

**ENVIRONMENTAL SUSTAINABILITY PRACTICES IN SPECIAL  
INFORMATION ORGANIZATIONS IN KENYA: THE CASE OF  
KENYA BUREAU OF STANDARDS**

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## DECLARATION

This research project is my original work and has not been presented for examination to any other university.

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## **DEDICATION**

This work is dedicated to National Environment Management Authority in their effort to publicize the concept of environmental sustainability countrywide, geared towards protection of natural resources.

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>ACET:</b>	Action Consulting and Evaluation Team
<b>AEER:</b>	Applied Ecology and Environmental Research
<b>EMCA:</b>	Environmental Management and Coordination Act
<b>IFLA:</b>	International Federation of Library Associations and Institutions
<b>ISO:</b>	International Organization for Standardization
<b>KEBS:</b>	Kenya Bureau of Standards
<b>LIS:</b>	Library and Information Science
<b>MDAs:</b>	Ministries, Departments and Agencies
<b>MDGs:</b>	Millennium Development Goals
<b>NEMA:</b>	National Environment Management Authority
<b>OARE:</b>	Online Access to Research in the Environment
<b>SDGs:</b>	Sustainable Development Goals
<b>SPSS:</b>	Statistical Package for Social Sciences
<b>UN:</b>	United Nations
<b>UNCED:</b>	United Nations Conference on Environment and Development
<b>UNCHD:</b>	United Nations Conference on Human Development
<b>UNCSD:</b>	United Nations Conference on Sustainable Development
<b>UNDESA:</b>	United Nations Department of Economic and Social Affairs
<b>UNDP:</b>	United Nations Development Programme
<b>UNDPI:</b>	United Nations Department of Public Information
<b>UNEP:</b>	United Nations Environment Programme
<b>WCED:</b>	World Commission on Environment and Development

## ABSTRACT

This study sought to assess environmental sustainability practices in special information organizations in Kenya with special reference to Kenya Bureau of Standards. The specific objectives of the study were to establish the level of awareness creation by the library staff on environmental sustainability practices in special information organizations, examine environmental sustainability practices applied in the operations of special information organizations, establish the role of information professionals in support of environmental sustainability practices and propose possible strategies for adoption to promote environmental sustainability practices. The study applied a mixed method approach where both qualitative and quantitative data was collected and mixed at analysis, discussion and reporting levels. Multiple sampling methods were used including purposive sampling to determine the area of study, stratified random sampling to accommodate various departments at KEBS and simple random sampling to select a sample size of 106 respondents from a total target population of 723 staff members. In addition, seven members of staff from six departments which had highest number of staff were also interviewed. The study employed interview guides, questionnaires, document analysis and observation methods to collect data from respondents. Kenya Bureau of Standards was purposely selected for the study as the organization works with the public to provide and ensure standardization solutions in production and manufacturing industry for sustainable development and environmental protection. Kenya Bureau of Standards library is based at the headquarters office and houses standardization information on environmental protection. Quantitative data was analyzed using Microsoft Excel application and presented in form of charts, graphs, tables of frequencies and percentages while qualitative data was analyzed through Statistical Package for Social Sciences in accordance to the study themes based on the objectives and research questions and discussions were reported. Findings revealed that the level of awareness creation on environmental sustainability practices is low since KEBS library staff have not implemented methods of awareness creation to the users. KEBS library has not embraced the concept of environmental sustainability to integrate green movement practices in the library operations. There are no strategies and structures put in place to implement and evaluate environmental sustainability practices signifying lack of awareness creation on sustainability matters. Institutions need to create awareness on environmental sustainability practices for staff and clients, conduct staff training, policy formulation and implementation and frequently conduct monitoring and evaluation to ensure implementation of the sustainability policy. Information professionals and other stakeholders in the environment sector need to promote and support effective implementation of environmental sustainability programs, policies and practices in institutional operations.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

This chapter presents background information on environmental sustainability, contextual information, statement of the problem, aim, objectives of the study and the research questions. The chapter also includes the significance of the study, scope, limitations and the operational terms and concepts.

#### 1.1.1 Sustainability and Sustainable Development Goals

The history of sustainability and Sustainable Development Goals (SDGs) traces back to 1972 when governments met in Stockholm, Sweden, for the United Nations Conference on Human Development (UNCHD) to deliberate on the rights of the human society to a healthy and productive environment (United Nations Conference on Sustainable Development, 2012). Much later in 1983 the United Nations resolved to form the World Commission on Environment and Development (WCED) which described sustainable development as meeting the needs of the present generations with absolute assurance that the needs of future generations shall be met. The first United Nations Conference on Environment and Development (UNCED) was held in Rio in 1992 with the development and adoption of the first agenda for environment and development, well identified as Agenda 21. (Linnér & Selin, 2013: 972). The idea of the SDGs was proposed in July 2011 during a meeting for the preparation of Rio+20 Conference in Indonesia (United Nations Conference on Sustainable Development, 2012). This idea was further adopted by the United Nations Department of Public Information (UNDPI) 64<sup>th</sup> conference held in September 2011 in Germany where the resultant document suggested 17 sustainable development goals and related targets (Linnér & Selin, 2013: 972).

During the United Nations Conference on Sustainable Development (UNCSD), referred to as Rio+20, a resolution document christened “*The Future We Want*” was attained by member states. *The Future We Want* document makes the connection between the Rio+20 resolution and the Millennium Development Goals (MDGs) since it stresses on pursuing a focused and clear action on sustainable development goals, addressing in a balanced way the environment, society and economic pillars (UNDESA, 2012). The

MDGs were to be attained by 2015 therefore; a process was required for the post-2015 structure for international development. A report was released by the United Nations System Task Team on Post 2015 Development Agenda identifying four aspects as part of a global vision for sustainable development which included economic development, social development, environmental sustainability and peace and security (Linnér & Selin, 2013).

### **1.1.2 Environmental Sustainability**

The seventh goal of the United Nations MDGs emphasized on ensuring environmental sustainability. This specific goal was geared towards integrating the ideology of sustainable development into country's strategies and programs consequently reducing loss of environmental resources. Sustainability has various meanings depending on application. Environmental sustainability is a key element of sustainability but emphasizes on conservation and management of natural resources (Schuler, *et al*, 2017). The author continues to emphasize that this kind of sustainability is concerned with caring and rehabilitating the environment while acknowledging the inter-dependence with economic and social goals and interests. However, Binks *et al* (2014:3) argues that, environmental sustainability means conserving the environment for future generations, living in an eco-friendly manner and meeting the needs of the current community while guaranteeing that the requirements of future generation are met. Environmental sustainability practices are strategies, techniques and methods used by an institution with an intention of monitoring, regulating and controlling the effects of the operations of an institution on the natural environment (Schoenherr & Talluri, 2012). Environmental sustainability therefore is the capacity to preserve the qualities that are valued in the physical environment so as to sustain life. These valued aspects of the environment may include forests, air, soil, water, energy, suitable climate, and even human life and wildlife. Threat to these aspects of the environment implies that there is a risk that they will not be sustained.

The concept of environmental sustainability has become a global concern owing to the environmental issues faced by the world communities as a result of rampant population growth, reduction of non-renewable resources and over-utilization of renewable

resources, climate change and poor waste management. The conscious and unconscious actions of man on the environment are causing a lot of harm and instability on the natural resources. Climate change is increasing calamities which include severe weather conditions, storm tides, droughts and floods. It is in view of this that Yadzi and Shakouri (2012:478,479), state that, countries' development plans should incorporate strategies to build the capacity of communities in order for them to properly manage natural resources.

### **1.1.3 Environmental sustainability and LIS**

The green library movement, which embraces the concepts of sustainability was initiated in the 1990s (Chauhan, 2015:1893) but began to grow in popularity in libraries in 2003 (Connell, 2010: 2). Kurbanoglu and Boustany (2014:49) also argues that the concept of green library, which came about in the late 20th century, has lately started to be commonly mentioned and linked to the field of information science. In support of the green library movement, the International Federation of Library Associations and Institutions (IFLA) developed guidelines for library buildings to accommodate and consider environmental conservation. Under the Environment, Sustainability and Libraries Special Interest Group, IFLA offers annual rewards for the IFLA Green Library, geared towards publicizing green movement in libraries worldwide. This Special Interest Group's mission is to address effects of climate change on libraries, ensure applications of environment-friendly practices in libraries, propose environmental recommendations for the profession, increasing and promoting sustainability-related library resources and services and increase librarians' own awareness of environmental concerns. However this being the case, Chauhan, (2015: 1893) argues that regrettably two decades ago, this movement is yet to reach a significant library populace. Contrary to this, Karioja and Niemitalo, (2012:138) argues that in the twenty first century information organizations have begun to implement the principles of green movement and make sustainability a reality.

Special information organizations usually offer information resources in distinctive themes to serve specialized needs of the targeted group of users who are mainly the staff of the parent organization and the general public. A special information organization is

part of a private or public organization established to support the vision and mission of the parent organization through provision of relevant information resources and services. Abiolu and Okere (2011:4) submit that, information professionals are charged with the responsibility of conducting information literacy instruction to the clients as part of the services offered in the library. This therefore implies that, information professionals have a role to play in reducing environmental degradation and its negative impact on human health through evolving roles of information professionals as change agents and partners to other change agents, electronic experts and educators. In the 21<sup>st</sup> century, therefore, information professionals are confronted with the new role of connecting the public with environmental literacy, awareness and education.

Notably, libraries are established on principles of sustainability given the fact that they aspire to offer clients equal access to information by sharing and recycling resources (Karioja & Niemitalo, 2012:139, Mansfield, 2013:3). Oyelude and Alabi (2013:2) assert that information professionals have developed interest in the issue of environmental degradation coupled with a fervent need to contribute to environmental sustainability. Oyelude and Alabi further argue that these libraries are faced with the challenge of conveying and transferring the practice of sustainability to the clients to ensure a clean, healthy and sustainably managed environment for all. Furthermore, information organizations as gateways for information and knowledge are primarily responsible not only for leading as exemplars but also by publicizing the idea of sustainability. As such, information organizations should look for innovative ways to improve sustainable practices and cultivate more opportunities to collaborate with the community and other stakeholders in this effort.

## **1.2 Context of the Study**

The Kenya Bureau of Standards has grown enormously since 1974 when it was established. The mandate of the institution is to provide standardization solutions, calibration of measurements, quality assurance, laboratory testing, dissemination of standards related information, testing equipment, product and quality systems certification, training and quality inspection of all imports. Kenya Bureau of Standards is a prominent member of several international standardization institutions which include

the International Organization for Standardization (ISO) which is an association of 163 national standard bodies (KEBS, 2014:22). Standards assist to promote trade, protect the environment and consumers from hazardous and imperfect products and control the economical use of natural resources and raw materials in accordance with national guidelines (ISO, 2015).

It is becoming increasingly important to achieve stable environmental performance by controlling the impact of an organization's activities, products or services on the environment. This makes it necessary for organizations to integrate environmental management practices into organizational culture and the overall management systems. ISO has developed standards that assist organizations to take a dynamic approach to environmental management. The ISO 14001 series of standards on environmental management provides a structure through which this can be achieved. Kenya Bureau of Standards conducts training and awareness creation on environmental management system based on ISO 14001. ISO 14001 on environmental management standards can be applied in either public or private organization. This standard also develops documents that facilitate implementation of environmental goals by encouraging the incorporation of environmental protection features in service and product design.

International Standards are imperative for organizations to work towards similar environmental management practices while supporting the sustainability of organizations' products and services. It entails consideration of all environmental issues relevant to an organization's operations including waste management, air pollution, water and sewerage, soil pollution, climate change mitigation and adaptation and efficiency in utilization of natural resource.

Kenya Bureau of Standards Library's main functions include selection, identification acquisition, processing, storage and dissemination of standards and standards related documents, and information to customers in trade, commerce and industry. The library provides necessary technical information to support the bureau's work in the drafting of standards, quality control and certification by providing the necessary literature and dissemination of information to the staff fraternity and the public.



### **1.3 Statement of the Research Problem**

Environmental sustainability is becoming an increasingly significant subject in various organizations. Jeffers and DeGaetano (2011) note that knowledge of environmental sustainability issues has become part of people's daily life. Jeffers and DeGaetano further states that this new development is influential as many organizations including libraries have now become more conscious of their impact on the environment. This consciousness ought to inspire special information organizations to consider offering products and services that are friendly to the environment considering issues of air pollution, energy consumption, waste management, water and sewerage, soil pollution, climate change mitigation and adaptation and efficiency in utilization of natural resources.

Nevertheless, library operations and practices may continue to negatively impact on the environment causing environmental degradation due to lack of planning, coordination and involvement of stakeholders at all levels including library users. It is the responsibility of staff members at all levels to promote environmental sustainability practices in special information organization. Management support will play a major role in the implementation of these practices in the organization. The Kenya bureau of Standards library being the gateway to environmental management standardization information ought to put in place measures to mitigate environmental degradation by upholding environmental sustainability practices. However, due to lack of awareness creation, the library users are not aware of environmental sustainability practices in the library.

The community relies on libraries for information resources. This places libraries in an exceptional position to become community leaders and models of environmental responsibility. Libraries are supposed to foster behavior change regarding environmental concern and responsibility by inspiring the community to begin applying environmental sustainability techniques at home and at work. Libraries should support the building of sustainable communities (Genovese & Albanese, 2013), and create environmental awareness and responsibility in communities (Boucon, 2015). Nevertheless, on the contrary, libraries have high energy consumption due to air conditioners, variety of

computers, photocopiers and networked printers held in these facilities, and lights that are switched on for long hours. Although a lot of information is available in digital format, printed formats continue to form a major portion of information resources available in libraries while the paper industry remains to be the third biggest industrial greenhouse gas emitter (McElrath & Sutherland, 2015:14). On the other hand, there is lack of proper waste management and control on photocopying services, recycling practices and indoor air quality in libraries is not well maintained to ensure the health of readers. All these practices have a negative impact on the environment (Kruse, 2011).

Libraries and information professionals ought to re-think about their products and services and their responsibility on the current decline in the state of natural resources around the globe. Consequently, information professionals are advantageously placed to impact on the behaviour of the community at all levels. This can be achieved through information provision, awareness creation and education to build and sustain an environmentally literate community (Abiolu & Okere, 2011:8). The mission of information organizations extends beyond simply being custodians of information resources and requires information professionals who are responsive to the deteriorating state of the environment to take necessary action to alleviate the situation by adopting appropriate strategies that will promote environmental sustainability practices to be part of the organizational behaviour.

#### **1.4 Aim of the Study**

The aim of this study was to assess environmental sustainability practices in special information organizations in Kenya with particular reference to the Kenya Bureau of Standards library.

##### **1.4.1 Objectives of the Study**

The following were the main objectives of the study:

1. Establish the level of awareness creation by the library staff on environmental sustainability practices in special information organizations.

2. Examine environmental sustainability practices applied in the operations of special information organizations.
3. Establish the role of information professionals in support of environmental sustainability practices in special information organizations.
4. Propose possible strategies for adoption to promote environmental sustainability practices in special information organizations.

### **1.5 Research Questions**

1. What is the level of awareness creation by the library staff on environmental sustainability practices in special information organizations?
2. Which environmental sustainability practices are applied in the operations of special information organizations?
3. What is the role of information professionals in promoting environmental sustainability practices in special information organizations?
4. Which are some of the possible strategies for adoption to enhance environmental sustainability practices in special information organizations?

### **1.6 Assumptions of the Study**

The assumptions of this study include the following;

1. The understanding of the significance of environmental sustainability is assumed to continue to increase variously as natural resources remain to be strained while the population and the resources they require increase. Therefore, the primary assumption for this study is that sustenance of the global natural resources is vital.
2. There is a general agreement on the definition of environmental sustainability. The definition states that environmental sustainability is a state in which the demands placed on the natural resources by the current generation can be met without compromising the ability of future generations to meet their needs. This assumption embraces the difference between renewable and non-renewable resources and the effects sustainability practices and programs have on them.

3. Lack of adequate knowledge about environmental sustainability practices may hinder information professionals from conducting environmental literacy and awareness creation programs in special information organizations.

### **1.7 Scope of the Study**

This study was carried out at Kenya Bureau of Standards headquarters library and focused on evaluating practical approaches applied in the operations of special information organizations to enhance environmental sustainability. The study was restricted to KEBS headquarters library since it is the largest and has high concentration of users. KEBS conducts training and awareness creation on environmental management systems which assist to protect the environment and control economical utilization of natural resources.

### **1.8 Limitations of the Study**

All the questionnaires were not returned while it also took a period of one month to get feedback from respondents as most of them cited busy working schedules. Limited financial resources and a busy working schedule on the side of the researcher was also a major constraint.

### **1.9 Significance of the Study**

The study will serve as a guide for special information organizations and information professionals in general to promote and support effective implementation of environmental sustainability programs and practices in the library. It will assist the library staff, researchers and administrators to understand issues regarding environmental sustainability practices, provide information on the role they ought to play and how library services and products can boost environmental sustainability in special information organizations.

Similarly, this study will be of great benefit to environmental organizations and their stakeholders by providing insights, strategies and direction on how to promote environmental sustainability and improve on environmental management. This study will therefore empower information professionals by providing strategies that they can

implement to assist the relevant authorities in better management of the environment. It is hoped that the study will influence environmental organizations and their stakeholders to collaborate with special information organizations and together implement strategies that will promote environmental sustainability practices in Kenya.

Furthermore, the study will be a tool of general environmental management awareness to the community and managers of various institutions and organizations. Researchers seeking to carry out further research on the same topic will get a reference point for their study. Finally, the results of this study will form a critical information resource in libraries.

## **1.10 Operational Terms and Concepts**

### **Environment**

Natural resources including land, water and air which sustains life and surrounds us (Bayode, Emmanuel & Sogbon, 2011:111).

### **Environmental Sustainability**

Conserving natural resources for future generations, living in an eco-friendly manner and meeting the needs of the current generation while guaranteeing that the requirements of future generation shall also be met in the future (Binks *et al*, 2014:3).

### **Green Library**

An information organization that embraces the concepts of sustainability by accommodating and considering environmental conservation both in design and through the products and services offered to the users (Chauhan, 2015)

### **Special Information Organizations**

Facilities established by various organizations to house collections of information materials which are made accessible to the target community who are mainly the staff of the parent organization (Yi, 2016)

### **Sustainability**

Effective management of inadequate or non-existent natural resources (Turner: 2014)

### **Sustainable Development**

This refers to development that assures the needs of the present generation without compromising the ability of future generations, while ensuring care for the environment and social well-being (UNEP, 2011).

## **1.11 Chapter Summary**

The matters discussed in this chapter relate to environmental sustainability practices in special information organizations in Kenya. The concept of environmental sustainability has become a universal concern due to the environmental problems faced by the world communities as a result of rampant population growth, reduction of non-renewable resources and over-utilization of renewable resources, climate change and poor waste management. Environmental sustainability is a key element of sustainability but emphasizes on conservation and management of natural resources.

Libraries are established on principles of sustainability given that they aspire to offer clients equal access to information by sharing and recycling resources. Libraries as gateway for information and knowledge are principally responsible not only for leading as exemplars but also by publicizing the idea of sustainability. As such, libraries should explore innovative ways to improve sustainable practices and cultivate more opportunities to partner with the community in this effort.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Environmental Sustainability Practices**

The United Nations Sustainable Development Goals were developed to build on the success and accomplishment of Millennium Development Goals (MDGs) which have the aspect of environmental sustainability as one of the eight goals. Abiolu and Okere (2011:2), argues that these goals were developed to recognize and improve the poor condition of the earth's health caused by rampant establishment of development programmes and human activities which negatively impact on the environment. While there is persistent growth in the urban population, the problem of insufficient provision of infrastructure will continue to be experienced thereby causing unhealthy environment typified by inappropriate waste management practices, and other deprived hygienic conditions which pollute water, soil and air (Ahmed, 2011). Environmental sustainability is a state of constancy, resilience and inter-relation that permits the society to satisfy its needs without surpassing the ability of the environment to continue restoring the services crucial to meet these needs, more so, in the future (Morelli, 2011). It is therefore clear that, without a productive and sustainably managed environment to provide necessary resources, it would be challenging to have a sustainable society.

Remarkably, various activities, plans and strategies can be developed as tools to boost environmentally sustainable development practices and projects. In support of this, Been *et al* (2010:9) state that the level of these activities vary from constructing environmental friendly buildings, walkable neighbourhoods rich with transportation opportunities that reduce society's reliance on vehicles, climate change plans execution and adoption of land-use controls and green infrastructure. Schuler, *et al* (2017) also emphasize that environmental sustainability programs embrace actions to minimize the use of physical resources, the use of renewable instead of depletable resources, the adoption of a 'reuse everything/buy recycled' approach, the redesign of manufacturing processes to abolish the manufacture of toxic materials, and the restoration, conservation and protection of natural resources.



The environment, as submitted by Bayode, Emmanuel and Sogbon (2011:111), comprises of biological and physical elements and processes of environment including land, water and air. However, Ogboru and Anga (2015:4) expanded this definition and argue that, the environment also consists of inorganic and organic matters, atmospheric layers, both social and economic activities and practices of human beings. The environment can therefore be termed as the natural habitation of both man and other organisms with numerous segments in which different types of activities and processes happen. Contrary to this, environmental degradation is the decline of environmental health caused by human practices, bringing about depletion and destruction of natural resources, soil, water and air pollution and the extinction of flora and fauna (Tyagi, Garg & Paudel, 2014: 1491). In the course of utilizing natural resources to meet growing needs, humankind has applied technology and culture which has caused myriad depletion of the environment. The application of soil additives in addition to chemicals and other artificial methods of enhancing produce, development of dams and irrigation schemes have caused environmental degradation (Nwagbara, *et al* 2012:2). Tyagi, Garg and Paudel (2014: 1492) highlight some factors that may impact the environment to include economic and population growth, urbanization, increase of agricultural activities, increase in usage of energy and transportation. When people drain and misuse natural resources and discharge hazardous chemicals to the environment water, land and air are damaged and compromised leading to environmental degradation.

### **2.1.1 Environmental Sustainability Practices in Special Information Organizations**

Special information organizations, in general, capture, generate, convert, manage, organize, disseminate information and offer services to achieve organizational goals and facilitate decision making. In this study, special information organizations have been taken to encompass all the facilities established by various organizations to house collections of information materials (including electronic information) which are made accessible to the target community who are mainly the staff of the parent organization, for reference and borrowing. One of the main functions of a special information organization is to sustain and support research initiatives of an institution by providing a rich and relevant collection. Special information organizations can successfully uphold

sustainability matters by developing a core collection of sustainability information resources (Connell, 2010:8). Developing a strong sustainability collection and managing digital sustainability resources will not only enhance research in this field but also facilitate awareness creation on sustainability issues.

Environmental sustainability initiatives have been explored and exercised in libraries since 1990s. According to Connell (2010:2), the Green Library Movement started in the United States in the early 1990s. This initiative was geared towards encouraging information professionals to commit themselves to greening libraries and other information organizations consequently reducing environmental impact. Chauhan (2015:1893) argues that this innovation is achieved by constructing green libraries, greening the current library amenities and services and embracing environmental friendly and sustainable practices in libraries. Therefore, in regard to this, an environmental sustainable library comprises not only the design and renovation of library building, but also enhanced daily functions and processes of the library, in addition to enlightening the society concerning responsible environmental practices.

In the article "*Implementing green technology practices and culture in the library*" More (2016) defined sustainability in information organizations as one that embraces all aspects of institutional and statutory information necessities which will not only be beneficial to current library clients but also to future clients. The emphasis is on the sustainable utilization of resources provided in information organizations. Information organizations are in an excellent position to be both an ecological worker and an advocate of environmental literacy, awareness and sustainability. Informational professionals should work hand in hand with environmental specialists to develop guidelines for sustainability in accordance with the best practices and policies, striving for activities that are environmental friendly (Sonkkänen, 2012:9).

Miller (2010) asserts that information organizations should build the capacity of their clients so as to realize that one's actions and choices impact on the environment, to identify the most sustainable solution to an environmental problem and be able to act in the most environmentally friendly way. Miller deems the information organization's role to be a societal exemplar of environmentally friendly practices. The researcher

emphasizes the library's role in educating the public regarding sustainability and green initiatives consequently raising public awareness. This role is achieved not only by providing reading materials, but also through conducting capacity building programs, environmental awareness campaigns and the library being an example of an environment that implements green standards.

In pursuit of sustainability, information organizations should also be devoted to discover best practices and to be innovative so as to solve environmental problems. Mansfield (2013:23) asserts that, in this era of technological advancement, several information organizations committed to working on sustainability matters make use of "green library" blogs to publicize events, display and highlight information resources about sustainability, announce opportunity for collaboration in matters sustainability and encourage a culture of sustainable activities. Blogs are interactive and permits users to contribute by posting queries, sharing views and ideas in commentary format. As such, blogs promote communication in the society and entails little in terms of effort and resources given that majority of the regularly used blogging software is freely available and easy to use, (Williams, 2012:163). Usually, information organizations are places associated with knowledge and innovation therefore "green" libraries should take advantage of their position to exhibit to their clients green technologies and practices and how these practices can be appropriate at workplace, home and in the society.

### **2.1.2 Rationale for Environmental Sustainability Practices**

Sustainability links utilization and protection of natural resources in a way that encourages peaceful co-existence (Ogboru & Anga, 2015:11). Production methods should be restricted by change of attitude guided by motivation for sustainability. Ogboru and Anga (2015:11) argue that, sustainability brings about the feasibility of the financial system, suitability of technology, transformation of organizations by means of education, human safety and peace, and a balanced natural and socio-cultural environment. Environmental sustainability in information organizations may essentially assist to build connections with numerous stakeholders and strengthen values and principles which are applied daily in the library operations (Dias, 2017:6). Development that is environmentally sustainable is not just a theory other than a procedure and a channel to

achieve an intended objective. It requires mastery of development necessities and a change of attitude and mind-set for it to succeed, to promote security and peace through natural resource conservation for maintenance of livelihood and eventually economic development. Modern business pioneers deem an environmentally literate labour-force vital to business accomplishment and productivity as sustainability, efficiency and economy are essential to the expansion of companies today (Abiolu & Okere, 2011:4).

Mansfield (2013:11) asserts that, the society depends on the environment both for economic prosperity and improved standard of life. It is evident that a country's environmental challenges are not merely local or national issues, but require the understanding of the intense relationship between human societies and natural resources on a universal level. Participants at the United Nations Conference on Sustainable Development, Rio+20, held in June 2012 agreed that, green economy is not only a significant agent for sustainable development but it also promotes economic growth, employment creation and poverty eradication, while sustaining the healthy functioning of the world's natural resources.

## **2.2 Awareness Creation on Environmental Sustainability Practices**

The environment has become a subject of interest to policy makers, politicians, scientists, scholars, governments and the general public globally (Godara & Khirwadkar, 2017: 1711) and no wonder NEMA (2014:32) argues that there is need for awareness creation on the importance and value of the environment so as to improve individual, societal and organizational responsibility towards the same. Environmental protection, conservation and management is a duty that no government or individual group with the entire obtainable resources, expertise and knowledge, can achieve effectively without the contribution and participation of the society (Godara & Khirwadkar, 2017: 1714).

Involvement of the above named groups in environmental activities and practices will impact positively on behaviour, change of attitude and enhance ownership (Otinga, 2014:19). However, due to low environmental awareness creation, the society often demonstrates little or no interest on environmental participation and responsibility (Chen, Qian & Zhang, 2015: 526). Awareness creation on environmental sustainability therefore

is largely significant in order to improve the success and receptiveness of environmental management strategies and reinforce public commitment and engagement.

Environmental awareness creation is not a topic to learn but it is a strategy to sensitize the society concerning the environment (Godara & Khirwadkar, 2017:1712). Environmental sustainability awareness creation is sensitizing and making the public willing to take part in environmental activities, understand and be knowledgeable about the facts and concepts associated with the environment and the consequences of various actions and environmental problems like pollution, ecological disruption, deforestation, population growth, poor waste management and energy crises (Boiyo, 2014:20). Today, libraries are deemed to be important not only in disseminating the idea of sustainability and acting as role models for other organizations in green practices but also in conducting environmental literacy sessions (Mulford & Himmel, 2010). It can therefore be stated that, information professionals as decision makers play a critical role in green library practice while making decisions on important issues such as taking care of natural resources and promoting the practice of environmental sustainability while communicating the same to the public. However, information organizations cannot assume social responsibility and invest in citizen training on environmental sustainability, without also pursuing the example being passed on to the public and the users of the library (Dias, 2017:7).

Information professionals are experts in information searching and retrieval; however, there is need to join other professionals in putting this information to use by converting it into productive knowledge that can produce practical solutions to the challenges caused by environmental degradation, as stated by Abiolu and Okere (2011). Not only should information be gathered, organized and processed for access and dissemination but should be put to active use by developing strategies and engaging other stakeholders in productive conversations regarding environmental sustainability in terms of improving awareness creation. Chauhan (2015: 1895) highlights that information professionals should not only select techniques for green libraries but should also create awareness about the green libraries for sustaining the future.

To date, most of the research conducted on environmental sustainability in libraries has concentrated on the green library with emphasis being put on the library building design (Townsend, 2014:21). Furthermore, Kurbanoglu and Boustany (2014:48) also point out that the amount of information available on green libraries appears to be increasing. Townsend however argues that, it may be useful to examine not only what libraries are doing to be environmentally sustainable in terms of the library building design, but also how libraries are assisting to enhance user awareness creation regarding this matter. Lankes (2012:42) clarifies that, if libraries are to contribute to the development of the community, they must aggressively facilitate knowledge creation within the society. Information organizations can integrate in their operations and interaction with library users unique events, information resources and programs that may facilitate awareness creation regarding environmental sustainability. Notably, behavioral transformation is brought about by improving public knowledge by raising awareness concerning environmental issues and nurturing proper attitude (Hamid, et al, 2017: 475).

### **2.3 Role of Information Professionals**

Environmental management and conservation requires collaborative responsibility and action from various partners comprising of Library and Information Science professionals, development partners, policy makers, scholars and politicians (Mulumba & Nakazibwe, 2017:4). The authors further stress that, in modern librarianship, there is further need for practical commitment to environmental matters than just promoting information literacy and dissemination. According to Niegaard (2013:283), some information organizations have already developed and put into practice green activities within their operations, some have embraced environmental considerations in building design, while others are working with environmental stakeholders in terms of creating environmental awareness. Niegaard further explains that, information professionals regularly interact with scholars, researchers, students, and other information seekers who engage them although there are crucial players in environmental matters who may never seek assistance for information. Consequently, there is dire need for information professionals to engage the society including elites and non-elites, children, traditionalists, farmers and business persons to work hand in hand in ensuring

environmental protection and conservation (Mulumba & Nakazibwe, 2017:5). These collaborative engagements initiated by information professionals should result in stakeholders being strongly involved in activities that support environmental protection.

Information organizations play a major role in improving personal knowledge about environmental sustainability consequently assisting to enhance community well-being. (Townsend, 2014:21) Townsend further states that these organizations can incorporate exceptional practices, programs and activities that may help further awareness regarding environmental sustainability. Abioulou and Okere (2011) opines that information literacy is a conventional role of information professionals and therefore environmental literacy is one of the literacy required by the society to manage the environment. Environmental literacy coupled with excellent sustainability practices transform information organizations into reliable facilities with own ideas and values that strengthens investment and maintenance (Dias, 2017:7). The reference and teaching role of information professionals produce independent and lifelong users of information. Cunningham and Cunningham (2010) submit additional techniques that can be applied by information professionals to enhance environmental literacy as teaching pupils in schools, internship in environmental organizations and incorporation of an environmental sustainability model into the mission statement of institutions.

Information professionals as mediators not only choose and obtain information materials pertinent to the needs of library users but also control and manage information overload and explosion through bibliographic control (Abioulou & Okere, 2011:6). The role of information professionals in environmental education has also been identified in terms of developing a unique collection of information resources consisting of fiction, non-fiction and audiovisual materials as well as providing a friendly and conducive environment that will attract users (Townsend, 2014:22). Environmental information is integrative in nature and therefore, information professionals may be required to repackage this information to by working with community extension workers so as to widen access to societies with low literacy levels. (Kurbanoglu & Boustany, 2014:52)). Information professionals can also work in partnership with interested groups and stakeholders in the environment sector to enhance environmental sustainability (Dias, 2017:12). According

to Abioulu and Okere (2011:7), information communication technology has established new roles for information professionals to work as electronic-resource managers controlling the management of the digital library to enhance access. The authors further submit that subscription to e-resources for example; Online Access to Research in the Environment (OARE), and Applied Ecology and Environmental Research (AEER) has facilitated the provision of excellent environmental research materials.

#### **2.4 Challenges to Environmental Sustainability and Strategies for Adoption**

Information professionals in developing countries experience various challenges in their effort to promote environmental sustainability. According to Abioulu and Okere (2011:4-5) these factors include low literacy levels in developing countries, poor infrastructural/ technological development and inadequate political good will to support policy issues. The authors also continue to note that imparting information literacy is a traditional role for information professionals. Information literacy refers to the set of skills required to find, retrieve, analyze and use information. Information literacy enables individuals to cope with information explosion and disinformation and enhances their ability to make informed decisions (Hancock, 2003). Environmental literacy therefore is a component of information literacy. Miller (2010) explains that, environmental literacy is the ability to realize that one's choices and actions impact on the environment discover the most sustainable solution to a problem and be able to act in the most environmental friendly way. This clearly implies that information professional have a great role to enhance environmental literacy skills in library users and this will consequently boost the utilization of environmental information and therefore creating awareness on environmental sustainability practices.

Information organizations are in an exceptional and impressive position which allows them to be role models in the community by implementing sustainable plans and programs. Information organizations have a chance to influence and become environmental champions in the community since they are devoted to the society and to the future by providing hospitable and durable buildings (Jena 2015:1). The author further argues that when constructing buildings, information organizations should make



good use of funds and lead the way in the society by developing green designs and operations.

In preparing for whichever kind of development plan it is important to evaluate previous failures and successes so as to make informed decisions in the future. In regard to this, Mansfield (2013:10) argues that, a contextual and qualitative evaluation can be useful when creating a strategy to assess sustainability endeavors within an information organizations because a lot of what these organizations are already practicing support the objectives and principles of sustainability, but often information professionals lack the professional capacity and understanding of environmental sustainability to view this work. In determining clearly how the operations of an information organization is currently performing results to deeper understanding of sustainability, these organizations should reinforce infrastructure and additionally develop a more comprehensive plan that incorporates all features of sustainability.

Information organizations occupy a huge public footprint and as such what they prefer to accent develop into a subject of public attention. These organizations therefore have an incredible chance to publically symbolize the principles and objectives of the parent institution in significant and extremely noticeable ways (Mansfield, 2013:13). Information organizations can therefore take advantage of their huge public footprint to positively influence and develop a community and organizational culture of sustainability by increasing access to sustainability information resources, putting up displays focusing on sustainability matters in highly trafficked places, and holding sustainability awareness/training events for the community.

Information organizations have a chance to assist in forming environmentally literate communities through environmental education which highlights on environmental literacy and is equivalent to information literacy (Miller, 2010:4). Since environmental education is a particular form of literacy, it is attached to the informative role of information organizations which is environmental literacy. Environmental literacy is the ability to recognize and understand the comparative wellbeing of ecosystems and take proper action to improve, preserve or restore the physical condition of the systems. (Miller, 2010:3). A community which is environmentally literate comprises of environmentally

informed citizens working collectively to manipulate the way the society perceives and exploits the environment. Information organizations, therefore, can be a focal point to set environmental education into the hands of the community to create environmentally literate society in a country.

To deal with the current ecological issues, information organizations have a responsibility to build up on environmentally literate community, knowledgeable and aggressively involved in matters of sustainability. An environmentally literate individual has the ability to work independently and mobilize the community to embrace environmentally sound activities that preserve the ecosystems for the present and future generations. (Cunningham & Cunningham, 2010). While Abiolu and Okere (2011:4) submit that environmental literacy is one of the many literacy programs and is necessary in assisting individuals to properly manage their environment, Stark (2011:1) argues that information professionals have not entirely embraced their role in introducing aspects of sustainability into information literacy. This subject area is a huge opportunity for information organizations through information professionals who are well placed to engage individuals, conduct trainings and direct their thoughts more towards ecologically sustainable activities.

Introduction of aspects of sustainability into information literacy may heighten the recognition of sustainability as a way of considering personal and communal role to the environment and a means of making evident the impact of industrial and human activities on the environment (Stark, 2011: 4). Information professionals have an opportunity to instruct library clients during information literacy sessions. During these sessions, information professionals can incorporate sustainability subject in their training by integrating ecological terminologies as illustration search terms and even engage the clients in a short discussion on sustainability. The rising environmental challenges experienced in the society, calls for an environmentally educated community with ability to comprehend, examine, and get involved in elaborate choices concerning issues like water usage, climate change and conservation of natural resources.

## **2.5 Knowledge Gap**

A number of studies on environmental sustainability in libraries have been conducted focusing on sustainability practices within the library operations. Miller (2010) emphasizes the need for libraries to be at the forefront in championing environmental friendly practices as the communities they serve have become more environmental conscious. As such, libraries should therefore recognize their responsibility to set an example based on how their decisions, operations and strategic plans affect the environment. Miller also stresses the importance of information organizations embracing the special role of conducting environmental literacy sessions to build a community that is environmental knowledgeable. Such a community has the capacity to recognize and understand the relative health of natural resources and take appropriate action to preserve, restore, or improve such environmental structures together with formed partnerships.

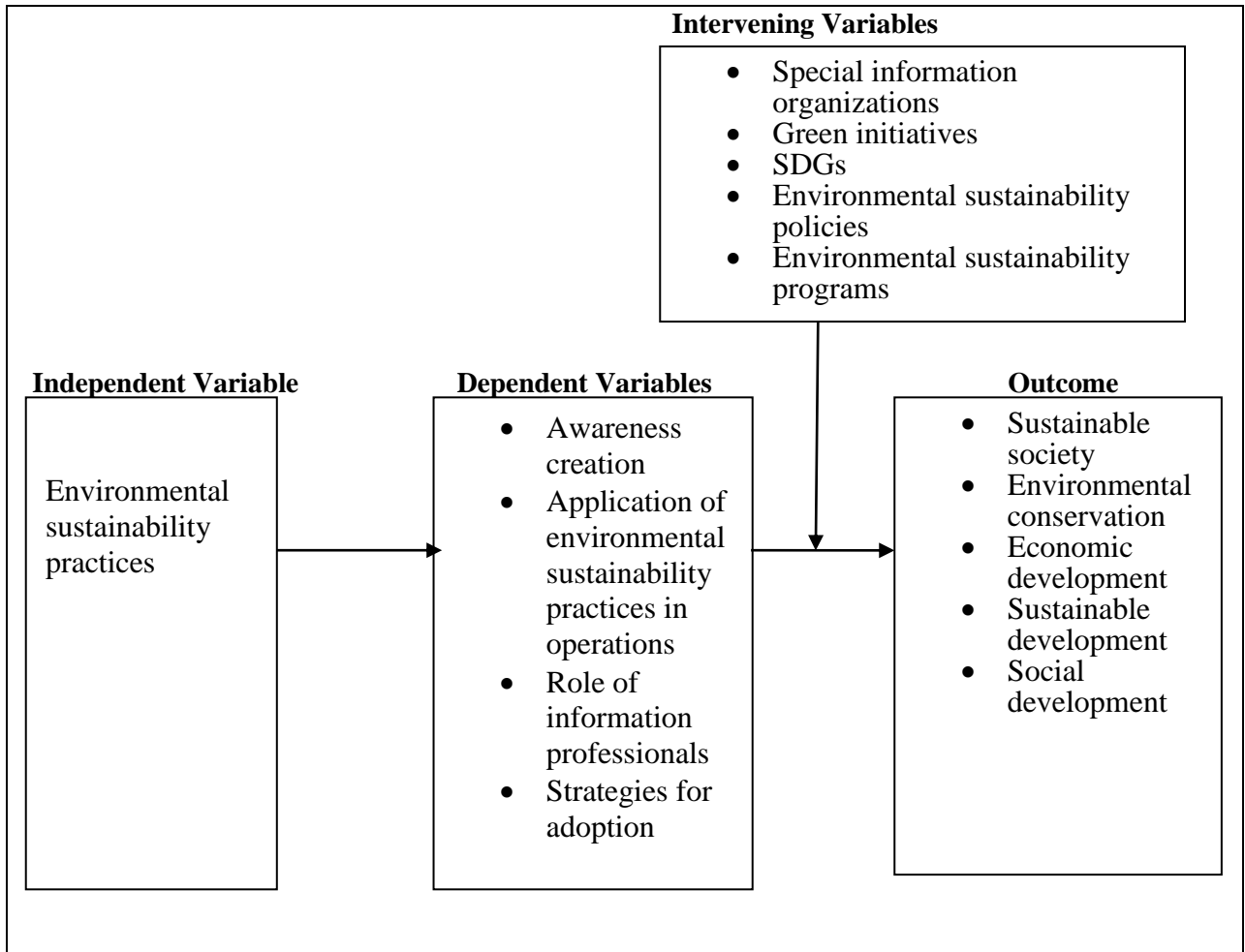
Karioja (2013) carried out a study to investigate how libraries have integrated sustainability practices in their operations to improve environmental sustainability in these facilities. This study indicates that, to increase environmental awareness, library staff needs to develop structures for change geared towards environmental sustainability or else libraries cannot function as green mentors and educators. Libraries' own environmental brand, labels and auditing systems need to be put in place to evaluate the state of sustainability. These structures could be used worldwide to increase environmental awareness in libraries for information professionals, library patrons and policy makers. To achieve this, they need to consider symbolic behavior where libraries work as green educators, staff that is committed to sustainability, collaboration with other partners, shared values and develop appropriate strategic plans that promote environmental sustainability. However, Hauke and Werner (2013:3) argue that green washing is a widespread promotion technique to market products and services as environmental friendly while there is lack of the actual effect on the ecological footprint of the client. This should not be an impediment to libraries from taking a firm position in promoting green initiatives and green practices through their operations, management, and the services offered.

A survey conducted by Oyelude and Alabi (2013) revealed the need to sensitize librarians on green initiatives in libraries, so that information professionals can as well conform to the global trend in promoting a sustainable environment. Raising the level of environmental awareness and greening initiatives among information professionals, will make it easier for them to become environmental literacy specialists and consequently conform to their new role of educating library clients on environmental sustainability.

## **2.6 Conceptual Framework**

A conceptual model is a logical tool with variables and elements used to identify the concepts in the study including the relationship amongst these concepts. The framework is applied to explain the objectives of the study and works as the basis in which the research is devised. In this study, dependent variables include awareness creation; application of environmental sustainability practices in library operations, role of information professionals and strategies for adoption to promote environmental sustainability practices in special information organizations. The independent variable is environmental sustainability practices. When the mediating or intervening variables which include; special information organizations, green initiatives, SDGs, environmental sustainability policies and environmental sustainability programs are well implemented, some of the expected outcomes include sustainable society, environmental conservation, economic development, sustainable development and social development. Sustainability is embedded in the rising recognition of the strong links between the environment and development.

The expected outcomes such as environmental conservation, economic development, sustainable development and social development may be hindered by policies, awareness materials, environmental literacy and the role of librarian. Intervening variables clarify the linkage between the other variables which are dependent and independent variables. This therefore implies that establishment of special libraries does not guarantee environmental sustainability if sustainability practices are not integrated in the library operations.



**Figure 1: Conceptual Framework**

**Source: Researcher (2017)**

## **2.7 Chapter Summary**

The contents of this chapter has been gathered from various sources included being past written books by different authors on related subject to this study, online journals, reliable internet sources including the personal experience of the researcher in the library professional.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

A research design is explained by Bryman (2012: 56) as the planning of all the necessary research conditions including data collection and analysis process in the correct and efficient manner which is relevant to the study. Research methodology can be categorized as quantitative, qualitative or mixed methods (Stangor, 2011:14). Stangor further explains that, quantitative research is a way of testing objective theories by investigating the correlation amongst variables which can be measured using designated research tools so that numbered data can be analyzed using statistical procedures. This study was designed to gather information from respondents regarding their opinions on the level of awareness creation, application of environmental sustainability practices in library operations, role of information professionals and strategies for adoption to promote environmental sustainability practices in special information organizations.

ACET (2013:1) expresses that, quantitative research process is an exclusively efficient method of data collection particularly for large groups of people. Stangor (2011:16) terms qualitative research as descriptive research which concentrates on observation and description of events as they occur, with the aim of recording all of the richness of everyday behaviour. Descriptive survey is concerned with the present phenomena in terms of relationships, conditions, processes, practices or trends invariably (Salaria, 2012:2). Salaria further explains that this type of research is dedicated to the collection of information about existing conditions or situations for the purpose of description and interpretation.

According to Guest *et al* (2011:188) qualitative research is usually devoted to introductory analysis of a social reality with a descriptive and exploratory reference point. In general, therefore, the difference between qualitative and quantitative research is explained in terms of using words (qualitative) rather than numbers (quantitative), or using close-ended questions (quantitative) rather than open-ended questions (structured

interview questions). Haq (2015:7) argues that some of the data collection methods suitable for qualitative research include interviews guides, focus-group discussions, open ended questionnaires and documents analysis. Alternatively, elements of both qualitative and quantitative methods can be combined in a study resulting to another research approach described as mixed method research. According to Heale and Forbes (2013:98) triangulation method uses more than one approach in data collection as with qualitative and quantitative, to investigate a research topic, with the aim of increasing confidence in the findings. Creswell (2010:203) emphasizes that the combination of results from two or more thorough approaches provides a more exhaustive concept of the findings than either of the single method could do alone. Mixing of data transpires while the findings are being interpreted and this allows the researcher to contrast and relate the results from the different methods applied (Fielding, 2012:131). This argument therefore means that mixed method research offers more advantages that compensate the weaknesses of both quantitative and qualitative research when being applied as a single method.

In order to meet the objectives of this study, and based on the above argument, the researcher applied a mixed method research approach that comprises of both qualitative and quantitative approaches. The integration of both qualitative and quantitative research methods was regarded as the best for this particular study in order to exploit multiple data collection methods, interpretation and understanding of the research findings within a natural setting. This method was considered necessary in order to obtain inclusive information from the respondents and therefore offer a better comprehension of the research problem. Open and closed ended questionnaires, observation method, documents analysis and interview guides were used by the researcher to collect data from the staff of Kenya Bureau of Standards to assess environmental sustainability practices applied in the operations of the library. The table below outlines the objectives of the study, variables and the mode of measurement

**Table 1: Objectives and Mode of Measurement**

<b>OBJECTIVE</b>	<b>INDEPENDENT VARIABLE</b>	<b>DEPENDENT VARIABLES</b>	<b>RESEARCH INSTRUMENT</b>
Establish the level of awareness creation by the library staff on environmental sustainability practices in special information organizations.	Environmental sustainability practices	Level of awareness creation	Questionnaire (Both Open and closed ended questions) Interview
Examine environmental sustainability practices applied in the operations of special information organizations	Environmental sustainability practices	Application of environmental sustainability practices in operations	Questionnaire (Both Open and closed ended questions), Interview, Observation
Establish the role of information professionals in support of environmental sustainability practices in special information organizations.	Environmental sustainability practices	Role of information professionals	Questionnaire, (Both Open and closed ended questions), Interview, Document analysis
Propose possible strategies for adoption to promote environmental sustainability practices in special information organizations	Environmental sustainability practices	Strategies for adoption	Questionnaire, (Both Open and closed ended questions), Interview

### 3.2 Area of Study

This study was conducted at Kenya Bureau of Standards headquarters situated in South C in Nairobi County, Kenya. This organization was deemed to be ideal for the study because it works with the public to provide and ensure standardization solutions in production and manufacturing industry for sustainable development. Standards assist to promote trade, protect the environment and consumers from hazardous and imperfect products and control the economical use of natural resources and raw materials in accordance with national guidelines (ISO, 2015). The institutional library is based at the headquarters and houses the largest volume of standardization information. The library



has the highest concentrations of staff who are the major clients of the library despite other external customers who may visit the library.

### **3.3 Target Population**

A population is the total number of all objects, elements or individuals to be studied that have specific common characteristics (Kothari, 2013:50; Ary, Jacobs & Sorensen, 2010). Target population therefore, is the population to which the researcher needs to generalize the results of the study. The target population for this study comprised of Kenya Bureau of Standards' library staff and all the other staff members from other departments which form the organization, as they are the frequent users of the library. The library has 18 staff members while all the other departments have approximately 705 members (KEBS, 2017:34). The target total population for this study therefore was 723 members. Table 2 on page 32 shows the number of staff in the sixteen departments of the organization that formed the target population.

### **3.4 Sample and Sampling Techniques**

A researcher may not be in a position to collect data from the total population which is involved in a study, making it necessary to select a representative sample. Sampling techniques are therefore applied to reduce the population into a manageable number Taherdoost (2017:18).

#### **3.4.1 Sample Size**

The target population was too big to be studied within the period in which this study was planned to be completed, therefore the need to select a representative sample group from a sample frame. Taherdoost (2017:20) defines a sample frame as a record listing the specific participants from which a sample would be drawn and of which the sampling frame must be representative of the population. The sample frame used in this study was a database of staff members which was obtained from the human resource department at Kenya Bureau of Standards.

The researcher was able to obtain information on all the departments and the number of staff in each department including their designations from the database. The first sample frame consisted of participants who were provided with questionnaires (Table 2) while the other sample frame comprised of participants who were interviewed (Table 3). The study comprised of 106 respondents who were randomly selected from all the sixteen departments of the organization. This number was formed when the researcher calculated the percentage (%) of each single department out of the total target population of 723. The sample size from each single department was then calculated out of the resultant percentage from the target population in proportion to the total number of staff in each department. This formed 15% of the total target population of 723 staff members as shown in Table 2 pg. 32. This percentage is an appropriate proportion for research sample population according to Snyder and Dillow (2012) who state that in qualitative research which has a large population, the sample size should be 10% to 20% of the target population.

### **3.4.2 Sampling Techniques**

A researcher employs sampling techniques to assemble individuals or participants intended for a study (Alvi, 2016:11). Alvi further explains that the procedure involves choosing a number of participants from a given total population so that the chosen group has characteristics found in the entire population. This particular study applied a multi-stage sampling technique where in the first stage purposive sampling technique was employed to determine the area of study. Purposive sampling is a non-probability sampling technique which depends on the opinion of the researcher to select an organization which would successfully provide the relevant information required for the study objectives on the basis of relationship and knowledge regarding the research subject (Alvi, 2016:30). According to Taherdoost (2017:22), non-probability sampling is usually connected to case study research design and qualitative research. This research is a case study of Kenya Bureau of Standards. This institution was purposively selected because this particular organization works with the public, industrial and manufacturing companies to provide and ensure standardization solutions for sustainable development consequently resulting in environmental protection. The study sought to assess

environmental sustainability practices in special information organizations and targeted all the employees at KEBS headquarters office.

The second stage of sampling in this study applied stratified sampling method to accommodate the various groups targeted by the study in terms of departments. Stratified random sampling is a probability sampling technique where a population is divided into equally exclusive groups known as strata and then a simple random sample or a systematic sample is drawn from each group (Etikan & Bala, 2017:2). Etikan and Bala further explain that, probability sampling implies that every item in the population has an equal chance of being included in the sample especially where a sampling frame is constructed and then used to select a random representative sample. In this study, the researcher used the sample frame provided on Table 2 pg. 32, which shows the various departments at KEBS and the population size in each department. Finally, individual respondents were randomly picked from each stratum through simple random sampling.

**Table 2: Sample Frame**

<b>Department</b>	<b>Population Size</b>	<b>Sample size</b>
Metrology and Testing Standards	212	61
Quality Assurance and Inspection	86	10
Marketing and Corporate Communications Certification	112	18
NQI Training	23	1
Market Surveillance	25	1
Legal	22	1
Internal Audit	50	4
Procurement	20	1
Finance	25	1
Planning and strategy	17	1
ICT	23	1
Research and development	18	1
Human Resource	20	1
Library	24	1
<b>TOTAL</b>	<b>723</b>	<b>106 (15%)</b>

**Source: Researcher (2017)**

Seven members of staff from six departments were also randomly selected to be interviewed for more data collection on environmental sustainability practices in special information organization as shown on Table 3 pg 33. The researcher purposively selected six departments with the highest number of staff for representation. These departments included Metrology and testing, Standards, Quality Assurance and inspection, Market Surveillance, Library and Human Resource. This is illustrated in Table 3 below.

**Table 3: Interview Sample Frame**

<b>Department</b>	<b>Designation</b>	<b>Respondents</b>
Metrology and Testing	Senior Calibration Officer	1
	Lab Assistant	1
Standards	Principal Standards Officer	1
Quality Assurance & Inspection	Senior Inspection officer	1
Market Surveillance	Principal Enforcement Officer	1
Library	Chief Librarian	1
Human Resource	Chief Human Resource Officer	1
<b>TOTAL</b>		<b>7</b>

**Source: Researcher (2017)**

### **3.5 Data Collection Methods**

The researcher administered questionnaires to the staff of Kenya Bureau of Standards to solicit for the required information as guided by the study objectives. Other secondary data was collected through documentary evidence that was important and related to the study from relevant publications and online information resources. An interview schedule was organized to collect more information while data which was not captured through the above methods was obtained through observation method.

### **3.5.1 Questionnaire**

The researcher personally administered questionnaires in the respondents' offices and respondents were given time to fill in the answers at their own convenient time while some were filled immediately and collected. This was after permission to conduct the research was granted by the Training Department at Kenya Bureau of Standards. The questionnaire was divided into five parts where the first part (section A) assisted the researcher to collect the background information of the respondents. The other sections of the questionnaire tackled different themes of the study as guided by the objectives and research questions. Section B addressed the theme on the level of awareness creation on environmental sustainability practices. Section C was dealing with environmental sustainability practices in special information organizations while questions in section D addressed the theme on the role of information professionals. The last section E contained questions on strategies for adoption to promote environmental sustainability practices (Please see Appendix III). The questionnaire had both closed and open ended questions to enable the researcher collect both qualitative and quantitative data. Closed questions provided the respondent with a set of choices to select from while open ended questions allowed the respondent to give their personal opinions without limiting them with choices. The questionnaire was designed for respondents who are staff at Kenya Bureau of Standards for they are the main users of the library.

### **3.5.2 Interview Schedule**

The researcher conducted interview sessions at the respondents' place of work to collect additional qualitative data. Appointments for the interview were booked by the researcher a day earlier. All the participants were interviewed in their offices at KEBS. To guarantee consistency when collecting data using this particular tool, an interview guide document was developed. The interview guide was divided into two parts where the first part comprised of information about the background information of the respondents while the second part had open ended questions on different topics on the study (Appendix IV). Seven members of staff from various departments were interviewed as follows; 2 from Metrology and Testing, 1 from Standards, 1 from Quality Assurance and Inspection,

1 from Market Surveillance, 1 from Human Resource and 1 from the Library. This is as illustrated on Table 3 pg. 33.

### **3.5.3 Observation Method**

This is where a researcher gathers information directly from a primary source of information by use of eyes (Hancock & Algozzine, 2015). This particular author continues to emphasize that this may happen through organized list of items proposed to be observed by the researcher while writing down the report of what can be seen in summary form. The researcher visited KEBS library severally to observe and verify environmental sustainability practices applied in the library operations. This involved inspecting the library stock for environmental sustainability information resources, visiting the institutional website to check on any information regarding environmental sustainability, checking provision of e-resources from the library database and any other environmental sustainability practices applied in real-life situation of the library. During this process, the researcher was guided by a checklist as provided in Appendix V.

### **3.5.4 Document Analysis**

In order to provide broad insights on the research topic, the researcher analyzed various documents including books, journal articles, reports, organizational publications at KEBS and online information resources to evaluate existing literature on environmental sustainability practices. This also helped to verify the relevance of the information gathered.

## **3.6 Research Instruments**

Research instruments are tools used by a researcher for data collection in a specific area of research work. It is essential for the researcher to ensure that the tools selected are suitable and consistent since the validity and reliability of every research study depends mainly on the appropriateness of the instruments employed (Annum, 2017:1). The researcher adopted questionnaires, interview schedule and observation guide to collect primary data. Secondary data was collected from books, journals, past researches and the internet to reinforce the primary data.

### **3.6.1 Pilot Study**

A pilot study assists the researcher in improving the data collection tools including both the procedures to be followed and the content of the data collected (Yin, 2014). Before embarking on the main research, a pilot study was conducted to ascertain the validity and reliability of the study. The pre-test was carried out at National Environment Management Authority (NEMA) headquarters in South C to determine any issues that may affect data collection process. Three departments were selected for the pilot study due to the fact that their functions relate directly to environmental management. These departments were; Environmental Compliance and Enforcement, Environmental Planning and Research Coordination and Environmental Education, Information and Public Participation Department. A sample was selected from these departments through stratified random sampling where five representatives from each department were sampled. During the piloting process, the researcher noted that some questions were irrelevant some were not clear while some would have produced unreliable responses. All these questions were corrected and most of the questions which were open-ended were modified to be closed- ended. Some words and phrases were amended to guarantee clarity and avoid ambiguity.

### **3.6.2 Validity**

The validity of a research is the accuracy of the research which is measured in terms of the success of research design and methods applied (Fowler, 2013). Validity of a measurement therefore, is the capability of the tool to measure what it is designed to measure. The researcher employed suitable data collection tool in form of a questionnaire which included pertinent question to the study. The pilot study conducted assisted the researcher to identify areas of the questionnaire which may not have been clear for correction and improvement. Construction of objective questions for the questionnaire ensured validity of the research.

### **3.6.3 Reliability**

Yin (2014) argues that for reliability to be achieved, a researcher requires to make some steps as functional as possible and conduct the research as if somebody was watching over the shoulder of the researcher. Yin applies the comparison of accountants who are subjected to audits from auditors doing a reliability check for same results if the same processes are followed. The researcher conducted a pilot study and the data collected was used to check the reliability once the actual study was completed.

### **3.7 Ethical Considerations**

This refers to the norms of conduct stipulating the right behaviour while carrying out research (Miller *et al.* 2012). The researcher wrote a letter of introduction to seek permission for the study to be carried out in the selected organization. The respondents were not forced to participate in the research but were politely request to grant their acceptance to respond. The researcher informed respondents the purpose of the study as being purely academic and confidentiality will be assured. References made in the study were acknowledged to avoid plagiarism.

### **3.8 Data Analysis and Presentation**

After the successful collection of both qualitative and quantitative data, the resultant data was separated to correspond to the major themes of the study using thematic analysis approach. The major themes of the study were; awareness creation on environmental sustainability practices, environmental sustainability practices, role of information professional and strategies for adoption to promote environmental sustainability practices in special information organizations. The separation process assisted the researcher to analyze, interpret and present the data into applicable information. The quantitative data collected through questionnaires was analyzed through Microsoft Excel. This involved feeding the data into the excel sheet by assigning numeric value to every response to represent scores. The scores were then statistically analyzed based on research objectives and each question from the questionnaire. Microsoft Excel assisted in producing meaningful tables, graphs and charts as presented in Chapter 4 while trends were illustrated using percentages. Information collected during the interviews and



observations was transcribed into Statistical Package for Social Science (SPSS) and analyzed descriptively. During this process, the researcher ensured accuracy by organizing the data into study themes which were written down to make sense of the data. Responses provided were then examined and conclusions reported based on comparison of all the responses.

### **3.9 Chapter Summary**

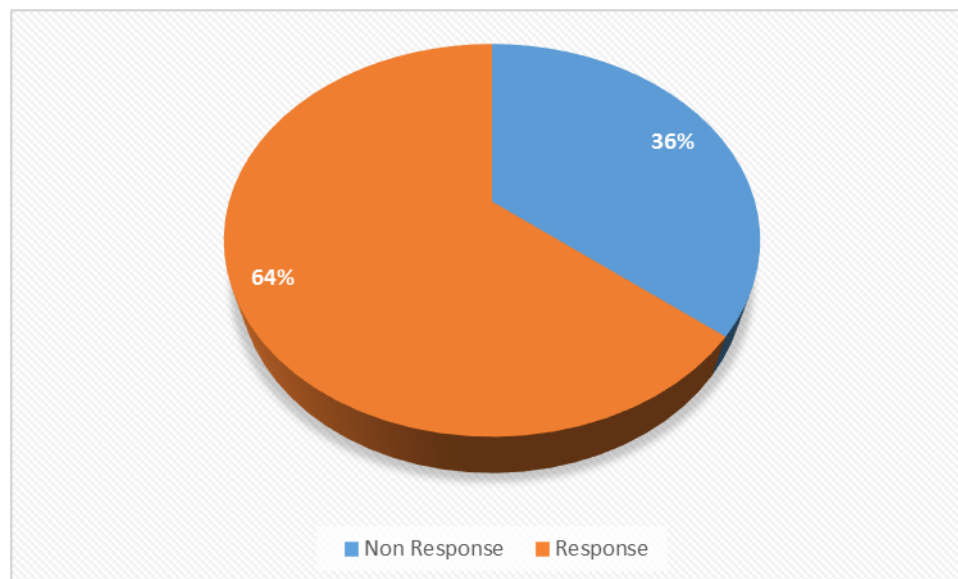
This chapter has provided a description of the research methodology which was employed in the study. The chapter presents the basis upon which the research data was collected and analyzed.

## **CHAPTER FOUR**

### **DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION**

#### **4.1 Response Rate**

This specific study sampled 106 respondents from 16 departments at KEBS, however, only 68 of them responded by filling and returning the questionnaires making a response rate of 64% as shown in Figure 2 pg 39. According to Babbie (2011:289) a 50% response rate is acceptable and adequate for analysis and reporting, however 60% is believed to be good while above 70% is considered to be excellent. Chapter three of this study also states that, to generalize the research findings and raise the validity of the data collected, the sample size selected must not be less than 10% of the population for qualitative research (Fowler, 2013:42). The study utilized 15% of the whole representative population of staff from Kenya Bureau of Standards as shown in Table 2 pg. 32.



**Figure 2: Response Rate**

#### **4.2 Background Information of the Respondents**

The study sought to find out the background information of the respondents based on department or section, designation and gender. The demographic profile questions helped

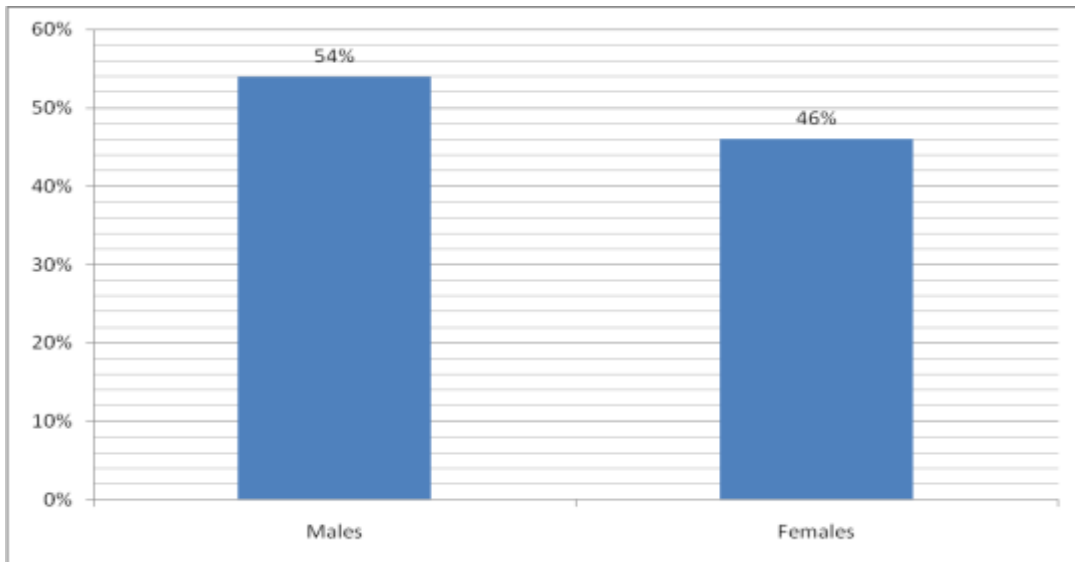
the researcher to establish the general characteristics of the respondents. Results indicate that all the departments were well represented with majority of the respondents (35) being from Metrology and Testing (largest department) as indicated in Table 4 pg 40 followed by 12 respondents from Quality Assurance and Inspection. The results also indicate that some departments are bigger than others in terms of number of staff especially the technical staff. The technical staff are well placed to provide information on environmental sustainability due to nature of work and would contribute constructively to the study. In addition, this information was also very useful for the purpose of follow-up during interview with some members of the department to clarify some issues.

**Table 4: Questionnaire Response Rate**

<b>Respondents Department</b>	<b>Distributed</b>	<b>Returned</b>	<b>Percentage</b>
Metrology and Testing	61	35	33
Standards	10	6	6
Quality Assurance & Inspection	18	12	11
Marketing & Corporate Communication	1	1	1
Certification	1	1	1
NQI Training	1	1	1
Market Surveillance	4	2	2
Legal	1	1	1
Internal Audit	1	1	1
Procurement	1	1	1
Finance	1	1	1
Planning and Strategy	1	1	1
ICT	1	1	1
Research and Development	1	1	1
Human Resource	2	2	1
Library	1	1	1
<b>Total</b>	<b>106</b>	<b>68</b>	<b>64%</b>

The results consideration in terms of gender established that the number of respondents were almost equal with only a small margin difference between the males and females as shown in Figure 3 pg. 41, with males leading at 54% and the females at 46%. This shows that there is a fair gender balance ratio between male and female at Kenya Bureau of Standards. Gender has become a matter of concern in the professional cycles in Kenya. It was therefore of great concern to this study that the information gathered included views

and opinions from both males and females. Additionally, men and women have diverse roles, which have different impact on the environment (Leduc, 2010: 1). Leduc further argues that the power relationship among men and women can extensively influence the viewpoint of men and women on environmental challenges. This therefore implies that, a gender sensitive research embraces the distinctions and similarities between men and women in terms of knowledge and opinions, and provides equal value to both of them.



**Figure 3: Gender**

Additionally, results consideration in terms of designation showed that most of the respondents (46%) were technical officers followed by the specialist who formed 28% of the respondents while the least were clerks and managers each forming 7% of the respondents as shown in Table 5 pg 42. This implies that the technical officers and specialists in various fields formed the biggest percentage of the operational staff at the Kenya Bureau of Standards. The specialist and technicians who included quality assurance officers, lab technicians, inspection officers, calibration officers, standards officers, enforcement officers and testing officers are well placed to understand matters environmental sustainability as was also discovered during the interview sessions. An interview was conducted on seven members of staff from six departments namely; Metrology and Testing, Standards, Quality Assurance and Inspection, Market

Surveillance, Human Resource<sup>1</sup> and Library. This information is as illustrated in Table 3 pg 33. From the interview, 57% of the interviewees were males while 43% were females.

The above named technical officers work with the public to provide and ensure standardization solutions in production and manufacturing industry for sustainable development (KEBS, 2014:23) this being the mandate of Kenya Bureau of Standards. The findings also concur with ISO (2015:8) that standards assist to promote trade, protect the environment and consumers from hazardous and imperfect products and control the economical use of natural resources and raw materials in accordance with national guidelines

**Table 5: Designation**

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage</b>
Technical officers	31	46
Managers	5	7
Specialists	19	28
Administrators	8	12
Clerks	5	7
<b>TOTAL</b>	<b>68</b>	<b>100</b>

#### **4.3 Level of Awareness Creation**

This particular objective was developed to establish the level of awareness creation on environmental sustainability practices in special information organizations. The specific areas of concern was to establish whether the library users were aware of any environmental sustainability practices applied in the library operations, awareness of any methods used by the library staff to promote environmental sustainability practices and the library users' level of knowledge and understanding about environmental sustainability practices.

#### **4.3.1 Awareness Creation on Environmental Sustainability Practices in the Library**

The study sought to assess whether library users were aware of any environmental sustainability practices applied in the operations of the library. This was considered to be important in this study as it would assist to establish the environmental literacy levels of the respondents and this would consequently affect the role of information professionals. This was either Yes or No response question where 46% of the respondents indicated of being aware of environmental sustainability practices in the library while 54% were not aware. Similarly, respondents were also asked to rate their understanding and knowledge of environmental sustainability practices. Results are as indicated in Table 6 pg 44. The findings showed that 43% of the respondents indicated that they had low understanding of environmental sustainability practices, 21% indicated average while 19% very low. Only 7% of the respondents indicated high understanding. In general, it can therefore be concluded that, most of the respondents were not aware of environmental sustainability practices applied in the operations of the library while their understanding and knowledge of the same was low.

During the interview, respondents who participated were asked to rate the level of awareness creation on environmental sustainability practices in the library and had the following to say: The Principal Enforcement Officer said that *“No one sensitizes library users about environmental sustainability practices in the library. I am not aware of anything like that”*. *“The library staffs are not keen on making users aware of anything like environmental sustainability practices”* noted the Senior Inspection Officer. In addition the Principal Standards Officer acknowledged that *“I am a regular library user and I have never been told about environmental sustainability practices but I have read about it in some environmental science books”*.

The above results confirms what Chen, Qian, and Zhang (2015: 526) found out that, lack of environmental sustainability awareness creation results to a society that normally demonstrate little or no concern on environmental participation and responsibility. Imparting knowledge and understanding of environmental sustainability practices and the benefits yielded from the same to the library users by conducting environmental literacy will eventually positively impact on the attitude of the society towards the environment.

Instilling environmental literacy skills to library users is a more serious task that must be conducted seriously by information professionals.. This assignment must also be monitored often using the right tools to ensure implementation and confirm benefits. Sensitization on environmental sustainability practices therefore is mainly significant in order to improve the success and receptiveness of environmental management strategies and reinforce public commitment and engagement.

**Table 6: Level of Understanding on Environmental Sustainability Practices**

<b>Level of understanding</b>	<b>Frequency</b>	<b>Percentage</b>
Very High	7	10
High	5	7
Average	14	21
Low	29	43
Very Low	13	19
<b>TOTAL</b>	<b>68</b>	<b>100</b>

#### **4.3.2 Awareness Creation Methods**

The study sought to establish the methods used by the library staff to create awareness on environmental sustainability practices. This question was deemed important in order to identify the most effective method of sensitization so as to raise the level of awareness on environmental sustainability practices to the library users as illustrated in Table 7 pg 45.

The results show that, 34% of the respondents indicated that the library staff create awareness on environmental sustainability practices through the organizational website. This was confirmed by the researcher by visiting the website and noted that the institutional policy on environmental sustainability had been posted. Results of the study also show that, 24% of the respondents indicated that the library staff uses the social media while 16% of the respondents indicated that organizational publications are used.

These results implies that the methods being used by KEBS to create awareness are not effective and the library staff should intensify and improve on awareness creation methods so that library users are well informed about environmental sustainability practices.

Respondents who were interviewed and asked to provide some of the methods used by the library staff to create awareness on environmental sustainability practices had the following to say: The Lab Assistant responded that *“I am not aware of any methods used”* while the Human Resource Officer said *“I have only seen the institutional policy posted on the website”*. Senior Inspection Officer acknowledged that *“No method is being used here to create awareness on environmental sustainability practices”*.

The aim of creating environmental sustainability awareness is to encourage library users to apply environmental-friendly techniques not just in the library and offices but also in daily activities at home as this will deepen knowledge and understanding of the significance of protecting natural resources. Awareness creation develops appropriate attitude and concern for the environment resulting into favorable practices and habits. The above results confirms Godara and Khirwadkar (2017:1711) submission that, major efforts are required for effective awareness creation on environmental sustainability issues across the country, so that every citizen is inspired to be actively involved in environmental protection. Oyelude and Alabi, (2013:8) recommends some activities and practices that can be employed by the library staff to create awareness like; recycling contests could be held between departments, individuals, or against other libraries, displays, exhibitions, talk shows, training and lectures should be regularly organized to develop environmental literacy. These two researchers further recommend initiating a library blog to increase awareness about library’s green activities.



**Table 7: Awareness Creation Methods**

<b>Method</b>	<b>Frequency</b>	<b>Percentage</b>
Organizational website	23	34
Workshops	7	10
Training/Orientations	8	12
Social media	16	24
Organization publications	11	16
Others	3	4
<b>Total</b>	<b>68</b>	<b>100</b>

#### **4.4 Environmental Sustainability Practices in Special Information Organizations**

This particular objective was set to examine the level of application of specific environmental sustainability practices in the library, which were considered as key in environmental protection.

##### **4.4.1 Leverage of Environmental Sustainability Practices**

Respondents were asked to indicate the extent to which environmental sustainability practices were being applied in the library operations. Summary of the findings are indicated in Table 8 pg 48. From the findings, it emerged that 37% of the respondents indicated that e-resources were provided in the library to a low extent. On whether double-sided printing was being practiced in the library, 42% of the respondents indicated that this was applied to a low extent while only 21% of the respondents said it was applied to a great extent. It also emerged that 50% of the respondents stated that the practice of waste recycling in the library was practiced to a low extent and 51% of the respondents indicated a low extent practice of proper waste management in the library. Water conservation was practiced to a low extent as indicated by 53% of the respondents and the same number of respondents (53%) indicated that there was use of green products to a low extent.

On whether there was air pollution prevention in the library, 50% of the respondents indicated low extent while only 20% of the respondents stated great extent. These results confirm that, though the green library movement was started in the 1990s and embraces the concepts of environmental sustainability, KEBS library is yet to support this movement by incorporating the practice of environmental sustainability in library operations (Chauhan, 2015: 1893). Information organizations are deemed as societal exemplars of environmental friendly practices to mitigate environmental degradation since these institutions are established on principles of sustainability. This places these libraries in an exceptional position to become community leaders and models of environmental responsibility.

Furthermore, the researcher posed the same question during the interview session on some of the environmental sustainability practices applied in the operations of the library to confirm the answers provided in the questionnaire. The chief librarian noted that that: *“We switch of lights during the day in our offices where necessary to reduce energy consumption. The librarian added that “All broken utilities like taps are repaired immediately to prevent water wastage. By lending out books which are returned when they are due, we are already practicing sustainability”.* The principal Standards officer commented that *“sometimes envelopes are recycled for internal mails.* The Human Resource officer also noted that *“Some of the redundant office equipments are auctioned or donated for reuse or recycling*

Given that libraries are established on principles of sustainability according to Mansfield (2013:3), information organizations as gateways for information and knowledge are therefore primarily responsible for leading as exemplars by applying environmental sustainability practices in library operations. Literature review carried out on this study established that, information organizations are deemed as societal exemplars of environmental friendly practices to mitigate environmental degradation (Miller: 2010) since these institutions are established on principles of sustainability (Mansfield, 2013:3) This places libraries in an exceptional position to become community leaders and models of environmental responsibility. In regard to this, libraries are therefore supposed to

foster behavior change regarding environmental concern and responsibility in the community by applying environmental sustainability practices in library operations.

**Table 8: Level of Application of Environmental Sustainability Practices**

Environmental Sustainability Practices	Respondents Number & Percentage					
	Very low extent	Low extent	Not sure	Great extent	Very great extent	Total
Provision of E-resources	6(9)	25(37)	13(19)	21(31)	3(4)	68(100)
Double sided printing	11(16)	29(42)	10(15)	14(21)	4(6)	68(100)
Waste recycling	10(15)	34(50)	15(22)	7(10)	2(3)	68(100)
Energy saving	10(15)	33(48)	11(16)	10(15)	4(6)	68(100)
Proper waste management	8(11)	35(51)	10(15)	13(19)	3(4)	68(100)
Water conservation	9(13)	36(53)	8(12)	11(16)	4(6)	68(100)
Use of green products	12(18)	36(53)	9(13)	9(13)	2(3)	68(100)
Air pollution prevention	8(12)	34(50)	8(12)	14(20)	4(6)	68(100)

#### 4.4.2 Environmental Sustainability Policy

Respondents were further requested to indicate environmental sustainability practices covered in the environmental sustainability policy of the library. Figure 4 pg 50 illustrates a summary of results from respondents. According to the results, 56% of the respondents stated that energy consumption is one of the areas covered in the environmental sustainability policy of the organization. This was followed closely by 54% of the respondents who indicated that the organizational environmental sustainability policy covers issues of air pollution. In addition, 53% of the respondents stated that water conservation is one of the practices covered. Further, 50% of the respondents indicated that waste management is one of the practices included while only 38% said that the environmental sustainability policy guides on how to handle hazardous substances. Also, only 13% of the respondents provided other practices covered in the policy on the open-ended question which included; recycling, sustainable procurement, consumption of office stationery and green building design.

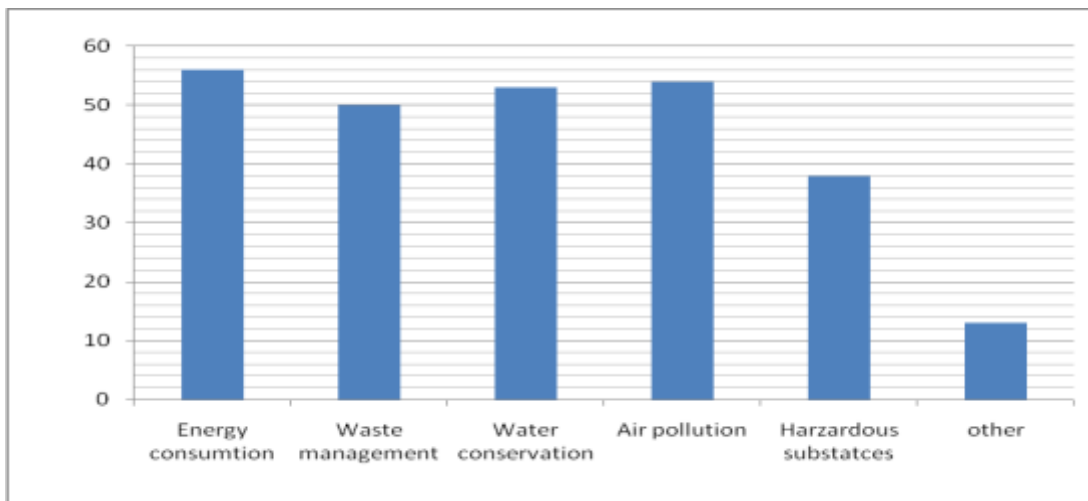
These results denote that most of the ordinary and obvious environmental sustainability practices are well covered in the environmental sustainability policy of the institution though implementation of the same is not effective. UNDP (2016) confirms that various activities, plans, strategies and policies need to be developed and implemented as tools to boost environmental sustainability practices and projects in organizations. Environmental sustainability policy addresses acceptable behavior and attitude by employees in regard to environmental management and protection of natural resources. Monitoring application of the policy in the operations of the library ensures consistency in application of the same. However, this important tool is rendered ineffective if information professionals neglect to adhere to the content of the policy or effectively communicate the same to the library users.

The researcher sought to establish whether respondents in the interview were aware and well understood the meaning of environmental sustainability. The respondents provided similar responses which the researcher summarized as; *“Responsible interaction with the natural resources with practices that will ensure maintenance of the factors that will contribute to the quality of the environment on a long-term basis for the future generations”*.

A question in the interview guide sought to establish whether there exists an environmental sustainability policy in the library. The interviewees indicated that *“The library does not have an environmental sustainability policy as a single section but KEBS as an organization has an environmental sustainability policy which is also posted on the website and applies to all the departments and sections at KEBS. All the departments and sections at KEBS should support and adhere to this policy. Unfortunately, not all the employees are keen to adhere to the policy which upholds sustainability of the environment”*.

The above responses are in agreement with what Dias (2017:15) noted that, it is easy to claim to have an environmental sustainability policy in the library, but when confronted with the fact that staff and library users are not aware of the policy and that there’s no external recognition, then this is a clear indication that the environmental policy is therefore not working. Success of the implementation of the environmental sustainability

policy depends on the commitment of everyone from all levels and functions of the organization, and particularly support from the top management. The researcher also observed that one of the main core values of KEBS as an organization is “endeavouring to ensure the sustainability of our environment” Information gathered by the researcher during the interview to confirm whether the policy is being adhered to established that “There is no proper guidelines, monitoring and evaluation process to ensure that the policy is well implemented in the organization as a whole including the library”. Dias (2017:16) further notes that to have an environmental sustainability policy indicates a set of principles and values that should be structured and evaluated by the library to favour the environment, and monitored over time to ensure application.



**Figure 4: Practices Covered in the Environmental Sustainability Policy**

#### **4.4.3 Methods Used in Implementation of Environmental Sustainability Practices**

Respondents were requested to give their opinion regarding the extent to which assessment questionnaires, internal audits and audits conducted by external party are used to assess implementation of environmental sustainability practices in the library. Results are indicated in Table 9 pg 51. Regarding the extent to which assessment questionnaires are used, 40% of the respondents indicated that they are not used at all while only 26% said that they are used to a low extent and 31% of the respondents were not sure. Internal audits are not used at all as indicated by 31% of the respondents while 22% stated that they are used to a low extent and 41% of the respondents were not sure. Additionally,

59% of the respondents were of the opinion that audits conducted by external party are not used at all while 35% of the respondents were not sure.

The above results of the study imply that there are no methods used by the library to ensure implementation of environmental sustainability practices. Notably, majority of the respondents were not sure of any methods being used while most of them indicated that assessment questionnaires, internal audits and audits conducted by external party were not being used at all. Libraries should have their own environmental sustainability indicators and evaluation systems in order to measure the state of sustainability while commitment to sustainability should be demanded from staff so that librarians could act as green educators (Karioja, 2013:35). It is a great idea for an organization to develop an environmental sustainability policy however proper systems should be put in place to ensure implementation while monitoring methods will assess adoption and compliance of the policy in the operations of the library.

**Table 9: Methods used to audit environmental sustainability practices**

Method	Respondents Number & Percentage					Total
	Very great extent	Great extent	Not sure	Low extent	Not used at all	
Assessment questionnaire	0	2(3)	21(31)	18 (26)	27(40)	68 (100)
Internal audits	0	4 (6)	28 (41)	15 (22)	21(31)	68 (100)
Audits conducted by external party	0	0	24 (35)	4(6)	40(59)	68 (100)

#### **4.4.4 Benefits of Environmental Sustainability Practices**

Having examined whether there are any environmental sustainability practices applied in the operations of KEBS library, the study sought to establish the benefits associated with the application of these practices. The summary of the findings are shown in Table 10 pg. 52. This question was considered to be significant because if there are any benefits associated with environmental sustainability practices; information professional and equally the library users will support implementation and application of these practices.

The findings of the study shows that, 59% of the respondents strongly agreed that sustainable society is one of the benefits of environmental sustainability practices while 53% indicated economic development. Also, 63% of the respondents stated sustainable development while 56% indicated sustainable communities. Further, 63% of the respondents strongly agreed that there is increased organizational productivity and reduced costs. Additionally, 56% strongly agreed with reduced poverty and 53% also strongly agreed that improved community health is a benefit of environmental sustainability practices.

These results implies that if KEBS library would employ strategies to promote environmental sustainability practices in library operations then it is paramount that all the itemized seven benefits of environmental sustainability as listed in Table 10 would be reaped. Chapter 2 of this study had established that, sustainability brings about the feasibility of the financial system, suitability of technology, transformation of organizations by means of education, human safety and peace, and a balanced natural and socio-cultural environment (Ogboru and Anga, 2015:11) Further, the society also depends on the environment both for economic prosperity and improved standard of life (Mansfield, 2013:11).

**Table 10: Benefits of Environmental Sustainability Practices**

Benefits	Respondents Number & Percentage					
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Sustainable society	0	2(3)	2(3)	24(35)	40(59)	68(100)
Economic Development	0	1(2)	3(4)	28(41)	36(53)	68(100)
Sustainable development	1(2)	0	1(2)	23(34)	43(62)	68(100)
Sustainable communities	0	4(6)	5(7)	21(31)	38(56)	68(100)
Increase organizational productivity	0	1(2)	1(2)	23(34)	43(62)	68(100)
Reduce poverty	0	1(2)	4(6)	25(36)	38(56)	68(100)
Improve community health	0	3(4)	2(3)	27(40)	36(53)	68(100)

#### **4.5 Role of Information Professionals**

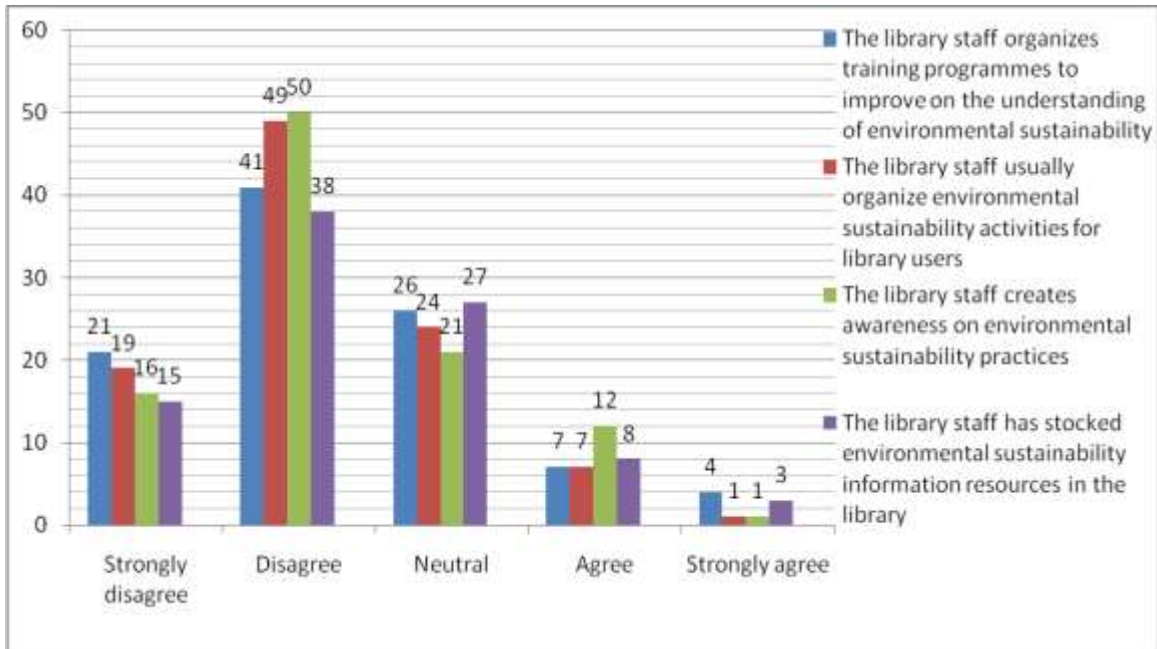
The study sought to establish the role of information professionals in promoting environmental sustainability practices in special information organizations. This question was posed to establishing whether information professionals working in these facilities are in support of this exercise. Respondents were requested to rank statements in regard to whether the staff at KEBS library organize capacity building programmes for library users to assist them improve on their understanding of environmental sustainability, whether the staff organize environmental sustainability activities in the library, whether the library staff creates awareness on environmental sustainability practices and whether the library staff have stocked environmental sustainability information resources. Respondents were instructed to rank these statements on a five point Likert scale and results of the responses are as shown in Figure 5 pg. 55.

A question on whether the staff at KEBS library organize training programmes for library users to assist them improve on understanding of environmental sustainability practices had 41% of the respondents disagreeing while only 7% agreed. Also, 49% of the respondents disagreed that the library staff usually organizes environmental sustainability activities for library users while only 7% of the respondents agreed. Results of the study also indicated that 50% of the respondents disagreed that the library staff creates awareness on environmental sustainability practices while only 12% of the respondents agreed. It also emerged that, 38% of the respondents disagreed that the library staff have stocked environmental sustainability information resources in the library while only 8% of the respondents agreed with the statement.

Participants in the interview were asked to name staff who were responsible for environmental sustainability matters in the library. Responses provided were as follows: The Chief Librarian said that *“There is no specific staff who is responsible for environmental sustainability practices”*. The Lab Assistant responded that *“I am not sure of any library staff who is responsible for environmental sustainability matter. I think anyone can do it”* while the Principal Standards Officer said *“I have never seen any library staff responsible of environmental sustainability matters”*.



These results concurs with the findings of Karioja (2013:36) that information professionals at KEBS library have not developed structures for change geared towards enhancing environmental sustainability practices consequently functioning as mentors and educators to the library users. The literature review carried out on this study also established that, information professionals are advantageously placed to impact on the behavior of the communities at all levels and this can be achieved through information provision, awareness creation and education to build and sustain an environmentally literate community (Abiolu & Okere, 2011:8). However, Godara and Khirwadkar (2017: 1712) argues that, providing bookish knowledge is inadequate as information professionals should be determined to involve library users in activities and projects which would provide appropriate experience to develop and nature specific skills and knowledge required to practice environmental sustainability. The vision and mission of information organizations extends beyond simply being custodians of information resources and requires information professionals who are responsive to the deteriorating state of the environment to take necessary action to alleviate the situation. Furthermore, to examine the standardization concerning environmental sustainability and the appropriate implementation of sustainable practices collectively, promotion of the services and the image intended for dissemination is the initial stage for information organizations in pursuit of proper role of the library as highlighted by Shopfel (2012).



**Figure 5: Role of Information Professionals**

#### **4.6 Strategies for Adoption to Promote Environmental Sustainability Practices**

The strategies for adoption to promote environmental sustainability practices were regarded to be that:- the library has a formal environmental sustainability policy statement which embraces a continual improvement in environmental performance and practices, the library communicates environmental sustainability policy to library users, visitors, customers and suppliers, there is specific library staff who is in charge of environmental sustainability matters, the staff in charge of environmental sustainability is well trained and knowledgeable on the subject, the library staff conducts environmental literacy programmes as a way of promoting environmental sustainability and the library has stocked enough information resources on environmental sustainability. Respondents were required to rank these strategies using a five point Likert scale and results are illustrated in Table 11 pg. 57.

A question on whether the library has a formal environmental sustainability policy statement was posed to the respondents and the findings shows that 44% of the respondents disagreed. Respondents who agreed with this same statement were only 10% while 21% were neutral. On the other hand, 43% of the respondents disagreed that the

library communicates environmental sustainability policy to library users, visitors, customers and suppliers while 16% agreed .The question on whether there is specific library staff that is in charge of environmental sustainability matters had 44% of the respondents disagreeing and only 12% agreed while 27% were neutral.

Further, 46% of the respondents disagreed that the staff in charge of environmental sustainability are well trained and knowledgeable on the subject of environmental sustainability practices while only 9% agreed with this statement. The findings of the study also shows that 49% of the respondents disagreed with the fact that the library staff conducts environmental literacy programmes as a way of promoting environmental sustainability and only 10% agreed while 25% strongly disagreed. The results also show that 40% of the respondents disagreed that the library has stocked enough information resources on environmental sustainability while only 13% agreed and 22% of the respondents strongly disagreed with this statement.

The above results therefore implies that, majority of the respondents disagreed that there are strategies put in place to promote environmental sustainability practices at KEBS library. The results are a clear indication that KEBS library has not developed sustainability indicators or even adopted indicators previously developed by other organizations while such indicators may become the basis for developing an inclusive sustainability structure to assist in evaluating the impacts of library operations and future projects on the library's environmental sustainability progress (Jankowska & Marcum, 2010:167). Environmental sustainability requires staff training and implementation of the right structures to monitor sustainability practices in libraries.

One of the respondents in the interview stated that *“There is need for support from the top management and also implementation of a system that will ensure monitoring and evaluation. The library staff should vigorously sensitize library users about environmental sustainability practices and conduct training on the same”*

**Table 11: Strategies for Adoption to promote environmental sustainability practices**

Strategies	Respondents Number & Percentage					Total
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Library has a formal environmental sustainability policy statement which embraces a continual improvement in environmental performance and practices	13(19)	30(44)	14(21)	7(10)	4(6)	68(100)
Library communicates environmental sustainability policy to library users, visitors, customers and suppliers	13(19)	29(43)	12(18)	11(16)	3(4)	68(100)
There is specific library staff who is in charge of environmental sustainability matters	11(16)	30(44)	18(26)	8(12)	1(2)	68(100)
Staff in charge of environmental sustainability is well trained and knowledgeable on the subject	13(19)	31(46)	16(24)	6(9)	2(3)	68(100)
Library staff conducts environmental literacy programmes as a way of promoting environmental sustainability	17(25)	33(49)	10(15)	7(10)	1(2)	68(100)
Library has stocked enough information resources on environmental sustainability	15(22)	27(40)	14(21)	9(13)	3(4)	68(100)

#### 4.7 Chapter Summary

Results of the data collected based on the objectives of the study are presented in this chapter. The data collected was presented and organized under specific themes where discussions were supported with documentary evidence appropriately and presented in form of pie charts, tables and bar graphs to illustrate the findings of the study. The need to promote and integrate environmental sustainability practices in the daily operations of libraries has been recognized as a major issue that special information organization in the country should address.

## **CHAPTER FIVE**

### **SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary of the Findings**

This section provides the summary of the key findings based on the objectives of the study. Themes and sub-themes of the research questions were formed from the objectives of the study. The study findings addressed the various issues as discussed below. The chapter also provides suggestions for further study.

##### **5.1.1 Level of Awareness Creation on Environmental Sustainability Practices**

The first objective of the study was to establish the level of awareness creation on environmental sustainability practices in special information organizations. On the question of whether the respondents were aware of any environmental sustainability practices applied in the operations of the library, the findings revealed that more than half of the respondents indicated that they were not aware. Respondents also indicated that understanding and knowledge of environmental sustainability practices was low. Also as shown in Table 7 pg 45, methods being used to create awareness on environmental sustainability practices were not effective as respondents were not aware of these practices. These results therefore means that the level of awareness creation on environmental sustainability practices at KEBS is low since the library has not implemented effective methods of awareness creation.

##### **5.1.2 Environmental Sustainability Practices in Special Information Organizations**

The second objective of this study was to examine environmental sustainability practices applied in the operations of special information organizations. Results in Table 8 pg 47 shows that, key environmental sustainability practices are applied in the operations of the library to a low extent. These practices included provision of e-resources, double-sided printing, waste recycling, energy saving, proper waste management, water conservation, use of green products and air pollution prevention. This is a clear indication that KEBS

library has not embraced the concept of environmental sustainability by applying some of the simple and obvious environmental sustainability practices in the library operations.

During the interview session, the study also established that the library as a section does not have an environmental sustainability policy but is expected to apply and adhere to the environmental sustainability policy of the whole organization. The researcher observed that, the policy of the organization had been posted on the organizational website. It is not only enough to have a documented environmental sustainability policy as an organization but the policy should be well detailed in content to guide the staff on the key areas that should be observed and implemented. Reference to Figure 4 on page 49 indicates that, the available policy for the organization had covered information on the most obvious and key areas of environmental sustainability practices to guide and enlighten the staff on the same. However, the study revealed that the library had not put in place measures to ensure implementation and evaluation of the environmental sustainability policy and practices as indicated in Table 9 on page 50.

Notably, majority of the respondents were not sure of any methods being used to audit implementation of environmental sustainability practices while most of them indicated that assessment questionnaires, internal audits and audits conducted by external party were not being used at all. Table 10 on pg 51, shows the benefits of environmental sustainability practices as sustainable society, economic development, sustainable development, increased organizational productivity and reduced costs and improved community health.

### **5.1.3 Role of Information Professionals in Support of Environmental Sustainability Practices**

The third objective of this study was to establish the role of information professionals in supporting and enhancing environmental sustainability practices in special information organizations. Results illustrated in Figure 5 pg 53 clearly shows that the library staff do not organize capacity building programmes for library users to assist them improve on their understanding of environmental sustainability practices neither do the staff organize environmental sustainability activities in the library or even create awareness on environmental sustainability practices. The library staff have also not stocked enough

environmental sustainability information resources in the library. On the other hand, due to lack of awareness creation, the library users are not aware of environmental sustainability practices in the library. This therefore implies that the library staff at KEBS have not developed structures to enhance environmental sustainability practices in the library.

#### **5.1.4 Strategies for Adoption to Promote Environmental Sustainability Practices**

The last objective of the study was to propose possible strategies for adoption to promote environmental sustainability practices in special information organizations. According to the study as illustrated in Table 11 pg 55, the library did not have a formal environmental sustainability policy statement which embraces a continual improvement in environmental performance and practices. Also the library does not communicate environmental sustainability policy to library users, visitors, customers and suppliers. In addition, results shows that there is no specific library staff that is in charge of environmental sustainability matters. Furthermore, the staff in charge of environmental sustainability is not well trained and knowledgeable on the subject.

The findings of the study also denote that the library staff does not conduct environmental literacy programmes as a way of promoting environmental sustainability practices. The results also show that the library has not stocked enough information resources on the subject of environmental sustainability. This shows that special information organizations have not put in place strategies to promote environmental sustainability practices to the users. Libraries can either develop sustainability indicators or even adopted indicators previously developed by other organizations.

#### **5.2 Conclusion**

Based on the findings and discussions presented in the previous sections, the study drew the following conclusion:

Library users at KEBS were not aware of environmental sustainability practices applied in the operations of the library neither did they understand or possess knowledge on environmental sustainability practices. It also emerged that, the library staff has put some

effort to create awareness on environmental sustainability practices through the organizational website, social media, organizational publications and during trainings, orientations and workshops. However, the methods being applied to create awareness are not effective since the library users are not aware of these practices. Therefore, the study concluded that, the level of awareness creation is low.

KEBS library is yet to support the green library movement by incorporating the practice of environmental sustainability in the library operations. The library as a section does not have an environmental sustainability policy though there exists a policy for the entire organization which is supposed to be implemented by all departments and sections. The environmental sustainability policy of the organization covers most of the ordinary and obvious environmental sustainability practices however, the implementation of the policy is not effective. The study also revealed that, there are no methods used by the library to ensure implementation of environmental sustainability practices. KEBS Library therefore is supposed to foster behavior change regarding environmental concern and responsibility in the community by applying environmental sustainability practices in the library operations.

Information professionals at KEBS have not developed structures to enhance environmental sustainability practices in the library. These structures may include: organizing capacity building programmes for library users to assist them improve on their understanding of environmental sustainability practices, organizing environmental sustainability activities in the library, creating awareness on environmental sustainability practices and stocking enough environmental sustainability information resources in the library.

KEBS library has not put in place strategies to promote environmental sustainability practices in the library. These may include developing a formal environmental sustainability policy statement for the library which embraces a continual improvement in environmental performance and practices, the library should communicate environmental sustainability policy to library users, visitors, customers and suppliers, there should be specific library staff who is in charge of environmental sustainability matters, the staff in charge of environmental sustainability should be well trained and knowledgeable on the



subject, the library staff should conduct environmental literacy programmes as a way of promoting environmental sustainability and the library should stock enough information resources on environmental sustainability

### **5.3 Recommendations**

The following are the recommendations of the study:

#### **5.3.1 Level of Awareness Creation on Environmental Sustainability Practices**

In order to enhance the practice of environmental sustainability, user sensitization and awareness creation is of great significance and should be reinforced. There is need for KEBS to be proactively involved in campaigns and advocacy programmes that will enhance integration of environmental sustainability practices in the library operations by use of effective awareness creation methods. This study therefore recommends that policy makers should ensure thorough and effective awareness creation strategies are endorsed to promote the practice of environmental sustainability. Customer communication should be emphasized since libraries have great opportunities to promote customer environmental awareness through communication and environmental literacy as well as acting as role models.

#### **5.3.2 Environmental Sustainability Practices in Special Information Organizations**

The library should put in place appropriate measures to ensure implementation and evaluation of the environmental sustainability policy. Staff training in environmental sustainability practices should be conducted at all levels to improve teamwork. Effective teamwork will enhance implementation of environmental sustainability practices. The understanding of environmental literacy programmes requires effective and intensive staff training who consequently become a resource to the organization. Training staff on environmental sustainability practices is highly recommended so that consequently these practices may be embraced, adopted and integrated in the operations of the library.

### **5.3.3 Role of Information Professionals in Support of Environmental Sustainability Practices**

The study recommends that the staff at KEBS library should be innovative and proactive to embrace evolving roles of information professionals in the twenty first century to promote and enhance environmental sustainability practices in the library. Proper structures should be developed to enhance environmental sustainability practices. The study recommends that staff at KEBS library should organize capacity building programmes for library users to assist them improve on their understanding of environmental sustainability practices. The staff should organize environmental sustainability activities in the library for the library users as a way of creating awareness on environmental sustainability practices. Enough environmental sustainability information resources should be stocked in the library.

### **5.3.4 Strategies for Adoption to Promote Environmental Sustainability Practices**

Proper strategies and policies on environmental sustainability should not only be developed but also implemented in the organization. Special information organizations should partner with other organizations in the environment sector for appropriate integrations of plans and strategies on environmental sustainability. Monitoring and evaluation can be used to confirm that plans, policies and strategies have been implemented effectively and have had a measurable impact on expected outcomes. Environmental sustainability policies and strategies need to be evaluated frequently to ensure implementation and continual improvement

## **5.4 Suggested Areas for Further Study**

The following areas of study were identified as requiring further research:

### **5.4.1 Economic and Social Sustainability**

Environmental sustainability is concerned with caring and rehabilitating the environment while acknowledging the inter-dependence with economic and social goals and interests. Sustainability therefore is not just environmentalism but concerns for social equity and economic development are embedded in most definitions of sustainability. This particular study concentrated on environmental sustainability in special information organizations.

In future more research in the field of economic and social sustainability in these institutions would be necessary.

#### **5.4.2 Research in Public and Academic Libraries**

This study limited itself to special information organizations in Kenya. There is a need to conduct a similar study in public and academic libraries in Kenya to investigate the status of environmental sustainability practices in these institutions. This would be necessary to understand whether the findings of this study are representative of all libraries in Kenya or not.

#### **5.5 Chapter Summary**

This is the last chapter in this study on environmental sustainability practices in special information organizations in Kenya. The chapter provides a summary of the findings, conclusions and makes recommendations from the analysis of the findings. Additionally, a suggestion for further research has been provided.

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## APPENDICES

### APPENDIX I: LETTER FROM THE UNIVERSITY



#### UNIVERSITY OF NAIROBI FACULTY OF ARTS

#### DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

*Telephone: +254 20318262, Ext. 28095*

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**Our Ref: UON/CHSS/DLIS/303C  
28/09/2017**

**Date**

#### TO WHOM IT MAY CONCERN

Dear Sir/Madam,

#### **RE: RECOMMENDATION FOR NGIGE LEAH- REG NO. C54/81639/2016**

The above named is bonafide student at the university of Nairobi undertaking a master of library and information science (MLIS). She is currently in the process of collecting data as part of the requirements for the course.

Her topic is “**Environmental Sustainability Practices in Special Information Organizations in Kenya: The Case of Kenya Bureau of Standards**”.

Any assistance accorded to her will highly be appreciated.

Regards,

Dr. Dorothy Njiraine

**Ag. Chairperson**

**Department of Library & Information Science (DLIS)**

## APPENDIX II

### INTRODUCTION LETTER

Esther Leah Ngige  
Department of Library and Information Science  
University of Nairobi  
P.O. Box 30197-00100  
Nairobi.

Dear Respondent,

**RE: DATA COLLECTION**

I am a Master of Library and information Science student in the Department of Library and Information Science, University of Nairobi. I am carrying out a research on “*Environmental sustainability practices in special information organizations in Kenya*” with reference to Kenya Bureau of Standards.

The main objectives of this study are to; establish the level of awareness on environmental sustainability practices in special information organizations, examine environmental sustainability practices applied in the operations of special information organizations, determine the role of information professionals in support of environmental sustainability practices and explore possible strategies for adoption to promote environmental sustainability practices. The study will be of great benefit not only to environmental organizations and stakeholders in the environment sector but also to special information organizations by providing insights, strategies and direction on how to promote environmental sustainability practices and improve on environmental management in Kenya.

The information and views that you provide are entirely for academic purposes of this study and shall remain confidential.

Thank you.

Yours faithfully,

Esther Leah Ngige  
C54/81639/2016

## APPENDIX III

### QUESTIONNAIRE FOR STAFF

#### Instructions

Please indicate your response by ticking your preferred choice in the provided boxes. For questions that require suggestions or comments, please use the space provided.

#### SECTION A: BACKGROUND INFORMATION

1. Name of the department/section:-----
2. Designation:-----
3. Gender:        Male [    ]                      Female [    ]

#### SECTION B: LEVEL OF AWARENESS CREATION

4. Are you aware of any environmental sustainability practices applied in the operations of the library?  
Yes [    ]                      No [    ]
5. Please rate your level of understanding and knowledge of environmental sustainability practices.  
  
Very high [    ] High [    ] Average [    ] Low [    ] Very low [    ]
6. Please select from the following, the method used by the library staff to create awareness on environmental sustainability practices in the library.
  - (a) Organizational website                      [    ]
  - (b) Workshops    [    ]
  - (c) Training/Orientations                      [    ]
  - (d) Social Media    [    ]
  - (e) Organizational publications                      [    ]
  - (f) Please indicate any other method not listed above -----  
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**SECTION C: ENVIRONMENTAL SUSTAINABILITY PRACTICES IN SPECIAL INFORMATION ORGANISATIONS**

7. Indicate the extent to which the following environmental sustainability practices are applied in the library operations? Please use the scale below:

Very great extent = 5, Great extent= 4, Not sure= 3,

Low extent = 2, Very low extent = 1

No.	Activity	5	4	3	2	1
1	Provision of E-resources					
2	Double-sided printing					
3	Waste recycling					
4	Energy saving					
5	Proper waste management					
6	Water conservation					
7	Use of green products					
8	Air pollution prevention					

8. Which of the following aspects of environmental sustainability practices are covered in the environmental sustainability policy of your institution?

- (a) Energy consumption
- (b) Waste Management
- (c) Water conservation
- (d) Air pollution emissions
- (e) Handling of hazardous substances
- (f) Please indicate any other not listed above-----  
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9. In your opinion, indicate the extent to which the following methods are used to audit implementation of environmental sustainability practices in the library. Please answer using the scale below:

Very great extent=5, Great extent=4, Not sure=3, Low extent=2, Not used at all=1

Method	5	4	3	2	1
Assessment questionnaire					
Internal audits					
Audits conducted by external party					

Please specify any other method not listed above-----

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10. Indicate the level of your agreement on the benefits of environmental sustainability practices. Please use the scale below:

Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1.

No.	Statement	5	4	3	2	1
1.	Sustainable society					
2.	Economic development					
3.	Sustainable development					
4.	Sustainable communities					
5.	Increase organizational productivity and reduce costs					
6.	Reduce poverty					
7	Improve community health					

**SECTION D: ROLE OF INFORMATION PROFESSIONALS**

11. To what extent do you agree or disagree with the following statement regarding the role of information professional in promoting environmental sustainability practices in special information organisations? Please use the following scale:

Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1.

No.	Statement	5	4	3	2	1
1.	The library staff organizes training programmes to improve on the understanding of environmental sustainability.					
2.	The library staff usually organize environmental sustainability activities for library users					
3.	The library staff creates awareness on environmental sustainability practices.					
4	The library staff have stocked environmental sustainability information resources in the library.					

12. Please indicate any other role that is not included above-----  
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**SECTION E: STRATEGIES FOR ADOPTION TO PROMOTE ENVIRONMENTAL SUSTAINABILITY PRACTICES**

13. Indicate the level of your agreement on the strategies for adoption to enhance environmental sustainability. Please use the scale below:

Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1



No.	Statement	5	4	3	2	1
1.	The library has a formal environmental sustainability policy statement which embraces a continual improvement in environmental performance and practices.					
2.	The library communicates environmental sustainability policy to library users, visitors, customers and suppliers.					
3.	There is specific library staff who is in charge of Environmental sustainability matters.					
4.	The staff in charge of environmental sustainability is well trained and knowledgeable on the subject.					
5	The library staff conducts environmental literacy programmes as a way of promoting environmental sustainability					
6.	The library has stocked enough information resources on environmental sustainability.					

13. Please indicate any other method not included above-----  
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THANK YOU.

**APPENDIX IV**

**INTERVIEW SCHEDULE FOR STAFF**

**SECTION A: BACKGROUND INFORMATION**

- 1. Please specify your designation-----
  
- 2. Which is your department-----

**SECTION B: LEVEL OF AWARENESS CREATION**

- 3. How do you rate the level of awareness creation on environmental sustainability practices in the library? -----  
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- 4. What are some of the methods used by the library staff to create awareness on environmental sustainability practices? -----  
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**SECTION C: ENVIRONMENTAL SUSTAINABILITY PRACTICES IN SPECIAL INFORMATION ORGANISATIONS**

- 5. What do you understand by environmental sustainability practices?-----  
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- 6. What are some of the environmental sustainability practices in your library? -----  
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- 7. Do you have an environmental sustainability policy in the library?-----  
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8. Is the policy being adhered to? -----  
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**SECTION C: ROLE OF INFORMATION PROFESSIONALS**

9 Who is responsible for environmental sustainability matters in the library? -----  
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10. In your own opinion, what do you think the library staff needs to do in order to  
promote environmental sustainability practices in the library? -----  
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**SECTION D: STRATEGIES FOR ADOPTION**

11. What are some of the strategies that can be adopted to promote environmental  
sustainability practices in your library?-----  
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THANK YOU.

## APPENDIX V

### OBSERVATION GUIDE

The researcher will inspect, observe and record information about the following:

1. Visit the library and inspect application of the following environmental sustainability practices in the library operations:
  - (a) Provision of E-resources-----
  - (b) Double sided printing-----
  - (c) Waste recycling-----
  - (d) Energy saving-----
  - (e) Proper waste management-----
  - (f) Water conservation-----
  - (g) Use of green products-----
  - (h) Air pollution prevention-----
  
2. Inspect the library stock to check provision of environmental sustainability information resources-----
  
3. Visit the organizational website and any other social media used by the library to check on any information posted regarding environmental sustainability practices.-----
  
4. Inspect some of the library publications for example, brochures, newsletters, magazines, posters and fliers to check for any information about environmental sustainability practices-----
  
5. Inspect the environmental sustainability policy of the organization to confirm the content.-----