of extreme weather patterns, floods, desertification, distribution and prevalence of pests and diseases [. . .]. (6)

These effects significantly affect food security through reduced agricultural production upon which more than 80% of the country's population thrives. A study by Hepworth and Goulden (2008) confirms that "Uganda is highly vulnerable to climate change and climate variability" (3). Elsewhere, Okonya, Syndikus and Kroschel (2013, 258) reveal in their study that floods and drought are the biggest threat to crop production in Uganda. Climate change in Uganda has implications for health, water, infrastructure, environment, agriculture, fisheries, industry, tourism as well as the economy and as such requires a concerted and coordinated adaptation response.

Objective of the Study

This study was aimed at developing strategies for librarians in Uganda to actively engage in environmental conservation, other than through information literacy and dissemination. Specifically, the study investigated librarians' awareness of environmental degradation activities in Uganda, perception of the current level of involvement of librarians and their affiliate institutions, challenges encountered in environmental conservation as well as strategies that help improve librarians' engagement in environmental conservation, support the reduction of the adverse effects of climate change and ensure food security in Uganda.

Climate Change in Uganda

Uganda is an inland state bordered by Sudan in the north, Kenya in the east, Tanzania in the south, Rwanda in the southwest and the Democratic Republic of the Congo in the west (Okello et al. 2013, 56). Uganda's total land area is 241,559 km², with about 37,000 km² of this area occupied by open water while the rest is land. The southern part of the country includes a substantial portion of Lake Victoria, shared with Kenya and Tanzania. Uganda is located on the East African Plateau, averaging about 1,100 m (3,609 ft) above sea level (Uganda Bureau of Statistics 2016). The climate of Uganda is largely tropical but there are variations at times due to the varying levels of altitude. Land area estimates put agriculture at 38% of the total land share in Uganda. Agriculture therefore plays a big role in shaping the climate of the country.

The per capita carbon dioxide emission estimates for Uganda indicate that there has been an exponential increase in carbon dioxide emission since the year 1950. The major contributors to this are emissions from liquid fuels and cement production (Boden, Marland and Andres 2011), with this energy production comparison shown in Figure 1. The high population growth has also contributed to the current energy demand which has given rise to an exponential increase in the use of wood for fuel, contributing to more than 80% of the 90% biomass usage in Uganda (Boden, Marland and Andres 2011). Figure 2 shows the energy use ratios in Uganda by the year 2011.

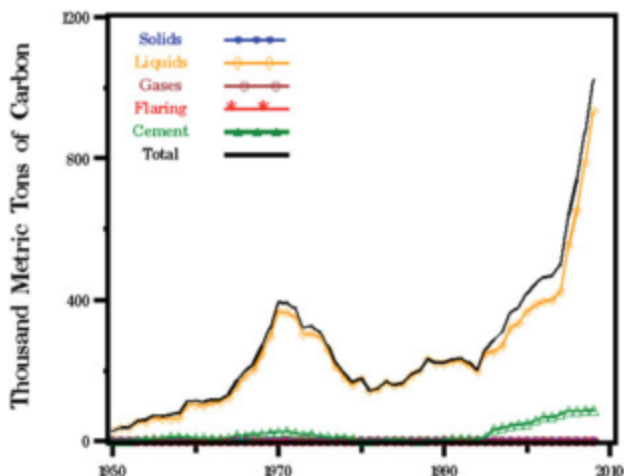


Figure 1 : Carbon dioxide emission in Uganda (Carbon Dioxide Information Analysis Centre 2012).

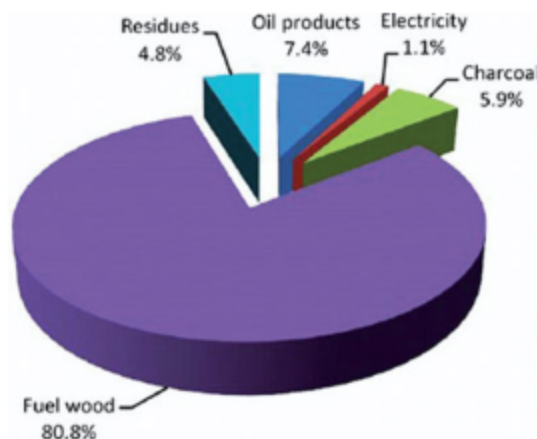


Figure 2: Energy use by category in Uganda (Okello et al. 2013, 56).

By the year 2014 Uganda's population had reached thirty-five million. However, the working population was estimated at 51% and of this 72% is engaged in agriculture (Uganda Bureau of Statistics 2016). According to Alexandrov and Hoogenboom (2000) as well as Kang, Khan and Ma (2009) climate variability has a direct impact on agricultural production. The levels of precipitation, temperature and amount of carbon dioxide significantly affect crop yield. Therefore, measures to improve and conserve the environment should be strengthened to ensure food security and promote human health.

Librarian-Environment Conservation Model

Librarians and information scientists aid other professionals in accessing relevant information for climatic sciences (climatology) which is key to enhancing environment conservation, protection and restoration. With the severity of the climate change effects in Uganda and other parts of the world, the need to revisit the role of librarians as well as other library and information science (LIS) professionals generates a model that encourages them to engage directly in environment-saving activities.

Different professionals use the information provided in different ways:

- The local community uses the information for activities such as communal collection of waste and conducting of environmental awareness campaigns.
- The policymakers use the information to put in place a policy framework to govern environmental conservation.

- Environment activists use the information to set out strategies for conducting environmental awareness campaigns and enhance environment protection.
- The environmentalists use the information to carry out environmental research and education.
- The farmers use the information to adhere to best farming practices, which are environmentally friendly.
- The foresters use the information to support professional activities in the management of protected areas, tree planting (afforestation) and ecological restoration.

Figure 3 links the activities of the different practitioners with the work of the librarian, as well as how this interaction of activities and involvement can overlap.

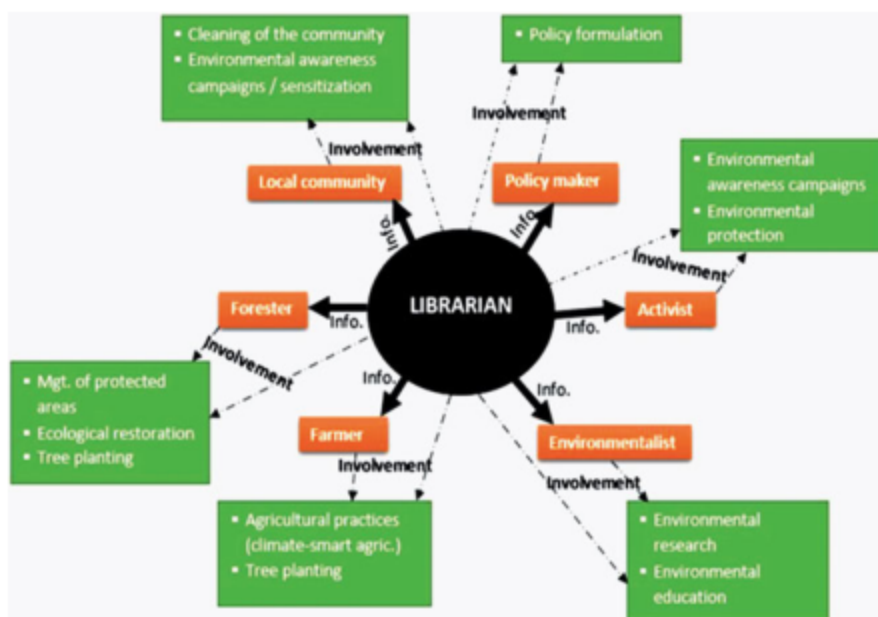


Figure 3: Librarian-Environment conservation model. © Authors' ontology.

The model suggests that the librarian, besides providing information support, should interact with other professionals in transmitting the information and knowledge into logical and practical solutions to environment degradation. The librarians should not just be observers in the implementation of activities but also players alongside other key stakeholders.

Librarians should thus engage in:

- environmental research and education,
- environmentally friendly agricultural practices such as
 - climate-smart agriculture,
 - tree planting,
 - management of protected areas,
 - ecological restoration,
 - collection of waste and general cleaning,¹
- environmental awareness campaigns and raising awareness, and
- policy formulation.

Materials and Methods

A cross-sectional survey was conducted using a semi-structured online questionnaire, involving both closed and open-ended questions. The questionnaire assessed the demographic characteristics of librarians, their awareness of activities which cause environmental degradation and the 2030 UN Agenda in relation to environmental conservation. Additionally, the questionnaire sought to establish the librarians' perception of their involvement, as well as that of their affiliate institutions, in environmental activities, as well as challenges encountered and strategies to enhance their participation. For scoring the questions relating to perception a five-point Likert scale was used, where 1 = strongly disagree and 5 = strongly agree.

The questionnaire was distributed electronically to forty-five LIS professionals in Uganda. Forty-three responses (95.5% response rate) were received and of these forty-two respondents answered the question asking about their affiliate institutions and organisations, as presented in Table 1.

Table 1: Responses per affiliate institution.

Institution	Frequency	Percent (%)
Uganda Christian University	1	2.38
Ankole Western Institute of Science and Technology	1	2.38
Bishop Stuart University	4	9.52
Bugema University	1	2.38

¹ General cleaning is referred to as "community social work", as a form of corporate social responsibility. Here the general public or sections of society communally participate in cleaning of the environment such as collection of rubbish and clearing of drainage channels.

Table 2: (continued)

Institution	Frequency	Percent (%)
Busitema University	1	2.38
Makerere University	13	30.95
Gulu University	4	9.52
Hoima Public Library	1	2.38
Islamic University in Uganda	1	2.38
Kampala International University	1	2.38
Kyambogo University	3	7.14
MTN Uganda	1	2.38
Ministry of Foreign Affairs	1	2.38
Ministry of Gender, Labour and Social Development	2	4.76
National Fisheries Resources Research Institute	1	2.38
Public Procurement and Disposal of Public Assets	1	2.38
Uganda Martyrs University	1	2.38
Uganda Institute of Information and Communications Technology	1	2.38
Uganda National Roads Authority	1	2.38
Uganda Revenue Authority	1	2.38
YMCA Comprehensive Institute	1	2.38
Total	42	100

Most respondents came from Makerere University with the rest from twenty other institutions. This diversity may not necessarily enable the results to be generalised because the research, in its largely qualitative nature, did not apply probability sampling. It does, however, provide an insight into the factors leading to a new direction for the LIS profession in helping to solve global challenges such as climate change (Polit and Tatano 2010, 1452).

The data was captured using Microsoft (MS) Excel and analysed using Statistical Package for Social Sciences (SPSS) version 23 for basic descriptive statistical analyses. Frequencies and percentages were the major statistical tools used to build description of librarians' involvement in environmental conservation and future direction of the profession.

Results and Discussion

The 95.5% response rate provided the basis for data analysis. Therefore, the following investigation is based on information provided by forty-three respondents.

Analysis of Demographic Data

The distribution of respondents by their personal data is shown in this section. Data was analysed using simple percentages, seen in Table 2 where it is used to show the gender distribution of the respondents.

Table 2: Distribution of the respondents by gender.

Gender	Total frequencies	Percent (%)
Female	22	51.2
Male	21	48.8
Total	43	100

The majority of respondents were females (51.2%) as Table 2 indicates, while males accounted for 48.8%. This may reveal that either female LIS professionals are more likely to participate in surveys than males, or that the LIS profession is dominated by females.

Table 3: Distribution of the respondents by type of institution.

Institution/Organisation	Total frequencies	Percent (%)
Academic institution	34	79.1
Government department	8	18.6
Private Sector	1	2.3
Total	43	100

Table 3 shows that the majority of respondents came from academic institutions (79.1%), followed by government departments (18.6%), with 2.3% coming from the private sector. The high number of respondents from academic institutions is probably attributed to the fact that there is easy access to information and communication technologies in such settings, which are key requirements for better learning and management (Chaudhari 2017).

Table 4: The role of respondents in their institutions/organisations.

Roles of respondents	Total frequencies	Percent (%)
Librarian	36	83.7
Information coordinator	2	4.8
Records manager	1	2.3
Lecturer	1	2.3

Table 4: (continued)

Roles of respondents	Total frequencies	Percent (%)
Researcher	2	4.8
Document officer	1	2.1
Total	43	100

Table 4 reveals that most respondents (83.7%) were librarians, followed by information coordinators and researchers, each with 4.8% distribution, then records managers and lecturers each with 2.3% and finally documentation officers (2.1%)

Table 5: Awareness about the 2030 UN Agenda and SDGs.

Awareness	Total frequencies	Percent (%)
Yes	24	55.8
No	11	26.6
Somehow	8	16.7
Total	43	100

Most respondents (55.8%), as shown in Table 5, were aware of the 2030 UN Agenda and SDGs while 26.6% were not aware and 16.7% unsure about their knowledge of it. The high awareness of the 2030 UN Agenda and SDGs may be attributed to the fact that respondents encounter these in their working environment.

Table 6: Causes of environmental degradation.

Cause	Total frequencies	Percent (%)
Air pollution and toxic pollutants	16	37.2
Deforestation	20	46.5
Solid waste pollution	3	7.0
Poor agricultural methods	1	2.3
Greenhouse gases and global warming	2	4.7
Mining	1	2.3
Total	43	100

Table 6 shows that 46.5% of respondents attributed the major cause of environmental degradation to deforestation, 37.2% air pollution and toxic pollutants, 7% solid waste pollution, 4.7% greenhouse gases and global warming while the rest (2.3%) indicated mining and poor agricultural methods.

Activities that LIS Professionals Can Adopt to Actively Enhance Environmental Conservation

Table 7: Library environmental conservation initiatives.

Library environmental conservation initiative	Frequency	Percent (%)
Promote products and services which assist in reducing waste	16	37.2
Promote awareness campaigns for waste reduction and education	20	46.5
Weeding and reselling or donating unwanted property	3	7.0
Use of electrical appliances with low energy consumption to conserve energy	1	2.3
Harvesting and use of rainwater rather than use of tap water	2	4.7
Participate in collection of used/unwanted paper, plastics, cans, bottles, etc.	1	2.3
Total	43	100

The study shows that librarians should engage more in promoting awareness campaigns for waste reduction and education, as well as supporting the products and services which assist in reducing waste. The other activities detailed in Table 7 are also highly important and should be given due consideration for possible adoption.

Challenges LIS Professionals Face or are Likely to Face when Repositioning Themselves to Actively Participate in Environmental Conservation

Table 8: Challenges LIS professionals face.

Challenge	Freq.	Percent (%)
Poverty and subsistence needs of the communities	19	44.2
Conflicting priorities of the people and government	18	41.9
Lack of resources such as money	2	4.7
Lack of strong policies against environmental degradation	2	4.7
Traditional beliefs in some communities	1	2.3
Social inequalities arising from diversities in ethnicity, religion, culture and race	1	2.3
Total	43	100

Table 8 shows that 44.2% of the respondents indicated that LIS professionals are likely to face the challenge of poverty and subsistence needs of the communi-

ties when repositioning themselves to participate in environmental conservation. 41.9% of the respondents expect LIS professionals to face the challenge which comes with conflicting priorities of the people and government. Other challenges include lack of funding and other vital resources, lack of a strong policy framework as well as traditional beliefs of and social inequalities amongst communities.

Recommendations by the Respondents

The respondents were asked to propose ways in which LIS professionals can improve on the dissemination of information relating to environmental conservation. Below are some of the proposals made:

- There is a need for LIS professionals to improve the documentation of environmental research in order to improve environmental conservation as well as positively engage in the protection of the environment.
- Environmental degradation is a serious issue that needs to be tackled by all stakeholders to ensure healthy living. Uganda should emulate and learn from other nations how to conserve the environment.
- With the changing information needs of the communities, information workers need to think of initiatives geared to better humankind.
- LIS professionals should also avail of accessible and understandable information, as well as translations on environmental degradation and its adverse impact on life.
- Librarians would benefit from training in some aspects of environmental preservation.
- Environmental conservation should be given high priority by government and leaders at all levels. Ugandans of all ages and walks of life should change their mindset and learn to care for the environment.
- LIS professionals should make people aware of the dangers of environmental degradation.
- Collaboration with other stakeholders would promote environmental conservation.
- LIS professionals need to become more active and participate in campaigns against the destruction of the environment, including the cutting down of trees for domestic use such as charcoal burning as well as cultivation in forest reserves.

Conclusion and Recommendation

Librarians are key stakeholders in many activities of national development. They are largely located within academic institutions, but their roles move across a diversity of organisations. Based on the findings of this study, it should be noted that 51.2% of the respondents were females and 79.1% from academic institutions, while 55% were aware of the 2030 UN Agenda and SDGs. The majority of LIS professionals primarily work as librarians but there are several other roles which LIS professionals play which puts them in a good position to contribute significantly to national development. Most efforts to curb the effects of climate change should be focused on controlling deforestation, air pollution and toxic pollutants in water, on land and in the air. Awareness campaigns and education for waste reduction should be among the major strategies led by LIS professionals, in addition to promotion of products and services that help to reduce waste.

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Arnold Mwanzu

18 Going Green to Embrace Aesthetic Reflections and Sustainable Library Buildings

A Case Study of USIU-A Library as a Benchmark of Kenyan Libraries

Abstract: This paper examines the strides taken by academic libraries in Kenya to match the standards of modern library buildings, including going green whilst highlighting the ensuing impact on user satisfaction. It provides a comparison between modern Kenyan libraries and other modern libraries in the world considered exemplary in progressive development of library design and sustainable library buildings. This paper will answer the following questions: how far have Kenyan libraries come in embracing environmentally friendly buildings? What is the impact of artistic modern library design and going green on user satisfaction? What are the effects of natural environments on libraries? In addressing these and related questions, the design of new libraries in Kenya over the past eight years can be traced.

Keywords: Green libraries; Academic libraries; Library buildings – Design and construction; Kenya

Introduction

Academic libraries in Kenya have kept up with IFLA's accelerating trends and widespread efforts to create innovative as well as engaging learning environments for users. Dynamic libraries are being envisioned through the transformation and development of library buildings. Current library designs draw from a combination and repurposing of concepts from many stimulating non-academic environments, creating a place that attracts students and inspires them to study, research and interact while preserving the ideals of a library. As in developed countries, technology and innovation have paved major breakthroughs in library spheres to inspire relevance in a time when competition is rife from other industry players. The United States International University-Africa (USIU-A) Library is touted as a pioneer of ultra-modern library design with aesthetic reflection and has been used as a trendsetting benchmark by recently erected library structures

across Kenya. This progress was necessitated by the need to remain relevant in an ever-changing information society that has experienced unprecedented growth in technology, convergence of culture and what Thomas Friedman (2007) would call the flattening of the world.

Green libraries came about in Kenya after the advent of green building technology, which is considered significant in mitigating the impacts of climate change as well as increasing circulation of oxygen. Libraries in Kenya are undergoing a dynamic shift from old-fashioned bookstore-like buildings to ultra-modern settings that embrace aesthetic reflections and green building standards. The timely upheaval in libraries in Kenya has ensured they stay ahead in the competitive age. The USIU-A Library has been a pioneer of modern library buildings since it opened its doors in 2007. The three-storied building, which boasts shimmering, electrically controlled glass windows on every floor, has been a silent witness as thousands of students graduate from the most popular private secular university in Kenya. Not only is the building admired by the numerous visitors who frequently book appointments to tour the facility, but it is also a benchmark example of current modern library buildings.

Open space and environmentally friendly design are aspects of library design that were poorly addressed previously. This is evidenced in the many library buildings that existed before the twenty-first century. Many people, when asked their opinions about libraries, imagine old buildings with dim light and endless rows of heavy wooden bookshelves. Library buildings typically focused on shelf space and filling up any empty area with reading stations and catalogue stations. This would in turn lead to congestion, crowding of users and, ultimately, poor circulation of air within the facility. According to Ranganathan (1931, 382), the fifth law of library and information dissemination emphasises that the library is a growing organism. Therefore, libraries ought to consider space as a critical factor in design.

Bhatt (2011) argues that Ranganathan's fifth law implies that libraries will continue to grow in the future (4). However, libraries continue to struggle with problems of space, reflected in the statistics of information generation and acquisition of information resources in libraries of any type. Even the proliferation of e-resources does not stop the acquisition of new print material, while the pace at which print materials grow has not changed. Lancaster's (1982) library dream of a paperless society is not likely to come to pass any time soon. The difficult decisions librarians make between space for bookshelves and computer terminals will continue to be an issue. The fifth law's implication for marketing is adapting the library to future user needs, including creating new dynamic environments which allow users to access information from the library rather than online, from the comfort of their homes, offices or cafes. The law therefore touches on

modifying library buildings to embrace open space and aesthetic reflections to continue attracting users. Bhatt (2011) goes on to add that the library “should also transform its services to keep up with other changes in the world” (4). The library must not lag in adapting to new technologies, environment, facilities and infrastructure.

According to Babu (2011), the fifth law of library science focuses on the vital and lasting characteristics of the library and “enunciates a fundamental principle that should govern the planning and organization of libraries” (259). He suggests the law should be interpreted and used strategically for planning the design and building of libraries of the future.

The revolution in the functionality of the library has shifted from custodianship of monographs to information dissemination and now knowledge management. The revolution not only comes with a dynamic shift of operations and services, but also the adoption of modern day design of buildings, facilities and infrastructure.

Going Green in Libraries

According to Hauke and Werner (2013), going green in library buildings encompasses the sustainable aspects of the structure of the building, such as the façades, building climate, ventilation, heating and cooling, lighting, interior fittings, green information and communication technology (4). These are all features that can be pinpointed for green marketing and from which libraries can benefit for years. However, going green in libraries does not necessarily mean building new structures to incorporate green environments. Libraries are advised to also check their existing, renovated, or second-hand buildings to identify all the areas that can be made sustainable by going green. The California Department of Resources, Recycling and Recovery (CalRecycle 2014) defines a green or sustainable building as “a structure that is designed, built, renovated, operated, or reused in an ecological and resource efficient manner”. It is important that Kenyan libraries lead in going green by reducing the carbon footprint of their buildings. The term carbon footprint is defined as “the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO₂)” (Time for Change 2008).

The architects and planning team of the USIU-A Library building design acknowledged the importance of going green and preserving the environment. The team went on to plan for a garden within the library, which is watered on a daily basis and provides an enjoyable ambiance for users in the library while

offering the feel of nature and fresh smell of a garden. The USIU-A Library's organic garden has flowers and trees that cover up to twenty square meters at the fulcrum of the library. This green garden is maintained by organic fertiliser, organic pest control, solar garden lights and water irrigation. The other aspect of going green is evidenced by the choice of drought-tolerant plants that do not require very much water. This enables users to enjoy the beauty of a garden with little effort. The design of the building also allows sunlight to penetrate into the organic garden directly through the environmentally and ecologically friendly atrium.



Figure 1: USIU-A Library, with a garden within the library, which is watered on a daily basis and provides an enjoyable ambiance for users. © A. Mwanzu.

Modern Library Buildings

Pearce and Robinson (2007) argue that there is a need for managers and policy makers in organisations to understand how to react to changes in the environment (59). Libraries are entities that need to react to changes in the environment to remain relevant. Universally, academic libraries have sought to endure com-

petitive competencies in the changing environment. To that end, many have erected ultra-modern buildings and pursued environmentally friendly as well as ecologically responsible decisions and lifestyles, which in turn help protect the environment and sustain its natural resources.

Libraries around the world are creating a more dynamic, multilevel environment for learning and pleasure. Futuristic library buildings have shaped the way users learn and enjoy books in the digital age, offering access to books in every possible form and format. Notable modern library buildings in the world include:

- the Library of the Vienna University of Economics in Austria, which rises as a polygonal block that faces a stunning tree front,
- the Cayenne University Library in French Guiana, which combines traditional documentation as well as modern technologies and has an interior that is mainly an open space with wide reception spaces alongside diverse reading and research areas,
- the Bishan Public Library of Singapore that emulates a tree house and has windows protruding out of the building that serve as reading nooks for users to read quietly or use their laptops,
- the Liyuan Library of China, a one hundred and seventy-five square metre building whose interior is spatially diverse, using steps and small level changes to create distinct places; wooden sticks temper the bright light and spread it evenly throughout the space to give a perfect reading ambience,
- the Warsaw University Library in Poland, which distinctly harbours a botanical garden considered one of the largest roof gardens in Europe
- the University of Aberdeen new library in Scotland, which accommodates fourteen thousand students with twelve hundred reading spaces and was designed to provide students with a twenty-first century learning and research experience,
- the Maranello Library in Italy, a clear, glass-walled building that provides users with an introspective experience and visual connection with nature,
- the University of Versailles Science Library in France that focuses primarily on energy management, as the building provides maximum energy independence without neglecting the environmental impact of construction,
- the Stuttgart City Library in Germany whose heart and core follows the design of the ancient Pantheon, including a five-story gallery hall in the form of a square surrounded by bookshelves,
- Yale University's Beinecke Rare Book Library in the United States that boasts a large glass tower as the central core of the building, whose mezzanine level lets people rotate around the glass tower.

Kenya has not been left behind despite being a developing country often faced with the challenge of poor funding for libraries. Although few academic, public and special libraries in Kenya have sought funding and built modern libraries for their institutions, these structures are built with the high standards of some libraries in Europe and America.

There have been notable strides taken by Kenyan libraries to achieve international library design standards, evident in the annual competitive Maktaba/Library of the Year Award. The award, which focuses on outstanding libraries in terms of facilities, technology adoption, services and library building design, has inspired many institutions to introduce new developments. USIU-A Library was notably the first double winner of the Best Library Award and Best Academic Library Award since the inception of the annual award in 2007, winning this twice in a row. This success brought many visitors to USIU-A seeking to emulate services, facilities, technology adoption and library design, which led to such individuals and organisations winning their own awards in these areas. USIU-A Library is no longer seen as the undisputed winner of the award, a clear indication of the strides taken by Kenyan libraries as a whole. New entrants and beneficiaries of the Library of the Year Award, such as the Catholic University of Eastern Africa (CUEA) Library and the Kenya College of Accountancy (KCA) Library, have also demonstrated the high level of complexity of library design across Kenya. Currently, the Kenya National Library Services (KNLS) is in the final stages of constructing a modern library building with a green building design concept.

USIU-A Library as a Benchmark in Kenya

USIU-A Library is touted as an early pioneer of ultra-modern library design with aesthetic reflections and has been used as a trendsetting benchmark by recently erected library structures across Kenya. The facility boasts a ten thousand square metre building with a fifteen hundred seat capacity. It has glass windows and a well-structured atrium that allows natural light to easily penetrate and keep the library well-lit and the organic garden well maintained. The well-ventilated building has an automated mechanism that enables windows in the roof level to be controlled electronically from the ground floor. The focal point of the library is the organic garden that sits at the pivot of the building. This well-known and attractive green garden is on the ground floor, where beautiful benches have been strategically placed between trees and flower gardens to allow users to relax and take a break from reading or have quiet group discussions. The garden, which is watered daily, offers a new dynamic design to library structures in Kenya. Users

can view the organic green garden, dubbed Mama Africa, from the balconies as they enjoy their reading.

The USIU-A Library has an admirable entrance that leads to an exhibition area and open lounge with a lobby set up to welcome users and provide a relaxing space for visitors. The first floor of the library has aesthetic suggestions of a modern day banking hall or art gallery starting from the entrance. The services located on this floor include the information and control desk, circulation desk, self-checkout stations, periodical collection, the reference collection, course text section, Online Public Access Catalog (OPAC), conference room, courtyards and reading space. The university librarians' office and the senior librarian user services office are also on this floor. Modern library features include a kitchen unit and staff lounge area, which have been fitted with hot water heaters, cupboards and comfortable leather seats.

The first floor, which can be accessed via a staircase and elevator, houses the entire circulating collection. The short loan section and media centre, instructional room, reference librarian's office, OPACs, study carrels and information desk are also on this floor. Reading carrels are well-spaced to avoid crowding. An impeccable carpet is fitted on all floors with glass strip floors on some edges sporting light bulbs underneath.

The second floor, a replica of the first floor in terms of spacing and aesthetic reflection, houses the special collections: Africana studies, American studies and the United Nations. This floor also comprises of the multimedia research centre, set up for research, as well as additional study carrels and reading space. It also houses an information desk, OPACs, the faculty room, card-operated copiers and an additional photocopying facility. A mixture of small and large study rooms designed to promote collaborative learning is available on the first and second floors of the library. Three of the study carrels on the first floor are fitted with video viewing workstations; headphones are provided to ensure quiet listening. The USIU-A reading carrel system is also on this floor.

The uppermost level of the library provides ventilation, lighting as well as aesthetic value and has access to the state of the art atrium and windows. USIU-A Library is strategically placed at the centre of the university so students can gain easy access from all parts of the campus, while the grounds adjacent to the library also serve as the graduation square. The building is on three levels and has a service area in the well ventilated basement, which houses the technical sections of the library and is also well lit.

The design of USIU-A Library takes full advantage of natural air movement throughout the building and on top. All external windows are operated from a central location to ensure lock-ability and control of air circulation during differ-

ent weather periods. The double-glazed solar windows embrace aesthetic reflections as well as green energy to provide sunlight, shading and security.

The large, central atrium stretches open to all reading areas around the library, which creates a stack effect of warm air rising through the upper levels. Electronically operated windows control the cool air moving in through the lower level window ventilation louvers. The external finishes are comprised of maintenance-free wall renders and glass to ensure the building is the focal point of the whole university complex.

USIU-A Library is considered a pioneer of modern library buildings and is therefore ultimately the point of reference for Kenyan university, public and special libraries. Since its establishment and commissioning by the then president of the Republic of Kenya, His Excellency Mwai Kibaki, in 2007, USIU-A Library has welcomed library managers and architects of local universities and other institutions to emulate the building design, facilities and even services. These institutions have gone ahead to replicate or implement better library structures with the design and structure standards used in the USIU-A Library. Notable local library buildings that drew inspiration from the USIU-A Library and are now exemplary modern library designs include the Kenyatta University Postmodern Library, CUEA Library, Kenya School of Monetary Studies Library, KCA Library, Masinde Muliro University Library and KNLS libraries, to mention a few. Other institutions that have benchmarked but are still planning to build modern library buildings are Egerton University, Maseno University and the Judiciary.

Impact of Artistic Modern Library Designs on User Satisfaction

According to Eigenbrodt (2009), “in some countries the library may be the only physical space for learning and sharing information in a non-institutional context” (3). He adds that some societies today offer a wide range of possibilities and it becomes crucial for libraries to deal with different partners in lifelong learning, research and the provision of information. High-tech learning centres have the potential to become attractive working environments for the World Wide Web generation by integrating technology in an appealing overall picture with communal and social spaces. This implies that an open learning space can serve variant knowledge societies by offering low intensity and collaborative meeting places for their communities. Eigenbrodt also argues that when a library is built with a comprehensive, multifunctional space beneath the same roof, it “could

become an attractive place for research participation and lifelong self-paced learning” (3).

Sufar, Talib, and Hambali (2012) observe that the development of library building concepts should be “evolutionary with new inspiring design and features appearing as the changing needs of the people” (132). They argue that library design is not only about the exterior but also practical as well as exciting physical interior spaces and environments (132). It is quite significant to consider physical interior environments that comprise interior space planning as well as interior ambience such as a selection of lighting, furniture, building materials and other finishes when designing a library in the modern age. This has directly impacted user satisfaction in the several modern libraries in the world.

According to Juhnevic and Udre (2010), the library needs to become “cool” and comfortable so teenagers consider it an appealing place for meetings and hanging out. They note that young people prefer comfortable workplaces as well as freedom to move around and explore the space; they need a place to use their laptops and different zones in which to work. Many young people prefer to work in an open workplace together with others, but some still want to work in silent rooms. There is also a need for silent rooms in the library such as carrels as well as discussion rooms or noise rooms.

As per Bell (2008), today’s library encourages more social interactions and offers a range of group as well as children’s spaces. These changes in library use have forced librarians to rethink their approach to the planning and design of the library building. Many writers emphasise the important role that the library plays as a social space and how space planning must reflect this. Pat Noon’s account of the development of the Lanchester Library details the creation of “a kind of shopping mall where the main attraction was [. . .] the library!” is described by Sufar (2012, 139). The USIU-A Library is not very far from this model, embracing open space where users can stretch from end to end while utilising the facilities and services in the establishment.

Research in library design conducted by Bell (2008, 34), Eigenbrodt (2009) as well as Shill and Tonner (2004, 125) demonstrated that certain design aspects affect emotions, mood and users’ experiences in libraries. Modern library buildings with open space considerations, green and ecological aspects, colourful interior design and good lighting influence human behaviours and perceptions through aspects of ambient, aesthetic and ergonomic factors. Those aspects influence users to return to the library and remain longer to embrace the library as a fun as well as exciting place to explore and visit.

Lighting

Lighting can control how a library looks and feels. Good lighting is needed for study, but intimate lighting may be ideal for reflective areas. According to Noon (2008), the Lanchester Library is an example of a modern library building carefully designed with good lighting and ventilation. Light wells and natural ventilation reduce the need for artificial light as well as air conditioning while windows are carefully aligned to minimise solar gain and glare.

According to Gold Coast City Council Branch Libraries (2007), lighting design in library should have glare-free lighting with a minimum level of 50 lux at the ground level. Eliminating glare and illuminating signage as well as high-light levels provide uniform luminance levels internally; this also complies with the requirements for maintenance illumination in circulation spaces. Libraries should consider providing a minimum illumination of 40 lux with a uniformity of 0.3 and an average maintained value of 120 lux, in addition to a graduated level of illumination at building entries and exits to assist people with vision impairment. Providing a minimum of 50 lux outside the entry or exit and adequate focused lighting for sign language interpretation can aid people who are hearing impaired in conference rooms, meeting rooms and auditoria.

The large atrium lights up the whole library during the day and provides sufficient sunlight for the small green garden on the first floor. The solar glass windows, which reflect light on the inside while giving a translucent reflection from the outside, also give the building adequate lighting.

At least three library buildings in Kenya also have design features which use atria, skylights and glass windows for maximising the use of natural lightings.

Best Practices in Kenya

There has been surging interest in sustainable buildings in Kenya. According to research on modern library buildings in Kenya by Mwanuzi and Wendo (2017), there are several libraries that have embraced the concept of going green. For instance, the CUEA Library in Nairobi stays cool even in the intense midday heat, despite not having an air conditioner. A report by Wanzala (2014) reveals that stones in the basement of the library absorb moisture from the ground that create a cooling effect as it evaporates; elsewhere, the building's large windows and doors are protected from the sun's heat by shades. In the same year the library opened, it won an award from the Kenya Association of Manufacturers Center for

Energy Efficiency (KAMCEE) as the best green building in the country. The award was given based on the building's energy efficient design (Otieno 2014).

Wanzala (2014) asserts that environmental and architectural organisations have worked hard to endorse and advocate for green design throughout the country as well as to position Kenya as a leader in sustainable construction and energy efficient design. Libraries in Kenya are actively participating in the trend and have become leading examples in the East African region. A staff member at the CUEA Library reported the following (as cited in Wanzala 2014): "The building is airy and well-lit with natural [light] during [the] daytime. Its orientation along the east-west axis of the sun allows natural lighting, therefore minimizing energy demand." According to Kanda (2016), the building has strategically positioned thermal chimneys at various intervals of the building to expel foul air. There are oxidation ponds for sewage and a high-roofed atrium with a narrow plan that allows natural lighting to filter through the building. To prevent heat build-up in glazed areas, concrete fins and aluminum louver screens have been used. Kanda adds that the building is also oriented for the climate with the major window facades in the north and south-facing walls that prevent excess glare to the users.

Another highlight of the CUEA Library is that, just like the USIU-A Library, it does not need to rely on artificial light during the day, even in the basement. While the building is encircled by many trees, it harnesses the predominant wind for natural ventilation. When it rains, the building harvests and stores rainwater to use within the building. This practice emphasises the objectives and expectations of green buildings, to utilise natural and sustainable materials, reduce water usage and be energy efficient.

According to research undertaken by Wanzala (2014), UN-Habitat has no figures available for buildings that qualify as green. Only South Africa ranks ahead of Kenya in the Sub-Saharan region of Africa in the adoption of green building standards. Green buildings play a significant role in preserving good health; apart from mitigating the impacts of climate change, they provide natural ventilation, which increases the circulation of oxygen and thus safeguards the health of users as well as occupants in the building. Many studies have highlighted that overreliance on artificial ventilation poses a risk to the human respiratory system (Wanzala 2014). Going green offers a lasting sustainable solution.

The UN-Habitat's empowerment programme provides a building manual of guidelines on constructing sustainable buildings in the tropics. The programme aims to encourage best practices in building sites to harness natural light, utilise locally available building materials and build capacity for rainwater harvesting as well as water recycling. However, one challenge in Kenya is the high cost of materials, solar panels and construction materials that meet green building standards, even when the resulting product is a cost-effective facility.

A number of organisations have spearheaded the adoption of green buildings in Kenya. The Green Africa Foundation (GAF) is an NGO that developed a standard dubbed Green Mark in the quest to provide guidelines for best practices regarding environmentally friendly building designs. Another organisation is the Kenya Green Buildings Society (KGBS), which provides standards for green design. KGBS provides information and support for owners of old buildings to renovate them with green building concepts to improve water conservation and energy efficiency. Green library standards have become a reality in Kenyan building design because one cannot consider energy conservation while disregarding buildings. A large percentage of most people's time during the day is spent inside; likewise, 60–80% of people's time is spent inside a library or a classroom in academic institutions and research centres. Studies have shown that 40% of carbon emissions are generated from buildings (McCabe and Kennedy 2003).



Figure 2: USIU-A library interior view from the top floor. © A. Mwanzu.

Going Green to Achieve Sustainable Development Goals

Czerwinska (2017) outlines the many ways in which green buildings can contribute to achieving many of the UN Sustainable Development Goals (SDGs). She argues that, while wide-ranging goals such as ending hunger as well as promoting peaceful and inclusive societies have detailed targets to be achieved over the next fifteen years, there are several goals that green buildings can and, in fact, already have, contribute to in a significant way. She highlights how the third goal, “good health and wellbeing – ensuring healthy lives and promoting wellbeing for all at all ages,” has been addressed over the last few years by green building features through improved lighting, better air quality as well as greenery to positively impact health and wellbeing.

Other SDGs detailed by Czerwinska (2017) that partially address green library buildings are:

- “[promoting] inclusive and sustainable economic growth, employment, and decent work for all”
- “[building] resilient infrastructure, [promoting] sustainable industrialization, and [fostering] innovation”
- “[making] cities inclusive, safe, resilient, and sustainable”
- “[ensuring] sustainable consumption and production patterns”
- “[taking] urgent action to combat climate change and its impacts”
- “[s]ustainably [managing] forests, [combating] desertification, [halting] and [reversing] land degradation, [and halting] biodiversity loss”
- “[and revitalizing] the global partnership for sustainable development”

According to the World Green Building Council (2013), there is a number of reasons and actual cases that could prove the green building movement would result in significant progress in decoupling economic growth from climate change, poverty and inequality. This would help achieve the Sustainable Development Goals and create a greener world that all could be proud to call home.

Conclusion

Rebranding libraries to embrace modern library designs is a shift necessitated in order to remain relevant in an ever-changing information society that has experienced unprecedented growth in technology, convergence of culture and competitive information dissemination service delivery. Libraries in Kenya and other

developing countries have stayed the course of revolution by adopting modern library designs and giving library users more reasons to cherish their libraries, not only as reading facilities but also destinations for relaxation, discussions and hanging out.

The USIU-A Library has been touted as a pioneer of modern library buildings, with its standards replicated and bettered by other libraries in Kenya today. This is a big stride for Kenyan libraries. The impact on user satisfaction is based on young people, the majority library users today, who prefer comfortable workplaces and freedom to move around as well as explore the space provided in modern library buildings. These users also need a place to enjoy the fresh air and green environment.

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Further Reading

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Abbreviations

3D	three dimensional
A3P	Environmental Public Administration Agenda
A/C	Air Conditioning
ACMHE	Association for Contemplative Mind in Higher Education
ACRL	American College and Research Libraries
ADFC	Allgemeiner Deutscher Fahrrad-Club
AIDS	Acquired Immune Deficiency Syndrome
ALA	American Library Association
appr.	approximately
AQUA	Alta Qualidade Ambiental
BEAM	Building Environmental Assessment Method
BID	Bibliothek Information Deutschland
BIST II	Bibliotheken im Stadtteil II
BPE	Biblioteca Parque Estadual do Rio de Janeiro
BREEAM	Building Research Establishment Environmental Assessment Method
BUND	Bund für Umwelt und Naturschutz Deutschland
CC	Creative Commons
CCE/USP	Centro de Computação Eletrônica da Universidade de São Paulo
CDO	Campus Development Office
Cedir	Centro de Descarte e Reúso de Resíduos de Informática
CFL	Center for the Future of Libraries
CIMS	Common Impact Measurement System
CMind	Center for Contemplative Mind in Society
COP	Conference of the Parties
CP	Contemplative Pedagogy
CPSO	Campus Planning and Sustainability Office
CSA	Community Supported Agriculture
CUEA	Catholic University of Eastern Africa
CUHK	Chinese University of Hong Kong
DESI	Digital Economy and Society Index
DigComp	Digital Competence Framework for Citizens
DIT	Do It Together
DIY	Do It Yourself
EFRE	Europäischer Fonds für regionale Entwicklung
e.g.	exempli gratia, used for "for example"
EM	Environmental Management
EMO	Estates Management Office
ENSET	École Normale Supérieure l'Enseignement Technique
ENSULIB	Environment, Sustainability and Libraries Special Interest Group
EPA	Environmental Protection Agency
EPD	Electronic Data Processing
ESSEC	École Supérieure des Sciences Economiques et Commerciales
EU	European Union
EU SDI	European Union Sustainable Development Indicators

e. V.	eingetragener Verein
FEBAB	Federação Brasileira de Associações de Bibliotecários, Cientistas da Informação e Instituições
FGI	Faculté de Génie Industriel
FL	Florida
FLSH	Faculté des Lettres et Sciences Humaines
FMSP	Faculté de Médecine et des Sciences Pharmaceutiques
FS	Faculté de Sciences
FSC	Forest Stewardship Council
FSEGA	Faculté des Sciences Economiques et de Gestion Appliquées
FSJP	Faculté des Sciences Juridiques et Politiques
Ft	feet
FUNBIO	Fundo Brasileiro para a Biodiversidade
GAF	Green Africa Foundation
GBC Brasil	Green Building Council Brasil
GL	Global Libraries
ha	hectare
HIV	Human Immunodeficiency Virus
HQE	High Quality Environment
IAI	International Aluminum Institute
IAP	International Advocacy Programme
IBA	Institut des Beaux Arts
icipé	International Center of Insect Physiology and Ecology
ICT	Information and Communications Technology
IFLA	International Federation of Library Associations and Institutions
IG	Interessengruppe
INE	Instituto Nacional de Estatística (Portugal)
IPA	Impact Planning and Assessment
IPCC	Intergovernmental Panel on Climate Change
IPHAN	Instituto do Patrimônio Histórico e Artístico Nacional
ISH	Institut des Sciences Halieutiques
ISO	International Organization for Standardization
IT	Information Technology
IUT	Institut Universitaire de Technologie
JULAC	Joint University Librarians Advisory Committee
KAMCEE	Kenya Association of Manufacturers Center for Energy Efficiency
KCA	Kenya College of Accountancy
KGBS	Kenya Green Buildings Society
km ²	square kilometre(s)
KNLS	Kenya National Library Service
KuB	Kultur- und Bildungszentrum
kWh	kilowatt hour
L	Litre
LEED	Leadership in Energy and Environmental Design
LIS	Library and Information Services / Library and Information Science
M	metre(s)
m ²	square metre(s)

MDG	Millennium Development Goals
MFP	Multi-Function Photocopier
MOHURD	Ministry of Housing and Urban-Rural Development of the People's Republic of China
MS	Microsoft
NABU	Naturschutzbund Deutschland
n.d.	no date
NEMA	National Environment Management Authority (Kenya)
NGO	Non-Governmental Organisation
OASE	Oldesloer Alternative Soziale Einrichtung
ODLIS	Online Dictionary of Library and Information Science
ODS	Objetivos de Desenvolvimento Sustentável
OPAC	Online Public Access Catalog
PC	Personal Computer
PEE	Programa de Eficiência Energética
PET	Polyethylene Terephthalate
PLS	Public Libraries and Sustainability
PM	Performance Metric
QDA	Qualitative Data Analysis
ROI	Return on Investment
RSS	Rich Site Summary
SDG	Sustainable Development Goal
SME	Small and Medium Enterprise
SNBP	Sistema Nacional de Bibliotecas Públicas
SPSS	Statistical Package for Social Sciences
STEM	Science, Technology, Engineering and Mathematics
STI	Scientific and Technical Information
T	ton(s)
TCF	Totally Chlorine-Free
UK	United Kingdom
ULA	Ukrainian Library Association
UMass	University of Massachusetts
UN	United Nations
UNC	University of North Carolina
UNESCO	United Nations Educational, Scientific and Cultural Organization
USA	United States of America
USIU-A	United States International University-Africa
VÖBB	Verbund Öffentlicher Bibliotheken Berlins
vs.	versus

Contributors

Akullo, Winny Nekesa, M.S.

Public Procurement and Disposal of Public Assets Authority, Uganda; Head of the Information and Records Management Unit
winny.nekesa@yahoo.com
nekesawinny@gmail.com

Cardoso, Nathalice Bezerra, MLS

Biblioteca da Escola de Guerra Naval, Brazil; Librarian, Researcher at "Bibliotecas Públicas no Brasil, reflexão e prática" (UNIRIO)
nathalice@gmail.com
<http://culturadigital.br/gbbp/>

Charney, Madeleine, MLS, M.A.

University of Massachusetts Amherst, USA; Research Services Librarian; Co-Founder of Sustainability Roundtable, Libraries Fostering Resilient Communities; Member of ENSULIB
mcharney@library.umass.edu
https://works.bepress.com/charney_madeleine/

Chen, Si

Sun Yat-sen Library of Guangdong Province, China; Associate Professorial Librarian
815148306@qq.com
<http://www.zslib.com.cn>

Claesson, Lo

Vaggeryd Public Library, Sweden; Library Director
lo.claesson@vaggeryd.se
<https://bibliotek.vaggeryd.se/>

Colvin, Jenny, MLS

Furman University Libraries, Greenville, South Carolina, USA; Assistant Director for Outreach Services; Co-Founder of the Contemplative Pedagogy Interest Group of the Association of College and Research Libraries
jenny.colvin@furman.edu
<https://libguides.furman.edu/jennycolvin>

Hauke, Petra, Dr.

Humboldt-Universität zu Berlin, Berlin School of Library and Information Science, Germany; LIS Assistant Teacher; Member of ENSULIB; Member of "Netzwerk Grüne Bibliothek"
petra.hauke@hu-berlin.de
<https://www.ibi.hu-berlin.de/de/institut/personen/hauke>

Huang, Qunqing

Sun Yat-sen Library of Guangdong Province, China; Professorial Librarian
qqh21@hotmail.com
<http://www.zslib.com.cn>

Jones, Louise

The Chinese University of Hong Kong Library; University Librarian
louisejones@lib.cuhk.edu.hk
<http://www.lib.cuhk.edu.hk>

Kavuri-Mutuku, Purity, MLIS, BLIS

Kenya National Library Service; Senior Librarian
purity.kavuri@knls.ac.ke
<http://www.knls.ac.ke>

Koudjam Yameni, Simon Jules

University of Douala, Cameroon; Senior Librarian
yamenisimon@yahoo.fr
<http://www.Univ-douala.com/>

Kutt, Konrad

Institut für Nachhaltigkeit in Bildung, Arbeit, Kultur (INBAK), Berlin, Germany; Founder and Managing Director
konrad@kutt.de
<http://www.inbak.de>
<http://www.bücherboxx.com>

Landes, Christopher, Dr.

Hertie School of Governance, Berlin, Germany; Manager of Library and Information Services; Member of "Netzwerk Grüne Bibliothek"

landes@hertie-school.org

<https://www.hertie-school.org/de/ueber-uns/profil/person/landes/>

Leyrer, Katharina, M.A.

Leyrer, Katharina M.A.

Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; Research Associate Member of "Netzwerk Grüne Bibliothek" katharina.leyrer@fau.de

<https://www.buchwiss.uni-erlangen.de/institut/teammitglieder/katharina-leyrer.html>

Mulumba, Onan

Makerere University, College of Agricultural and Environmental Sciences, Uganda; Librarian

omulumba@caes.mak.ac.ug, omulumba@gmail.com

Mwanzu, Arnold, M.S., MLIS

International Center of Insect Physiology and Ecology (icipe), Nairobi, Kenya; Head Librarian, Information Resource Center, Coordinator

amwanzu@icipe.org

<http://www.icipe.org/research/research-support-units/information-resources-centre>

Ochôa, Paula, Ph.D, MSc

CHAM and DH, FCSH, Universidade NOVA de Lisboa, Portugal; Integrated Researcher and Lecturer

poc.paula@gmail.com

Patron, Ira, M.A.

Lviv Regional Children's Library, Ukraine; Librarian in the Department of Book Advertising and the Organization of Leisure of Readers

patronira@gmail.com

<http://www.lodb.org.ua>

Pinto, Leonor Gaspar, Ph.D, MSc

CHAM, FCSH, Universidade NOVA de Lisboa, Portugal; Integrated Researcher lgpinto@sapo.pt

Rusakova, Lilia

Lviv Regional Children's Library, Ukraine; Head Librarian in the Department of Book Advertising and the Organization of Leisure of Readers, Public Relations Manager

lodb.bibliogr@gmail.com

<http://www.lodb.org.ua>

Sahavirta, Harri, Ph.D.

Vallila and Suomenlinna libraries, Helsinki City Library, Finland; Chief Librarian; ENSULIB Convenor harri.sahavirta@hel.fi

<http://www.helmet.fi/vallilalibrary>

Schumann, Tim, MLIS

Kreisarchiv Stormarn, Bad Oldesloe, Germany; Specialist in Library and Information Services; Member of "Netzwerk Grüne Bibliothek"

tim_schumann@posteo.de

Seifert, Anja, Dr.

Bibliothek Tiergarten Süd, Berlin, Germany; Librarian; Member of "Netzwerk Grüne Bibliothek"

anja.seifertdr@ba-mitte.berlin.de

<http://www.berlin.de/stadtbibliothek-mitte/bibliotheken/bibliothek-tiergarten-sued/>

Rogge, Stefan

Stadtbibliothek Berlin-Mitte, Germany; Head Librarian

stefan.rogge@ba-mitte.berlin.de

<http://www.berlin.de/stadtbibliothek-mitte/>

Vučković, Ratka

Public Library Užice, Serbia; Librarian capulica@gmail.com

<http://www.biblioteka-uzice.rs/>

Wong, Winky

The Chinese University of Hong Kong Library;

Head of Library Administrative Services

winky@lib.cuhk.edu.hk

<http://www.lib.cuhk.edu.hk>