ENVIRONMENTAL AWARENESS AMONG KEY ACTORS OF SELECTED ZAMBIAN SCHOOLS OF NCHELENGE DISTRICT IN LUAPULA PROVINCE.

By

Makoba Charles

A dissertation submitted to the University of Zambia in partial fulfillment of the Requirements for the award of the degree of Master of Education in Environmental Education.

The University of Zambia
Lusaka

2014
DECLARATION

I, CHARLES MAKOBA, declare that the dissertation hereby submitted is my own work and it has not previously been submitted for any Degree, Diploma or other qualification at the University of Zambia or any other University.

Signed: ....................................................

Date: ......................................................
APPROVAL

This dissertation by Charles Makoba is approved as partial fulfillment of the requirements for the award of the Master of Education (Environmental Education) degree of the University of Zambia.

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ABSTRACT

There are several environmental conditions that have become areas of major concern at global, regional and national levels both in urban and rural areas. These conditions are as a result of environmental degradation such as deforestation, indiscriminate waste disposal, poor health and sanitation, water pollution and land degradation to mention but a few. Environmental mismanagement affects both human beings and other living organisms in different ways, such as outbreaks of diseases like cholera which is very common in Nchelenge district especially Kashikishi settlement and islands where it has become an annual event. Such diseases could be due to unfriendly environmental practices by the local people, who may probably, have very limited knowledge on how to utilize the environment in a more sustainable manner. Despite the increase in documentation and publications on such environmental conditions, public awareness of environmental issues in both primary and secondary schools still leaves much to be desired. Most of the environmental related problems- and their consequences are as a result of lack of knowledge and skills related to the environment due to low levels of awareness among actors. Such a situation of low environmental awareness especially among key actors of educational institutions like those of Nchelenge district constitutes a problem which this study focused on.

This study aimed at determining environmental awareness in ten selected Zambian schools of Nchelenge district in Luapula province. The study sample was composed of sixty one (61) respondents of which 20 were teachers, 20 pupils, 10 head teachers, 10 parents and one District Education Board Secretary (DEBS). These constituted key actors. The study further sought to determine the type of awareness which actors had about environmental mismanagement in Nchelenge district. It also sought to establish the type of sensitization that had been done concerning the environment in the district. The third objective was to explore actions that pupils, teachers, head teachers and parents could undertake to address environmental mismanagement in their district.

The study adopted descriptive exploratory research design and used both quantitative and qualitative approaches. The research instruments that were used to collect data were questionnaires, semi – structured interview schedule and observation checklist. The study found that there were three main types of awareness namely; formal, non – formal and informal. The study established types of sensitizations which include the following; water and sanitation, solid waste management, tree planting, managing of fecal matter in schools and surrounding communities and keeping the environment clean through watering of flowers and plants, litter picking, cleaning the toilets and so on. The study also explored actions that actors could undertake to address environmental mismanagement which includes developing school environmental policies, establishment of clubs and committees, participation by relevant stakeholders, improvement of teachers’ qualification and provision of adequate teaching and learning resources for environmental education.

The study recommends that there is need to scale – up environmental awareness activities in Zambian schools in order to improve people’s knowledge, skills and values for better management of the environment. There is need to incorporate all relevant stakeholders in promoting environmental awareness in schools and surrounding communities.
DEDICATION

This study is dedicated to my wife Florence Makoba and our three children for all the patience, encouragement and unconditional love that they rendered to me throughout the period of training. The successful completion of this dissertation was made possible by their presence (and absence at appropriate times).

This research is dedicated with respect and gratitude to my mother Mary Kalembwe and the memory of my late father Renox Mwewa, who laid a strong foundation for this venture many years ago by putting me through all the different stages of education. I will always cherish your love and support.

May the good Lord always be with you.
ACKNOWLEDGEMENT

My heartfelt gratitude goes to my supervisor Professor C.M. Namafe whose guidance made this research study possible. His patience and timely constructive criticism helped me to do the work correctly. My sincere gratitude goes to Provincial Education Officer (PEO) and District Education Board Secretary (DEBS) for granting me opportunity to carry out the study in Nchelenge district. I am deeply indebted to the sixty one respondents from ten schools that constituted my study sample. I am also grateful to my fellow students Yamba Maybin, Namukolo Sitali, Moomba Augustin and Mwiinga Fridah for their assistance when things got bad. Finally, I am grateful to Mr. Rodrick Mulenga for having given me 20 litres of fuel to enable me conduct a research from one school to the other.
ACRONYMS

ACC: Ant-Corruption Commission
BNES: Botswana National Education System
CBD: Central Business District
CDC: Curriculum Development Center
CPD: Continuous Professional Development
CTS: Creative and Technology Study
DEBS: District Education Board Secretary
ECAZ: Environmental Conservation Association of Zambia
EE: Environmental Education
EIA: Environmental Impact Assessment
EP: Environmental Protection
EPPCA: Environmental Protection and Pollution Control Act
ESP: Environmental Support Programme
FOB: Faith Based Organization
GEF: Global Environmental Facility
GFID: German Foundation for International Development
GIS: Geographical Information System
IK: Indigenous Knowledge
IUCN: International Union for the Conservation of Nature
MAFF: Ministry of Agriculture Food and Fisheries
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<thead>
<tr>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>MENR</td>
<td>Ministry of Environmental and Natural Resources</td>
</tr>
<tr>
<td>MESVTEE</td>
<td>Ministry of Education Science Vocational Training and Early Education</td>
</tr>
<tr>
<td>NEAP</td>
<td>National Environmental Action Plan</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NPE</td>
<td>National Policy on Environment</td>
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<td>PAIDESAP</td>
<td>Pan Africa Institute for Development in Southern Africa</td>
</tr>
<tr>
<td>REEP</td>
<td>Regional Environmental Education Programme</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern Africa Development Community</td>
</tr>
<tr>
<td>SDS</td>
<td>Social and Development Studies</td>
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<tr>
<td>SHN</td>
<td>School Health Nutrition</td>
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<tr>
<td>SPC</td>
<td>Species Protection Commission</td>
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<td>SPD</td>
<td>Species Protection Department</td>
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<tr>
<td>TGM</td>
<td>Teacher Group Meetings</td>
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<td>UNCED</td>
<td>United Nation Conference on Environment and Development</td>
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<tr>
<td>UNESCO</td>
<td>United Nation Education Science and Cultural Organization</td>
</tr>
<tr>
<td>UNZA</td>
<td>University of Zambia</td>
</tr>
<tr>
<td>WECSZ</td>
<td>Wildlife and Environmental Conservation Society of Zambia</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
</tr>
<tr>
<td>ZANIS</td>
<td>Zambia National Information Service</td>
</tr>
<tr>
<td>ZAWA</td>
<td>Zambia Wildlife Authority</td>
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<tr>
<td>ZEMA</td>
<td>Zambia Environmental Management Agency</td>
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ZEP: Zambia Environmental Policy

ZFAP: Zambia Forest Action Plan
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CHAPTER ONE
INTRODUCTION

1.0 Overview of Chapter one
This chapter presents the background of the research, statement of the problem, the purpose of the study as well as specific objectives of the study. The chapter also includes the significance of the study and finally outlines assumptions, limitations and challenges encountered during the research.

1.1 Background to the Study
Environmental awareness relates to the recognition by the public of environmental issues and values, and the implications they have in relation to personal, economic and social standards of living. There are several environmental conditions that have become areas of major concern at global, region and national levels both in urban and marginal areas. These conditions are as a result of environmental degradation such as deforestation, indiscriminate waste disposal, poor health and sanitation, water pollution, land degradation, poor settlement patterns to mention but a few. Most of these environmental conditions are as a result of human activities ranging from domestic to commercial levels which are more severe than what the earth can process. Despite the increase in documentation and publications on such environmental conditions, such as public health awareness campaigns, education act policy (Chongololo clubs), drafting and implementation of national policies on the environment, tourism, agriculture to mention but a few, public awareness of environmental issues in both secondary and primary schools still leaves much to be desired, (ECZ, 2000). However, the degree of understanding of environmental impacts varies significantly among different segments of society in Zambia and elsewhere.

Most of the environmental related problems and their consequences are as a result of lack of knowledge and skills related to the environment due to low levels of awareness among the actors. District Education Board Secretaries, Head teachers, teachers and Pupils as well as other policy implementers are not fully equipped with relevant knowledge and skills on how to manage and mitigate environmental challenges arising from their activities (Ambrose et al, 1995). This is partly evidenced by a number of environmental problems associated with schools and surrounding communities, such as deforestation, poor waste disposal, poor sanitation, land
degradation, water and air pollution. These factors have significantly contributed to the outbreak of both water borne and tropical diseases such as malaria, cholera, bilharzias, dysentery, diarrhea and the depleting of biodiversity. For example, oil spills leaking from motorboats, illegally dumped quart of motor oil or run off from road can be as deadly to birds, aquatic animals and other wildlife (Sunday Times of Zambia, June 2013). Effects of oil spills can be seen by comparing the pollution of both terrestrial and aquatic species in the Kafue River in the Copperbelt along the mines areas and where the river crosses the road against Luangwa River which is less affected by effluents and other human induced pollutants. (Sunday Times of Zambia June 2013).

Environmental mismanagement does affect both human beings and other living organisms in different ways such as the outbreak of diseases like cholera which is very common in Nchelenge district especially Kashikishi settlement and islands where it has become an annual event. Disease outbreaks like cholera could be due to unfriendly environmental practices by the local people who may probably have very limited knowledge on how to utilize the environment in a more sustainable manner. This has been due to lack of consistence and localized environmental awareness programmes in the district. For example, a small amount of oil, no more than a dime-size drop can be deadly to birds and other species within the ecosystem (Sunday times of Zambia, June 2013).

Additionally, poor disposal of fecal – matters and other waste has resulted in enormous levels of pollution in the district. It is important to note that most of the environmental degradation that has been occurring in Nchelenge up to the time of conducting this study in the year 2014, has been the result of failure by local communities and educational systems in the district to provide citizens with basic understanding and skills needed to make informed choices about their local environment (Chacko 1998). Therefore, it is important to investigate the knowledge, conceptions and understanding of pupils, teachers, Head teachers and District Education Board Secretaries about the environment and how their knowledge could be a springboard for further learning in environmental education.

Effective implementation of environmental education programmes in schools as a regular part of the curriculum increases public environmental awareness and demonstrates a commitment to environmental protection. Young people comprise a large percent of Zambia’s population and
will be the decision makers of the future. Therefore, their way of thinking about the environment is already shaping the world of tomorrow. The involvement of today’s youth and children in environment and decision making has been internationally recognized as critical to sustainable development (UNEP 2007). Therefore, there is need to accelerate environmental awareness programmes through partnerships and localization of sensitization activities, in order to help people interact with the environment in a more sustainable manner.

1.2 Statement of the Problem
Consequences of environmental mismanagement by human beings are severe and affect all forms of life. Despite adverse effects arising from environmental mismanagement, people of Nchelenge district in Luapula province of Zambia still engage in numerous environmentally unsound practices. For example, they engage in deforestation, dumping solid wastes indiscriminately, using contaminated water, use of poor and inadequate pit latrines and keep premises dirty and so on. Environmental Education (EE) is generally expected to assist people to change their negative behaviours to positive behaviours so that they begin to act in an environmentally sound manner. However, little was known whether or not those charged with the responsibility of providing relevant education in Nchelenge district were doing enough to raise people’s awareness in this regard. This lack of knowledge constitutes a problem for various reasons. Firstly, people may continue destroying natural environments through deforestation, water pollution, land degradation, air pollution, poor solid waste disposal, wildlife depletion (fish and game), and poor health conditions to mention a few. Secondly, such lack of knowledge regarding the state of environmental education in Nchelenge district has made it difficult for Non–Governmental Organisation (NGOs), Faith Based Organisations (FBO), corporate partners and Donor agencies to partner with the local communities in combating environmental challenges. Thirdly, the knowledge gap makes it difficult for policy makers to plan and implement programmes that would address the environmental challenges of the area. Fourthly, faith based organisations would also find it difficult to preach about environmental related contents from their religious points of view to members of the public whose knowledge about environmental management is very limited. Since we do not seem to know the extent of environmental awareness levels among parents, pupils, teachers, head teachers and district education board secretary (DEBS), it was considered important to carry out research to ascertain environmental awareness levels among actors.
1.3 Aim of the Study
The aim of the study was to determine types of environmental awareness among key actors in selected Zambian schools i.e. pupils, teachers, DEBS and parents of Nchelenge District in Luapula province.

1.4 Specific Objectives of the Study

In order to address the above aim, the following specific objectives guided the study:-

- to determine the type of awareness which pupils, teachers and parents have about environmental mismanagement in Nchelenge district.

- to establish types of sensitization that has been done concerning the environment in the district.

- to explore actions that pupils, teachers and parents could undertake to address environmental mismanagement in Nchelenge district.

1.5 General Research Question

The study was guided by the following general research question:-

- What types of environmental awareness do key actors in selected Zambian schools i.e. pupils, teachers, Head teachers and District Education Board Secretary of Nchelenge District of Luapula province have?

1.6 Specific Research Questions

To address the above general research question, this study sought to answer the following specific research questions:-

- What type of awareness do pupils, teachers and parents have about environmental mismanagement in Nchelenge district of Luapula province?

- What type of sensitization programmes have been conducted in schools concerning the environment?

- What actions can pupils, teachers, Head teachers and parents take to address environmental mismanagement in Nchelenge district?
1.7 Significance of the Study
Lack of environmental knowledge is one of the most cited barriers to personal engagement in protecting the environment (UNEP 2007). The perception has been that people in less developed communities do not manage the environment positively due to little environmental information that is available. This study is therefore important as it may enable pupils, teachers, parents and other stakeholders in Nchelenge district to use the findings to formulate strategies that may help reduce negative impacts arising from unsustainable use of the environment in Nchelenge district of Luapula province. The findings of this study may also be used for assessing, monitoring and evaluating effective ways of managing the environment so as to avoid negative consequences resulting from environmental misuse as a result of lack of environmental knowledge by stakeholders. The Ministries of Health, Local Government and Housing as well as Ministry of Lands may also benefit from this study as the information may be used to formulate awareness programmes on how institutions in Nchelenge can improve their environment. These ministries and other collaborative stakeholders can develop workable strategies aimed at helping both the rural and urban poor to improve their living environment.

Other stakeholders such as community based NGOs and faith based organisations may benefit from the results of the study by ensuring that educational campaign programmes implemented are made more community based and effective in meeting the awareness needs of the target groups directly and in a sustainable manner. This may in turn increase pupils, teachers and parents’ appreciation of environmental education programmes being provided by these stakeholders. This appreciation by beneficiaries may encourage them to continue looking after the environment in a more sustainable manner and avoid practices that may be perceived to be harmful to the environment.

The results from this study may also benefit Nchelenge institutions as they may know the negative consequences arising from unsustainable utilization of their environment and enable them to prioritize areas where urgent interventions may be needed. Such interventions could be successfully implemented under the auspices of other institutions in and outside Nchelenge which are concerned with the environmental management, such as the Zambia Environment Management Agency (ZEMA), through community and institutional based programmes; Non – Governmental Organisations (NGO) specialized in environmental programmes and other
corporate institutions. The Ministry of Education Science, Vocation Training and Early Education (MESVTEE) may also use these results to standardize their environmental education curriculum and argue for the need to prioritize environmental education in educational institutions such as universities, colleges, secondary and primary schools. Besides, MESVTEE may use these results to embed indigenous knowledge (IK) or traditional cultural practices in disseminating environmental awareness (EA) activities in schools.

Other Ministries and institutions such as the Zambia Environment Management Agency may formulate policies and strategies aimed at raising people’s awareness and protecting the environment at all levels of Zambian communities regardless of the location. These agencies and departments may work towards engaging different organisations to try and promote environmental awareness to both public and private institutions. Generally, the results from this study may be used to promote partnerships among different stakeholders, help policy makers and implementers to address environmental issues in a holistic manner. Otherwise, the environment of Nchelenge is at the risk of diminishing if necessary environmental awareness programmes like those suggested in this study are not put in place.

1.8 Limitations of the Study
The research was characterized by the following limitations.

- In primary schools grade seven pupils were not interviewed as they were already out of schools after writing their final examinations.
- The research was only conducted in ten (10) schools out of seventy four (74) schools in the district representing thirteen and half percentage (13.5%), this was due to the limited financial resources and time. Thus, the results of this study might not be generalized to the whole country.
- The failure to check physically the action plans for Preventive Maintenance System (PMS) and witnessing the implementation of environmental awareness activities in the action plan due to time factor.
- Most of the pupils who were chosen as respondents were semi – illiterates. They were not able to read and understand the questions by themselves. Therefore, it required the researcher as interviewer to read the questions and interpret in local language before they could answer.
At Nchelenge Secondary School, the head teacher postponed my earlier appointment to the following week citing busy schedule. This development contributed to the failure to meet my deadline for the research.

1.9 Operational Definitions of Terms
The following concepts given below were defined in the context of conducting this particular research.

**Unsound Practices**
These are actions by human beings that are posing a great threat to the well-being of the environment. These threats range from different forms of pollutions, land degradation, deforestation, desertification, loss of biodiversity and so on. It can also be described as human activities that are incompatible with nature.

**Environmental Mismanagement**
This is the exploitation of the environment without paying attention to negative consequences affecting its ability to support life systems. Environmental mismanagement may be as a result of lack of knowledge on how to manage the environment; or poverty that leaves people with no choice but to exploit the resources from the ecosystem in unsustainable manner.

**Environmental Awareness**
Environmental awareness is the ability to understand the fragility of our environment and having skills on how to protect and preserve the environment.

**Cultural Practices**
These are practices defined by the local people in the context of their arts, philosophy and considered to be important for their wellbeing.

1.1 Structure of dissertation
Chapter one discussed background of the study, statement of the problem, the general objective as well as specific objectives, general research question and specific research questions. The significance of the study, limitations as well as operational definitions of terms. Chapter two reviewed both primary and secondary literatures on environmental awareness and education. Chapter three described the study area where research was conducted. Chapter four covered research design, target population, study sample, sampling procedures, research instruments,
processes and analysis of both primary and secondary data. Chapter five presented the findings from the field as obtained by the researcher. Chapter six presented the discussion of findings in chapter five in order to provide answers to the general research questions. Chapter seven presented conclusion, recommendations and suggestions for future research.
CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

Environmental problems have become a constant and perennial challenge facing modern society. What seems to change however is the way in which people interpret and view these environmental problems. Several researchers have argued that the nature and extent of the environmental problems have increased dramatically over many years to such an extent that the environmental problems now constitute a global crisis (Le Roux, 2001). Consequently, if the environment is to be utilized to its optimum, it is necessary that a thorough knowledge of its functioning be acquired. With every environmental problem, there are usually a number of contributing causes, whose interactions and feedbacks make it difficult to identify the most effective course of action (Hugo, 2004). Whatever solutions are needed towards environmental problems, community members need to engage in activities that would lead to environmental protection. Many people are increasingly becoming aware of the need to sustain the health of the planet and the integral web of actions that link together all life on earth. It is rather important to understand how our activities affect the environment and ourselves. However, solutions still lie much more in our attitudes, values and actions.

The present chapter examines mostly the literature on people’s knowledge, skills and understanding of the environment and the present crisis and issues surrounding the environment and environmental awareness programmes of current concerns.

2.1 Historical Background of Environmental Awareness at National Level.

Since 1985, the Government of Zambia has taken a number of important steps to preserve the environment and ensure conservation of its biological resources. There are a number of environmental and related conventions, treaties and agreements which Zambia has ascribed to since 1985. There are some milestone steps that have been adopted; the adoption of a National Conservation Strategy in 1985, the promulgation of the Environmental Protection and Pollution Control Act (EPPCA) in 1990, the creation of the Ministry of the Environment and Natural Resources (MENR) in 1991, the establishment of the Zambia Environmental Management Agency (ZEMA) in 1992, the formulation of a National Environmental Action Plan (NEAP) in
1995, the inception of the Zambia Forestry Action Programme (ZFAP) and the Wetlands Conservation Programme.

In order to provide backstopping for these steps, the country has recently adopted an Environmental Support Programme (ESP). The ESP is intended to successively prevent, assess and reverse environmental and natural resources degradation in the country. All these adoptions aimed at protecting and conserving the biosphere from numerous forms of destructive exploitations. In order to realize the perceived goals from these policies, a number of actions have taken place. One of these actions was the introduction of Environmental Education (EE) in schools through which environmental awareness is addressed. The Ministry of Education, science vocation training and early education (MESVTEE) through Curriculum Development Centre (CDC) and the primary and secondary school network had to play a big role in implementing EE and it could continue to do this in future (ECZ, 2001). In order to understand the development of environmental awareness it is important to know the deep meaning of key terminologies in the study. These terminologies are repeatedly used in this study; environment, education, awareness, environmental education and environmental awareness.

2.1.1 Environment
The word environment has been defined differently by different scholars. Dichiro (1987) says, the concept environment is understood to be the conceptual interactions between our physical surroundings and the social, political and economic forces that organize us in the context of our surroundings.

The concept of environment is often considered in a limited way to represent only the physical, biological, social and cultural factors that affect the development and life organism on the planet. Environment can be classified into three types; natural environment which includes the natural things that are never influenced by man’s intelligence and powers, the social environment this means that man is always surrounded by society because he is a social being and the cultural environment which includes social rules and regulations, traditions, and customs (Panneerselvam and Ramakrishnan, 2005).
MTENR (2007: iv) defines the word environment as:

“The Ecosystem of which mankind is part including cultural and man – made features. It can sometimes be defined as the complex set of physical, geographic, biological, social, cultural and political conditions that surround an individual or an organism and that will ultimately determine its form and nature of its survival”

However, the definition by MTENR was adopted by this study because it is much deeper in the sense that it has embraced all important aspects (social, nature, economy and culture) which are inclusive in human endeavour.

2.1.2. Education
Education is defined by Kelly (1996) as, a process of transmitting knowledge, values, skills, and attitudes from one generation to the next generation. Therefore, education is critical for promoting environmental awareness and capacity building for people to address environmental and developmental issues. Education has been recognised by UNEP (2007) as, an effective instrument for tackling environmental crisis throughout the globe, hence governments should prioritise quality education to mitigate environmental challenges facing various communities.

In the context of this study, education was viewed to be very cardinal in the sense that, learning process has to be life – long and should be able to change the lifestyle of a human being in favour of the environment. Therefore, education would significantly raise people’s knowledge, values, attitudes and skills for good management of the environment.

2.1.3. Awareness
The term awareness has been widely defined as, the state or condition of being aware, having knowledge and consciousness (UNEP, 2007, UNESCO, 2010). Therefore, people need to be aware, having Knowledge and being conscious of environmental issues that may affect the wellbeing of the environment. Besides, awareness is used to focus more on the process of awakening and raising people’s sensitivity or concerns about an issue or situation, for example the environment in this case. Awareness can be achieved through formal, informal and non – formal education. This is based on the fact that there is still considerable lack of awareness of the
interrelated nature of all human activities and environment due to inaccurate or insufficient information.

Wilke and Richard, (1997) argued that, through awareness, people are able to identify the destructive practices which harm the environment and their role in creating and preventing those environmental problems. In addition, they would develop skills which are conducive to the achievement of a sustainable future; reflect critically on environmental issues, how resources can be used more efficiently, and the interrelationships between social, cultural, economic and ecological dimensions and the environment; appreciate and respect the intrinsic value of the whole environment, allowing people to develop an ethic of personal responsibility and stewardship towards all aspects of the environment; use their new ethic to adopt more environmentally appropriate behaviour while participating as active and involved citizens in a sustainable future.

Environmental awareness programmes are essential part of a global education effort to strengthen attitudes, values and actions, which are compatible with sustainable development. It was important to stress the principle of developing authority, accountability and resources to the most appropriate level. There is need to increase public sensitivity to environmental and developmental problems and involvement in their solutions and foster a sense of personal environmental responsibility. This would stimulate greater motivation and commitment towards sustainable development (Dorcas, 2002).

For the purpose of this study, awareness was considered to be essential as it raises general knowledge and provide individuals with the confidence to voice opinions on environmental issues. Fisman (2005) focused on children’s ecological knowledge and their awareness of the form and features of their local environment. This emphasis is aligned with Sobel’s (1996) research, which suggests that elementary school students are not developmentally prepared to deal meaningfully with major environmental issues. Fisman (2005) contends that, teaching children about positive aspects of their local environment would build their sense of caring and connection to the place where they live. He further stresses the fact that the goal of EE is to produce citizens who are knowledgeable about the bio – physical environment and its problems,
aware of strategies that can be used to deal with those problems and actively engage in working towards their solution.

2.1.4 Environmental Education

Like the environment, environmental education has carried a lot of definitions depending on the individual or institutional contextual preferences. Many scholars have defined Environmental Education in different ways. For example, Dorcas (2002) defined Environmental Education (EE) as, a learning process that increases people's knowledge and awareness about the environment and associated challenges. EE develops the necessary skills and expertise to address the challenges. She further went on to say that, EE fosters attitudes, motivations, and commitments to make informed decisions and take responsible actions. Environmental Education is a cross curriculum theme promoting global awareness, sustainable living and active citizenship. It involves a structured and planned process that seeks the implementation of environmental curriculum at educational institutions at different levels (elementary school, high school, university, graduate and post-graduate levels). In Zambia EE is considered as one of the Cross – cutting subjects that are integrated in a global perspective but that can be learned and applied locally.

Environmental Education is further defined by Anna et al (2007) as, environmental awareness, knowledge and skills that bring about positive attitudes, values and commitment resulting in behavioral change that ultimately results in a healthier and safer environment for all. Ramakrishnan also define environmental education as;

“educational process dealing with man’s relationship with his natural and man – made surroundings and includes the relations of population, pollution resource allocation and depletion, conservation, transportation, technology, energy and urban and rural planning to the total biosphere” (Panneerselvam and Ramakrishnan 2005:5).

In addition, IUCN (1971) defines Environmental Education as the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter – relatedness among man, his culture, and his biophysical surroundings. Environmental Education also entails practice in decision – making and self – formulation of a code of behaviour about issues concerning environmental quality (IUCN; 1971).
The definition by IUCN, is widely accepted, as it was adopted by the inter governmental conference on environmental education at Tbilisi – USSR (1977) and it was used as a basis for the education component of Agenda 21, the Global Framework for Action adopted by United Nations conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil (1992) which states that: “Education including formal education, public awareness and training should be recognised as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of people to address environmental and developmental issues.

While basic education provides the underpinning for any environmental and developmental education, the latter needs to be incorporated as an essential part of learning. Environmental education encompasses a variety of programmes such as environmental awareness using multimedia approaches such as in the media, the Internet and other networks. Participatory community programs, environmental content within the school curriculum and school based programs. Others are training for industry and small to medium businesses, Communication of traditional knowledge of the environment and, formal education qualifications in areas such as environmental science, social and development studies, civic education, geography, creative technology studies and so on.

2.1.5. Environmental Awareness

Environmental awareness is to understand the fragility of our environment and the importance of its protection. Environmental awareness skills are potentially precursors to changes in behavior, attitudes and policy pressure necessary to secure changes in investment and regulation. Environmental awareness would lead to a greener economy and demands for ‘green’ skills on production and distribution. Environmental awareness is an integral part of the movement’s success in mitigating environmental issues arising from unsustainable utilisation of resources from the environment. By teaching our youths and communities at large that, physical environment is fragile and indispensable we can begin fixing the problems that threaten wellbeing of biosphere. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making (UNICED Agenda 21, Chapter 36).
However, the importance of environmental awareness cannot be over-emphasized. We must understand the fact that improving the environment is to improve the quality of life. It is not the question of air, water and land pollution. It includes elimination of disease, hunger, malnutrition and poverty, destruction of forests, extermination of wildlife, erosion of soil and accumulation of solid wastes. Hence there is an urgent need for proper management of the environment. Panneerselvam and Ramakrishnan, (2005) cited Kenya as an example where children are encouraged to nurture and appreciate the environment, through a programme of planting a tree for every child on birthdays. Hence, similar programmes are needed to be put in place to foster environmental awareness in schools.

GRZ (1997) mentioned some Public Institutions that were involved in promoting public awareness on conservation includes ministry of tourism, ministry of land and natural resources, ZEMA, Species Protection Commission (SPC), and government departments. Activities include formal environmental education in schools, workshops, and communication through public announcement by ZANIS, electronic and print media. There is need for promotion and encouragement of understanding importance of environmental protection and the measures required for the conservation of environment.

Measuring the level of environmental awareness in a given population can be very difficult. However, direct exposure to the natural environment or a particular place is a strong factor in determining concern for that environment or place. The availability of opportunities to experience the natural environment can be measured as an indicator of the potential for increased environmental awareness. Similarly, environmental programs can help us reduce the impacts of human actions on the environment and it can also be measured as a proxy for changes in environmental awareness. It is for this reason that Dorcas (2002) stipulated that, environmental awareness should be influenced by opportunities for instruction or exposure to environmental knowledge. The availability of environmental education to teachers and pupils can be measured partly by the number of environmental programs offered, awareness campaigns or by the number of stakeholders taking part in environmental awareness activities.

2.2. Environmental Awareness at Global Level
With an increasing awareness of environmental problems, a number of environmental movements have developed. Concerned individuals and organisations have written books, held
meetings, and made recommendations for the perceived challenges. However, the beginning of Environmentalism can be traced as far back as 1962. This was the time when social values were being questioned. An early example of this was the Scientist Rachael Carson, whose book ‘Silent Springs’ (1962) criticised the manufacturing and use of agricultural pesticides for harming the countryside. This literature documents the effects of chemicals on the rural environment. The Silent Spring was the result of the songbirds dying because of pesticides. Her potent mix of scientific evidence and restrained emotion gave strength to the emerging green political lobby and date of its first publication is often cited as the birth of the modern environmental movement.

Education was first recognized as an important conservation strategy in the 1970s when the United Nations Educational, Scientific, and Cultural Organization (UNESCO) made global environmental education a high priority. According to the Belgrade Charter by UNESCO (1975), the goal of Environmental Education is to develop a world population that is aware of, and concerned about, the environment and its associated problems. Develop people with knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones.

In the 1977 Tbilisi Declaration that followed the United Nations called for programs to foster environmental awareness, provide opportunities and skills for environmental protection, and create new patterns of behavior (UNESCO, 1977). The Declaration’s primary objectives were as follows;

i. increasing awareness,
ii. building knowledge,
iii. changing attitudes,
iv. Encouraging participation in pro-environmental behaviors.

These remain important goals of environmental education efforts around the world. The 1990 National Environmental Education Act emphasized the need for environmental programs within the American educational system (EPA, 1990). Traditional reforms have since targeted science knowledge through in-class activities, but classroom instruction rarely induces students to change their attitudes and ideas about the environment (Mahadeva, 1989). A new educational approach that builds on social constructivist theory and uses the environment as an integrated context for learning has been found to be more beneficial to young learners (Castro, 2006).
Out-of-school experiences that supplement in-class curricula increase positive exposure to natural environment and help children assimilate new ideas into their existing base of knowledge. These out-of-school experiences also increase the capacity for affective development (Stone & Glascott, 1998). A hands-on learning approach raises interest and awareness of environmental issues for many students, and may have a significant effect on environmental attitudes (Lavonen, 2003). Therefore, a greater emphasis should be placed on both school and non-school activities that integrate ecological concepts into educational structures (Falk, 2001). Summer programs in Europe, for example, provide an ideal opportunity for environmental education in an interactive context. However, the extent to which these programs impact the environmental attitudes and behavior of young children remains largely unknown.

Thus, there is a strong need for research that assesses the effect of informal EE on children’s environmental attitudes, awareness, and behavior. This is especially true as national support for EE initiatives, manifested by legislative measures such as the proposed “No Child Left Inside” Act in USA, continues to grow (Braus, 1995). The EE programs that foster positive environmental attitudes likely will enhance the efficacy of future conservation efforts. A thorough understanding of the formation and evolution of environmental attitudes and awareness is necessary to devise an effective strategy for measuring and improving EE quality and for generating funding for future EE programs.

In 1972 Report for the club of Rome’s project on the predicament of mankind in Europe, International group of industrialists, Scientists, Researchers called the Club of Rome acknowledged the fact that environmental decline had a major impact on world opinion at the time. Its message being that infinite growth in a finite system was not possible. Criticisms of the report are that it was over-pessimistic and was based on crude computer models. Its current value lies in the identification of growth beyond ecological limits as the root cause of environmental problems. In 1972 United Nations recommended that UNESCO and UNEP establish an international programme in Environmental Education interdisciplinary and encompassing all levels of education.

According to UNEP (2010), the most important landmark for environmental education at an international level was without doubt the International Conference on Environmental Education
organized by UNESCO and UNEP at Tbilisi in Russia in 1977. From this conference the following aims of EE were defined:

i. creating environmental awareness

ii. impart general knowledge for a basic understanding of environment

iii. acquiring environmental friendly attitudes and values

iv. generate new patterns of behavior towards environment.

Furthermore, UNEP (1992) pinpointed that, the Tbilisi IEEP Conference brought together delegates from 66 UN member states and 20 international NGOs. The conference, like its predecessor in Belgrade, developed and endorsed the concept of education for the environment. The Tbilisi declaration listed 5 objectives and 12 principles of EE that are still widely quoted and applied today. In 1980, Publication of the World Conservation Strategy, Gland Switzerland, IUCN, UNEP and WWF describe the cornerstone of conservation policy as the maintenance of essential ecological processes and life support systems. This aimed at preserving biological diversity and the sustainable use of species and ecosystems. Although based on a narrow vision of ecology without acknowledgement of people, politics and economics, the document stresses interdependence of conservation and development and introduces concept of sustainable development.

In 1991, Caring for the earth, Gland, Switzerland, IUCN, UNEP and WWF broadened the concept of conservation as described by its predecessor (World Conservation Strategy) by acknowledging the role of economics, culture and tradition in practices affecting ecology. The United Nations Conference on Environment and Development in Rio de Janeiro, Brazil in 1992, popularly known as the Earth Summit, adopted an action plan for Sustainable Development, Agenda 21. Chapter 36 which is devoted to education states that “Education is critical for promoting sustainable development and improving the capacity of people to address environment and development issues” (UNEP 1992:34).

However, this study has recognised the fact that environmental education has become a global phenomenon and it requires all countries to play an active role in the implementation of EE in order to combat environmental threats. The study further embraced global aspects as guidelines for effective and adequate development of EE in the context of Zambia. These aspects could be
taken into consideration when developing and implementing any type of environmental awareness program in Zambia. It is very clear that global societies have acknowledged the importance of protecting the environment from depletion. Therefore, this study would embrace some fundamental strategies highlighted by relevant stakeholders at global level in addressing environmental issues at local level.

2.3 Environmental Awareness at Regional Level
At regional level, Environmental Education was organised through the Southern African Development Community Regional Environmental Education Programme (SADC REEP). This started as SADC Energy and Land Management Systems (ELMS). SADC REEP runs EE courses and production of EE materials. Overview of Environmental Education in the region was that, Environmental Education was already part of the education system in most of the countries in the region (Mandikonza, 2012). However, development of environmental education depends on the history of each country in terms of environmental problems, political situation, economic conditions and so on. For instance, in Mauritius, Ministry of Environment has embarked on a mass sensitization campaign aiming at creating awareness among the public at large on environmental issues. It also aimed at fostering a sense of personal environment responsibility, and greater motivation and commitment towards the protection of the environment. The campaign which started on 31 May 2002 covered the following major issues of which the public has little knowledge but which constitute national concerns: air pollution, waste management, noise pollution, global environmental issues, biodiversity preservation and water pollution problems (UNESCO, 2005).

Environmental education should not be confined to the narrow scope of school education rather it should reach a wider public in order to effectively address environmental issues. In other words, environmental education should be understood not only in the aspect of formal education, but also in that of non-formal and informal settings. It is “the process of helping people, through formal and non-formal or informal education, to acquire understanding, skills and values that will enable them to participate as active and informed citizens in the development of an ecologically sustainable and socially just society” (Dorcas, 2002:25). Therefore, this study made comparison analysis on how environmental awareness has been implemented in other countries. Thereafter, it has drawn some concepts from regional level and provided a mechanism on how
best these concepts could be incorporated in environmental awareness programmes at national level. Furthermore, these concepts provided a benchmark upon which countries could gauge their environmental awareness activities. For example, conscious of the importance of shaping attitudes towards the environment during the years of childhood, a number of projects could have been launched in schools. These projects include talks on the environment, distribution of educational booklets and posters, and copybooks with covers displaying "Do's and Don'ts" in the field of environment. With a view to sensitizing school children on the need to eliminate plastic, papers and any other forms of waste are distributed to all school children.

2.4 Environmental Awareness at National Level

At national level, development of environmental awareness has been organised through the following programmes; WWF, ZEP which started as The Zambia Environmental Education Project (ZEEP) in 1989 to address Zambia’s need for a comprehensive Environmental Education Programme. In order to integrate EE in school curriculum, the government through Ministry of Education implemented the following measures; Chalimbana (National In-Service Teachers’ College) was assigned to carry out some EE activities such as, production of EE materials, development and delivery of an In-Service Module 5 in EE to the Basic School Teachers who wish to up-grade their professional Qualification from Teachers’ Certificate to Basic School Teachers’ Diploma. Mufulira College of Education has been mandated to develop and deliver Pre-Service EE course component Module for the Basic School Colleges of Education in Zambia and development of Basic School Lesson Guides in EE. Livingstone Environmental Education Project was piloted. This project has been involved in the development of the School Environmental Policy (SEP) to be adopted by all schools. Serenje Environmental Education Project has been involved in greening of Basic Schools and planting of trees (GRZ, 1997).

Environmental Education has also become of great importance and emphasis in Zambia to an extent that a course of study to train people in Environmental Education has been introduced at the University of Zambia (SADC, 2005). Zambia Network of Environmental Educators and Practitioners (ZANEEP) have been established. This was launched on 14th December 2002 and its secretariat is found at Zambia Environmental Management Agency in Lusaka. It coordinates all the EE activities in Zambia and finally the establishment of Sefula EE Centre in Western province (GRZ, 1997).
With its aim of conservation for development, The National Conservation Strategy (NCS) was the first major Zambian environmental mainstreaming initiative adopted by Cabinet in 1985. It was one of the first national conservation strategies in the nation. This strategy translated the principles of the ground-breaking 1980 World Conservation Strategy, produced by UNEP, WWF and IUCN, into policy and plans relevant to Zambia. Prior to this, the concerns of environmental groups had not been elevated to issues of national development policy (GRZ, 1997). NCS helped to do this by promoting three ecological principles for development; sustainable use of natural resources, maintaining ecological processes and protecting biodiversity. It was the first initiative to promote many sustainable development concerns that are now common place, including climate change, the need for community participation in using the environment sustainably.

Further than that NEAP (1994) argued that, Zambia has a long tradition of formal environmental education, with its roots in nature study. Informal and indigenous education in villages was for many decades wrapped up with practical and applied knowledge of the environment. From 1970’s, Wildlife Clubs of Zambia were formative in asserting the importance of the environment as a national asset, in circumstances where many environmental traditions were beginning to be lost. Although they did not last many years, Wildlife Clubs were probably the first attempt to formalise a national conservation education programme in Zambia and other countries in the region.

The year 1972 was declared as a ‘conservation year’ in Zambia (and the year of the first United Nations Conference on the Human Environment in Stockholm) that Zambia’s environmental education movement was consolidated. In the landmark Chembe Declaration, the Wildlife Conservation Society of Zambia decided to find the resources and the partners to create a national conservation education programme. The Society sought the partnership of WWF and mining companies for sponsorship, and the Ministry of Education for scaling up already seeing the opportunity for influencing the formal education infrastructure, and making use of a large network of teachers (NEAP, 1994).

GRZ (1997) revealed that, the 1985 National Conservation Strategy set out the need to establish a comprehensive national environmental education programme. In response to this, WWF International initiated the Zambia Environmental Education Programme, to incorporate environmental education in the school curriculum, working closely with the Curriculum
Development Centre in training curriculum specialists and teachers as well as developing teaching materials. The Programme was far-sighted in promoting community environmental education, mobilising communities for the related (but institutionally separate) tasks of conservation and improving livelihoods. To build on these efforts, the 1994 NEAP provided funds for a programme on public information and environmental awareness under the Environmental Support Programme (NEAP, 1994).

In creating strong links between schools and communities, the school based nature of these programmes was critical. Schools serve as a permanent home base and a respected community institution. They provide not only physical facilities but also the human resources (teachers and club leaders) necessary for the initiatives to succeed. The support of school administrators is also critical for sustaining the programs and convincing local communities of their importance. The Chongololo Clubs, government funded groups organized in public and private schools play a very important role in raising environmental awareness (USAID, 1999). The Zambian Government recognises five environmental problems; water pollution and inadequate sanitation, solid waste disposal, soil degradation, air pollution in the Copperbelt towns, depletion of wildlife, deforestation which require adequate attention (Lubinda and Aongola, 2009).

GRZ, (1996) alluded that, various institutions involved in the management of biodiversity developed specific programmes to raise awareness. Efforts in increasing public awareness on the importance and benefits of biodiversity were directed at both the national and local levels. The Environmental Support Programme (ESP) and the Zambia Environmental Management Agency (ZEMA) for example sponsored a television series to educate the public on the value and importance of conserving the country’s biological resources. The National Agriculture Information Services (NAIS) provided extension information, which incorporated biodiversity conservation massages. Radio broadcasts were used by NGOs to promote awareness.

In addition to that, GRZ (1996) spotted out the Institutions that were involved in the awareness programmes that included, the Wildlife and Environmental Conservation Society of Zambia (WECSZ), the German Foundation for International Development (GFID), Pan African Institute for Development in Southern Africa (PAIDES), World Wide Fund for Nature (WWF), IUCN, and Environmental Conservation Association of Zambia (ECAZ) to promote public awareness in biological resource conservation. In addition, special focus was given to promote public
awareness on corruption in biodiversity utilisation by the Species Protection Department (SPD), of the Anti-Corruption Commission (ACC). Awareness activities undertaken ranged from the formal integration of environmental education into the school’s curriculum to tailored workshops and seminars. In addition, stakeholders communicated through the electronic and print media to raise awareness including the use of popular theatre (GRZ, 1996).

A critical area for awareness is the development of data and information base from which information can be passed on to the public with respect to the status of environment. Increasing public awareness on biodiversity and its values requires that those organizations tasked with collecting information especially information of a technical nature actually collect and disseminate the information. As part of data base development, the Environmental Support Programme, embarked on the development of priority sectoral databases for five pilot areas which would have formed the basis of the National Environmental Information Management System (GRZ, 2006).

Subject areas include forest resources information system in Chibombo district, fish, and wildlife information system in Kafue National Park, land degradation information system in Mpika and Siavonga districts, air pollution information system in Mufulira district and water and sanitation information system in Lusaka urban district. Information systems whose development was initiated included computerised data base at Zambia Environmental Management Agency, Forestry and Fisheries departments. Geographical information systems (GIS) were established at the Ministry of Agriculture Food and Fisheries (MAFF), Zambia Wildlife Authority (ZAWA) and University of Zambia (UNZA). In the Education sector, Teacher Resource Centers positioned in selected areas around the country provided information to teachers for use in lesson plans (GRZ, 2006).

2.5. The Current Status of Environmental Awareness in Zambian Schools
There was no institutional framework for promoting public awareness on environmental issues in Zambian schools. Instead, various corporate partners, NGOs and individual actors promote environmental awareness on an ad hoc manner. Environmental awareness was promoted through various methods. These methods include public meetings, use of audio visual aids, media, radio, TV, posters, drama and so on. Popular and effective campaigns were normally held during
World environment days’ celebrations such as the World Environment Day, World Water Day, and Tree planting Days only.

Currently, the actors are sensitised through mass participation in tree planting and clean up campaigns. For example, during Global Environmental Facility (GEF) Southern province minister Daniel Munkombwe acknowledge the fact that, very little financial support has been given to the environmental sector despite decision markers being warned time and again that this triggers poverty.

“It is unacceptable for that environmental pillar which hosts the natural capital for the entire world, remains the most ignored by those with the means to support it. While decision makers at various international forum have been told time and again that compromising the environment triggers more serious vices such as ozone depletion, land degradation, air and water pollution which are further linked into loss of biodiversity and other precursors of poverty, very little financial support has been committed to effectively address the global situation.” (The Post July, 2013).

The liberalisation of both print and electronic media has greatly opened numerous channels for environmental awareness campaigns and environmental information dissemination. There are now increasing number of articles and presentation on environmental issues in both print and electronic media respectively. There is also increasing number of websites being set up by different organisations and individuals to provide environmental information. Introduction of plural politics and good governance advocacy in the early 1990’s strengthened the NGOs and community based institutions in their effort to campaign against environmental destruction and create public awareness. NGOs have been on the front line in creating environmental awareness through diverse means. Most NGOs have newsletters, periodicals, brochures, magazines and other publications, which serve to stir up the conscience of the society in as far as environmental issues are concerned (GRZ, 1997). Nevertheless, information was not effectively reaching the general populace in rural areas where access to information was still a challenge. This has been evidenced by the enormous environmental challenges found in communities.

Lack of sustained effort to continually educate the public about the intricate relationship among the various environmental components was much needed to be desired. Actions of raising
awareness by the stakeholders have been erratic spurred by impending environmental catastrophes. Victimisation of prior environment groups that are seen as vocal in opposing projects where the government indicated interest but are ecologically destructive was still a common challenge in Zambia. This kind of sensationalism has not augured well with the need to create an environmentally aware citizenry. High levels of poverty which have made the poor masses to resign to fate and see environmental concerns as a reserve for the rich. Poor networking between the Ministry of Education Science, Vocation Training and Early Education and other stakeholders has negatively affected awareness campaigns on environmental mismanagement in schools. Majority of Zambians have not been sensitised on the importance of protecting and conserving the environment and majority of them have adopted an “I don’t care” attitude (Dorcas, 2002). Therefore, this study was necessary for it would ascertain the level of awareness in schools and the surrounding communities. This could be done by recognising prior knowledge of the respondents (pupils, teachers, head teachers and parents) about environmental management. After assessing this prior knowledge, then necessary interventions could be taken to improve actors’ knowledge, skills and values for good management of environmental.

2.6 Environmental Awareness and its Relevance
Environmental awareness is one of the most effective tools in responding to environmental crisis at local, region and global level. Environmental issues and concerns are increasing rapidly at all levels of the society. UNESCO (1980) explains that Environmental awareness should not respond to a momentary concern but should be an essential component of the effort taken by individual countries to give greater social effectiveness to education and to make it a factor in national development. The report further urges countries that, this effort can only be attained fully if the means required to developing Environmental awareness are explicitly provided for in educational policies and general planning. This meant that Environmental awareness could no longer be limited to certain groups, institutions or programmes, but rather become an essential and permanent component of educational process. UNESCO (1980) acknowledges the role of the media in creating public awareness of environmental problems but on the contrary states that this type of information has its limitations.

Most of the researchers are subscribes to the position by UNESCO that Environmental awareness being an essential issue and an answer to our environmental problems, does not just
need mere awareness by the people but a full participation of every individual. Mere awareness of the people may not give them chance to ask questions and further clarification on environmental matters that they may not understand. Hence, Zambia needs an organized system through which the values of Environmental awareness are imparted in people and allow them to seek clarification to enable them adopt a new approach and acquire new knowledge (UNESCO, 1980).

2.7 Aim of Environmental Education in Schools

Environmental awareness programmes are cross cutting activities with significance impact on the wellbeing of our environment. Hence, implementation of these activities in the curriculum should be supported by all well meaning partners. A curriculum is a formal and informal content of learning and a process by which learners gain knowledge and understanding, develop skills and alter attitudes, appreciation and values under the auspices of an educational institution (Green, 1998). Curriculum is considered to contain the structures and processes of teaching and learning which the school provides in accordance with its educational objectives and values (MoE, 1996).

It has also been described as; what is taught, how it is taught, teachers' materials, students' materials, learning materials, educational experiences and all people's experiences combined into a rational as a whole (Doll, 1989). According to the first intergovernmental conference on EE, the following were the ultimate goals of EE as outlined in UNESCO (1980):

i. To enable human beings to understand the complex nature of the environment being as it results from interactions among the biological, physical, social, economic and cultural aspects;

ii. To contribute to an appreciation of the importance of the environment in economic, social and cultural development and

iii. To provide a clear awareness of the economic, political and ecological interdependence of the modern world

GRZ (2001) also highlights objectives of Environmental Education and emphasises that
these focus on five aspects namely; awareness, knowledge, attitudes, skills and participation. Below is a brief description of each of these five aspects according to UNESCO in GRZ (2001: 43, 44):

i. **awareness**: To help social groups and individuals acquire an awareness and sensitivity to the total environmental and associated problems;

ii. **attitudes**: To help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection;

iii. **knowledge**: To help social groups and individuals gain wide experience and acquire a basic understanding of the environment and associated problems;

iv. **skills**: To help social groups and individuals acquire the skills for identifying and solving environmental problems and

v. **participation**: To provide social groups and individuals with an opportunity to be actively involved at all levels in working towards resolution of environmental problems;

Once the above objectives are fully implemented in schools, Environmental education could:

Adequately address the current environmental issues. Both teachers and Pupils would be enlightened and become aware of environmental challenges and that awareness would lead to change in their attitude and behaviour towards the environment. If the above objectives were successively achieved teachers and pupils could acquired Knowledge, values, attitudes and skills which would help them to begin caring environment. The acquired values, attitude, skills and knowledge would be demonstrated through positive actions which would aim at protecting the environment and solve existing problems.

Therefore, this study has acknowledged the importance of environmental education aims in promoting awareness as the key in management of environment in schools and communities at large. Hence, actors and relevant stakeholders could embrace the objectives for environmental education in all awareness programmes that would facilitate the attainment of desired attitudes, values and knowledge for better management of the environment. This study further acknowledged the fact that any type of awareness should be directed by the aim in order to realize positive behavior among actors for environmental friendly actions.
2.8 Implementation of Environmental Awareness Activities from School Curriculum

The process of implementation of EE from already existing study areas had completely failed to change peoples’ attitude towards environment. This was evident by enormous environmental challenges prevailed in all schools at the time of study. UNESCO (1980) observed that there was no universal model for implementing EA from the curriculum. Each country, based on its specific conditions, ultimate aims, educational and socio-economic structure, can lay down the approaches, procedures and progressive stages of integration. One can, therefore, state that lack of a universal model could have been a serious challenge in a number of countries in trying to implement Environmental awareness programmes in schools.

A universal model can be drawn and be used as a guide in countries with different socio-economic factors. What was required was for each country to establish the goals of Environmental Education so as to create suitable strategies to meet the needs for a particular country. Strategies for the implementation of Environmental awareness in formal education should take into account the various components of the educational process, that is to say the objectives, content and methods, teaching materials, training of personnel, research and evaluative activities (UNESCO, 1980).

The statement above emphasizes, among other things, the need for teaching materials and qualified personnel. Teaching materials are very cardinal in the implementation of any education curriculum. Countries have to secure teaching resources for Environmental Education if its implementation is to be a success. Another key issue in implementing EE from curriculum is the need for coordination among different stakeholders. This position arrived at was in view of the statement found in UNESCO (1980: 38) which says:

...if the various measures relating to Environmental Awareness are to be better interconnected and more effective, machinery for coordination between the institutions involved in the framing and implementation of environmental policies, in which education can and does play an important part, must be established or strengthened.

Therefore, successful implementation of EE from the curriculum has greatly improved environmental management in most of the countries. Thus this study has acknowledged the importance of effective implementation of EE in learning institutions and other relevant sectors
of the society. This would enable people to appreciate significance of EE in sustaining the environment and mitigate the impending environmental mismanagement in Zambia. The study further placed emphasis on the provision of effective sensitisation programmes in order to improve awareness among actors. This would help people to acquire relevant knowledge, attitudes and skills for better management of environment.

2.9 Challenges Faced by Sub-Saharan Nations in Promoting Environmental Awareness in Schools.

Environmental awareness is one way of responding to the environmental crisis at national, region and global level. As a result of this, a number of countries have conducted a number of studies related to the level of EA in responding to the environmental crisis faced by each country. The following is a discussion on some studies conducted in some countries on implementation of EA in different educational sectors and also challenges faced in trying to do so. According to Filho and OLoan (1996) in a study conducted in Scotland, it was noted that the failure to recognize the crucial role of teacher education in the process of developing a sound environmental action was a barrier for the limited success of EA in that country. This implies that EA should be covered during the time of teacher education if its implementation is to be successful in schools.

In addition, Wilke (1985) also argues that teachers are a key to successful implementation of EA in learning institutions both inside and outside the classroom. If teachers do not have the knowledge, skills, or commitment to execute environmental contents in the curriculum, it is unlikely that pupils would develop with sense of humour for environment. Harde (1982) also noted that lack of clarity or understanding by many people of what EE is and how it should be promoted is also a challenge in promoting Environmental Awareness even in teacher pre-service programmes. Filho and Loan (1996) further explain that a number of teachers cannot differentiate between Environmental awareness and environmental information. This was evident in previous research whereby most teachers, head teachers and pupils were failing to distinguish EA from environmental information. For example, environmental sensitisation activities by relevant stakeholders in the district were perceived to be environmental education.

Taylor (1988) further acknowledged that, it was not possible to expect teachers without the
expertise to teach EE and successfully transmit environmental ideas to students. Ballantyne (1995) identifies four major barriers to the implementation of Environmental Education and these were;

i. competition for time in an already full curriculum;
ii. problems with management of cross-disciplinary approaches or infusion;
iii. a shortage of qualified and experienced environmental teacher educators and
iv. few opportunities for students to undertake Environmental Education teaching and observe good environmental education practice during their professional teacher experience in the schools.

On the other hand, Scott (1996) argues that the four factors listed by Ballantyne were not the only ones; neither were the major limiting factors. He suggests five limits namely:

i. the organization of initial teacher education within the particular country,
ii. the practice in terms of working with students and schools,
iii. the interpretation of Environmental Education found within courses,
iv. the readiness and ability to incorporate Environmental Education into courses,
v. the opportunity to deliver Environmental Education goals through pre – service courses.

Another similar study was conducted in Botswana by Ketlooilwe (2007) who looked at the challenges of implementing the Environmental Education Policy (EEP) in Botswanan Schools. In his study he examined the teachers’ responses to the introduction of Environmental Education into the Botswana National Education System (BNES) through the revised National Policy on Education (NPE). The analysis presented in the report showed the general perception by the teachers and the interpretation of EE in Botswanan schools and further explained the attitude of teachers towards the introduction of new policies, in this case, introduction of EE in schools. According to Ketlooilwe (2007:28), trying to implement Environmental Education into the BNES, faced barriers such as; “equating Environmental Education with environmental management activities in schools, expressing frustration over lack of resources in schools to undertake field trips and equating Environmental Education with environmental science.”
The researcher went on to explain that a number of teachers indicated that they had never been involved in any Environmental Education in – service training. This is similar to what Filho and Loan (1996) established in their study in Scotland). Some teachers in the research indicated that they had never undergone training in Environmental Education at any level during their training. Teachers however, confirmed that they were not even aware that EE was integrated in existing curriculum and they never attended any form of training, orientation or induction on Environmental Education.

2.10 MESVTEE and environmental awareness in schools

Environmental crisis is a global phenomenon which has affected every country including Zambia. Therefore, countries around the global are taking measurers on how to mitigate the increasing crisis and education has been acknowledged to be the key to these challenges. Hence the MESVTEE acknowledges the fact that EE has many important features which justify its placement in the curriculum (GRZ, 2001). GRZ (2001) it further acknowledges that Environmental Education needs to be taught as a cross cutting issue at all levels. Its focus (Environmental Education) should not only provide basic facts, bring about a positive change in the pupils” attitude and behavior in the way they regard their environment but to develop a holistic understanding of the environment. Among the goals of the education system stated in The National Policy on Education is “to produce a learner who can participate in preserving the ecosystem in one’s immediate and distant environment” (GRZ, 1996: 5). This statement clearly means that Environmental Education is supposed to be a whole – school commitment and concern.

The aspect of changing attitude and behaviour is very cardinal in the success of Environmental Education. This should however, begin with the teachers and all Environmental Education educators to lead by examples. The MESVTEE also acknowledges that Environmental Education is a cross cutting issue and should therefore be taught across the curriculum, for example, in Social Development Studies, English and Environmental Science. Therefore, EE was to be integrated in all subjects (GRZ, 2001). GRZ (2001) points out that school plays an important role in the teaching of Environmental Education across the curriculum. It is the role of the school to encourage the learners to put into practice what they learn and ensure that environmental protection is part of their long life process.
2.11 Environmental Awareness in Zambian Schools

Environmental awareness is not well understood by teachers and pupils in schools. This is because teaching of EE is not well structured and coordinated. Most of the teachers revealed that they have never trained or attended any workshops in EE and they find it difficult to implement environmental awareness programmes to the expected standards. Although they acknowledged the integration of EE topics in some study areas such as Social and Development Studies (SDS), integrated science, environmental science and so on, they do not pay serious attention to these contents but they are just taught like any other topics in the curriculum. Mweembe (2008) simply established that school administrators and teachers did not acknowledge that EE was there in the existing study areas.

2.12 Summary

In summary, literature reviewed for this study has provided a glimpse of how scholars internationally and locally have tried to understand people’s environmental knowledge in the different countries. This literature give us an idea that different scholars approach people’s knowledge and conceptions about the environmental management in different ways. Much of the literature reviewed focuses on studies conducted in developed and underdeveloped nations. The literature is helpful however, in the sense that it also provides an understanding of how environmental awareness has been addressed and reflects on how different people interpret environmental problems. Almost all researchers and scholars reviewed attach people’s environmental knowledge to sources of environmental awareness such as the home, school, direct observations, personal experience and media. Nevertheless, the literature has not clearly indicated the significant level of environmental awareness in schools. Besides, the literature has not provided mechanisms through which awareness could be effectively realized and influence positive behaviour. Therefore, this study has filled up this vacuum by determining type of awareness, establish environmental sensitisation activities and explore actions that could be undertaken.
CHAPTER THREE

DESCRIPTION OF THE STUDY AREA

3.1 Description of the Study Area

Nchelenge is one of the eleven districts of Luapula province in Zambia. It is located north of Luapula province and is 265 km away from Mansa, the provincial capital. The district has a total surface area of 4.793 square kilometers (60% land, 30% water and 10% swamps). The district shares its borders with Democratic Republic of Congo (DRC) in the west, Chienge district in the north, Kaputa district in the north – east and Kawamba and Mwansabombwe districts in the south – east. Lake Mweru marks the boundary between Nchelenge and Democratic Republic of Congo with four Islands, namely Kilwa, Chisenga, Isokwe and Kanakashi. The name Nchelenge is contiguous with Kashikishi, and is sometimes referred to as Nchelenge – Kashikishi. Nchelenge is the administrative centre for the district, being the seat of the district government and branches of national agencies, while Kashikishi is the market and fisheries centre. Climatically, the district experiences two seasons namely, the dry season (April – October) and a rainy season (November – March). The geographical nature of the district has greatly influenced the distribution of the population.

Most of the people are settled along the Luapula River and the shores of Lake Mweru (in pursuit of fishing). The district has a population growth rate of 3.2 per year and an average population of 119,841. As of 2010 Zambian Census, the district had a population of 152,807 people (SCO 2012). The inhabitants of Nchelenge are mainly depending on fishing for livelihood. However, with the depleting fish stocks, there has been a shift to peasant farming in the past few years, to meet people’s basic economic needs. Fish trading, timber business and goods retail trading are the main economic activities carried out by most people who account for 80 percent of the workforce. The remaining 20 percent is formally employed workers mostly in the government departments and a few with non – governmental organizations. The transport sector in the district has also increased in both small and large fleets. Traffic is relatively intensive, with regular bus services, traders plying lorries from the Copperbelt to Nchelenge to buy fish. Fish taken to the Copperbelt market is transported along the valley road via Mansa and across the “pedicle” at Chembe through DRC.
In 2001 a large motorised barge was launched to carry trucks laden with concentrated copper ore from the Dikulushi Mine in DR Congo across Lake Mweru to Nchelenge, and trucks to carry copper from Dikulushi Mine in DRC and fuel tankers delivering fuel to the mine through Nchelenge harbour. Currently, the mining firm is assembling another large motorized barge which will be carrying copper ore from the newly opened mine in Mpweto in DRC. Once the other motorized barge begins to operate, it will result into more environmental degradation. The harbour is constructed within the residential area and there were no Environmental Impact Assessment (EIA) carried out to determine impact of this harbour both to the people and the environment. Banking services are offered by the National Savings Bank and the Zambia National Commercial Bank; the latter operating as a mobile bank twice weekly from Kawambwa district located about 90 kilometers from Nchelenge district.

The principal highway of the Luapula Province ends its tarred surface at St Paul’s Mission Hospital in Nchelenge, providing good communication southwards to Mansa and the Great North Road at Serenje. Northwards a gravel road continues to Chiengi and Zambia’s border with DR Congo. Being the ending point for tarmac road and fishing trade activity, the district has experienced an influx of people from urban areas, Democratic Republic of Congo and Tanzania for trade and others have ended up settling in the district. This has resulted into development of unplanned settlements which has relatively impacted negatively on the environment and other social vices such as HIV and AIDS and crime. For instance, most of the settlements have no proper water and sanitation supply, poor drainage, no access roads and so on. This has resulted into poor garbage disposal, land degradation, deforestation, and water and air pollution. Naturally, the area has miombo type of vegetation with perennial streams and marshlands, but these ecosystems are severely under threat due to unsustainable exploitation by the growing population.

Generally, the natural environment nearby the settlements is extensively depleted and can no longer support the growing of indigenous crops and other biodiversity to sustain people’s food demand. Similarly, the fish stocks are severely depleted and the price of fish is becoming more expensive than even in Lusaka. The depletion of fish stocks in Lake Mweru is as a result of using unsustainable methods of fishing by local fishermen. The depletion of resources demonstrates lack of environmental awareness programmes among the local people. Therefore, residents are
covering long distances away from their settlements for them to find virgin land that can effectively support the growth of crops such as cassava, maize, millet, sorghum and so on. However, there are serious environmental challenges in Nchelenge district that need to be addressed and this can be ascertained by establishing the levels of environmental awareness local people have.

3.2 Reasons for Choosing Nchelenge District as a Study Area

As earlier mentioned in chapter one, Nchelenge district is one of the most hit by environmental issues in the province. There was numerous numbers of environmental challenges arising from mining activities, over exploitation of natural resources from the environment, poor management of waste by local people and so on. These trends have resulted into unprecedented environmental threats that are detrimental to the well being of both flora and fauna in the area. Therefore, it was deemed inevitable to conduct a study in order to ascertain whether the perceived environmental mismanagement were as a result of lack of awareness amongst respondents in the district.

Figure 1 Copper ore and Silver from Anvil Mining in Nchelenge at the Port

Source: Field data (2014)
CHAPTER FOUR

RESEARCH METHODOLOGY

3.0 Introduction
This chapter presents the research methodology used to collect the data. It starts by explaining the main research design used in this study and reasons for adopting it. Therefore, particular emphasis is placed on population, sample and sampling method. It also shows the process of primary and secondary data collection used just before the subsection that shows the method of data analysis as well as ethical considerations. Accordingly, the next section explains the research design and approaches used.

3.3 Research Design
McMurray (1990) states that research design is a set of instructions to the researcher to gather and analyze data in such a way as to control whom and what to study. Ghosh (1992) defines a research design as a plan that is not highly specific to be followed without deviation, but rather a series of guide posts to keep one headed in the right direction. Kombo (2006) describes research design as an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose. Therefore, a research design is a framework in the whole process aimed at guiding the researcher in the direction of research.

This study employed descriptive exploratory research design in order to facilitate precise interpretation of on – the – ground responses from various respondents premised on their different educational levels. This is the method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Kombo 2006). It is more than just collection of data, it involve measurement, classification, analysis, comparison and interpretation of data. It is more applicable when collecting information about people’s attitudes, opinions, habits or any of the variety of education or social issues. This research combined both qualitative and quantitative data. The qualitative data had been used to interpretive orientation that focuses on the complex and maintenance of meaning derived from the study. While quantitative data was used to facilitate numerical analysis and interpretation in a more precise manner. These data assisted the researcher to describe and understand the environmental awareness level by the intended target group on environment. They also provided a clear picture of the phenomena to
the researcher into how the District Education Board Secretary (DEBS), Head teachers, teachers, pupils, and the community respond to the prevailing environmental conditions.

3.3.1 Target Population
While the preceding section explained the research design used, this section shows the target population which composed of District Education Board Secretary (DEBS), head teachers, teachers, pupils and parents from selected schools in Nchelenge district. Sidhu (2003) states that a target population is an aggregate or totality of objects or individuals regarding which inferences during the study are made. It can also be referred to as an entire group of persons or elements that have at least one thing in common. Thus target population was sampled from the following schools; Kefulwa, Mulanga, Kabuta, Ntoto, Chandwe, Mutono, Nchelenge secondary, Isokwe, Mukumbwa and Shanyemba.

3.3.2 Sampling Design
This research used a combination of non-probability and probability sampling design which included purposive, stratified and simple random sampling techniques. The reasons for using purposive, stratified and simple random sampling approaches were as follows:-

i. Simple random sampling allowed a situation whereby every member of the generated population per selected subcomponent of a population (school) within a district had equal chance of being selected. This was used to choose teachers and pupils to be interviewed.

ii. Purposive sampling targets a group of people believed to be reliable for the study (extreme case sampling). This was used to sample head teachers, parents and district education board secretary (DEBS).

iii. Stratified sampling was used to sample schools from two different categories (islands and main land, primary and secondary).

3.3.3 Research Instruments
Data collection is a systematic way of drawing information about objects of the target population who are represented by a sample (Ghosh, 1992). In this study data collection was conducted by means of observation, use of both structured and semi – structured interviews. The reason for employing a variety of data collecting methods was to triangulate information collected. These methods are discussed here below starting with the literature study.
The study used both primary and secondary data. Primary data sources included:

i. Questionnaire: - This instrument was used due to the fact that most of the target population is able to read and understand the questions. The information collected using this method included types of environmental awareness programmes, establish type of sensitisation on environmental awareness and actions to be taken among pupils, teachers, head teachers, parents and the DEBS.

ii. Observation checklist: - This was used to compare the responses from the respondents and what was prevailing at the institutions. This was to prove if the responses from the respondents were in conformity with the conditions on the ground. This was inevitable because at times the response from respondents may appear to be very positive but contrary to what is on the ground.

iii. Semi-structured interviews: - were conducted to the DEBS, head teachers and parents in order to get in-depth information.

### 3.4 Processing of Secondary Data Collection

In this research, some secondary data were obtained from documentary sources, reports, print and electronic media and some dissertation, books, among others from the University of Zambia library, curriculum development centre (CDC) libraries and other sources. The process involved reading, reviewing, critiquing where necessary and comparing of different findings already done by different scholars in the context of environmental education. The internet was also used to obtain information from organisations that have websites such as Environmental Council of Zambia (ECZ).

### 3.4.1 Tools and Process of Primary Data Collection

To achieve the aim and objective of this study the researcher mainly used semi – structured interview schedule, questionnaire and checklist shown in appendices section to investigate the type of awareness and type of sensitisation concerning the environment and actions to mitigate environmental issues arising from mismanagement among selected schools of Nchelenge district in Luapula province. Semi-structured interviews explores participants’ knowledge of environmental awareness in the context of meaning, types of environmental awareness, types of sensitisation programmes concerning the environment and the most appropriate actions taken in order to mitigate environmental problems. During this process, the respondents were allowed to
express themselves as widely as possible on one theme of research, before proceeding to the other. As the respondents expressed their views, the researcher was alert to capture subtle, meaningful cues and phrases in respondents’ expressions and articulations of issues of environmental awareness. As respondents did a lot of talking, the researcher did a lot of listening, note taking, simple unstructured observations and some follow-up questions where necessary.

Researcher’s views about environmental awareness did not feature in any way during interviews. Thus, it was possible to take note of important words and phrases of the respondents as uttered without any personal twisting. Suspension of researcher’s academic notion of environmental awareness enabled the gaining of understanding of the typical knowledge and understanding of environmental awareness that the respondents had. Each respondent was interviewed for about thirty to sixty (30 to 60) minutes.

The use of semi-structured interview schedule facilitated follow – up questions to obtain deeper insight on certain issues that were raised by the respondents during direct interviews. Moreover, semi – structured interview schedule offered sufficient flexibility to approach different respondents differently while still covering the same areas of data collection. The researcher also used simple observations of respondents` non verbal cues during interviews and surroundings so as to confirm whether some of the issues they claimed to have been happening were existent or not. Being a face-to-face interview, discussion was also automatically incorporated and note taking was used to record respondents’ words and phrases related to research.

3.5 Analysis and Processing of Collected Primary Data
Constant comparative method was used to analyse primary data. This involved classification of words and phrases that related to the same content into major themes. This idea was to allow the actual prevailing pattern, themes and phases of the research findings to emerge from the data rather than be controlled by factors predetermined prior to their collection and analysis. After the summary of the findings from the interview questions and questionnaires, main emerging themes and ideas were manually and electronically coded, synthesized and quantified into percentages and presented in form of tables of frequencies and percentages as shown in chapter four. After obtaining the final overall portraits of the crude data from different schools, the data were qualitatively interpreted and discussed in chapter five. Therefore the conclusions were drawn.
3.6 Ethical Considerations during Primary Data Collection

The following were the ethical considerations during primary data collection on environmental awareness among selected Zambian schools of Nchelenge district in Luapula province:-

Since the study was conducted in schools, it was important to seek permission from relevant stakeholders before the commencement of research. The first office to ask permission from was the Provincial Education Officer (PEO) on 1\textsuperscript{st} November 2013, who later gave me an introductory letter to take to the District Education Board Secretary (DEBS) for Nchelenge district. On 4\textsuperscript{th} November 2013 I met the DEBS and sought permission to conduct research in selected schools. Thereafter, the DEBS introduced me to the Head teachers in sampled schools by signing informed letter of consent. Moreover, head teacher informed the parents through Parent Teachers Association (PTA) representatives in order for them to be aware of the study. In all these bureaucratic stages, a written document was provided to the concerned officers for endorsement. Every respondent had to sign a letter of consent before he or she was interviewed. This means that all respondents who participated in this study were not forced but rather participated at their own free will. The whole research took four weeks starting from 5\textsuperscript{th} November 2013 to 5\textsuperscript{th} December 2013.

3.7 Sample Size and Sampling Processes

This is defined as a piece or segment which is a representative of the whole. These include; primary schools (09) and secondary schools (01). Therefore, 10 schools were sampled out of 74 schools. This gave 13.5% representation of schools selected in Nchelenge district. The compositions of respondents were as follows; Head teachers, pupils (02), teachers (02) and a Parent were interviewed from each school and The District Education Board Secretary. Therefore, the total number of respondents was 61. The representation of targeted schools is shown in figure 2.
Head teachers, being the overseers of all the programmes in schools, were interviewed to get their views on environmental awareness. All ten (10) head teachers were interviewed. Teachers, who were implementers of environmental programmes, could not be left out in this study. Hence, a total of 20 teachers were interviewed by filling the questionnaire. The District Education Board Secretary was also interviewed as he was the general overseer of all education programmes in the district. Twenty (20) Pupils were interviewed by filling the questionnaire. Ten (10) Parents from the communities were also interviewed to ascertain the level of awareness and how they corporate with school authorities in implementing EE activities. The composition of the study sample is summarised in table 1 below.

**Table 1: Composition of the Study Sample**

<table>
<thead>
<tr>
<th>POSITION OF RESPONDENTS</th>
<th>TOTAL NUMBER OF RESPONDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Education Board Secretary</td>
<td>1</td>
</tr>
<tr>
<td>Head teachers</td>
<td>10</td>
</tr>
<tr>
<td>Teachers</td>
<td>20</td>
</tr>
<tr>
<td>Pupils</td>
<td>20</td>
</tr>
<tr>
<td>Parents</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
</tr>
</tbody>
</table>

The information in Table 1 shows that the following were interviewed: one Education Board Secretary (DEBS) was interviewed. All head teachers from the sampled schools were interviewed, twenty teachers were interviewed, twenty pupils were also interviewed and ten parents from the surrounding communities were interviewed. Figure 3 shows the distribution of respondents by percentage.
According to Figure 3, teachers and pupils represented the highest number of respondents (40). This was followed by head teachers and parents with a representation of (20). The lowest number was that of District Education Board Secretary with (1) representation. The next figure 4 shows the composition of the study sample by gender.

There were five categories of respondents and these were DEBS, school head teachers, teachers, pupils and parents. Figure 5 shows the distribution of respondents by category and gender. This was important in order to ascertain whether the level of awareness among respondents was either positively or negatively influenced by gender within categories.

**3.8 Sampling Procedure**
Sampling is the process of selecting a sample or small proportion that is representative of the population for observation and analysis (Sidhu, 2003). Sampling procedures may refer to the part of the research plan which shows how cases were selected for the purpose of being interviewed.
In this research simple random sampling techniques was used to select schools after classifying them according to categories such as island, main land, primary and secondary. This was to ensure that every school in each category had a chance to be picked and included in the study. Table 2 shows the sampled schools in the district.

**Table 2: Sampled Schools by Location and status.**

<table>
<thead>
<tr>
<th>S/N</th>
<th>NAME OF THE SCHOOL</th>
<th>STATUS</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Nchelenge Secondary</td>
<td>Senior secondary school</td>
<td>Within the CBD</td>
</tr>
<tr>
<td>02</td>
<td>Mulanga Primary</td>
<td>Primary school</td>
<td>36 km north of CBD</td>
</tr>
<tr>
<td>03</td>
<td>Mukumbwa Primary</td>
<td>Primary school</td>
<td>5 km south of CBD</td>
</tr>
<tr>
<td>04</td>
<td>Ntoto Primary</td>
<td>Primary school</td>
<td>10 km north of CDB</td>
</tr>
<tr>
<td>05</td>
<td>Isokwe Primary</td>
<td>Primary school</td>
<td>At the island</td>
</tr>
<tr>
<td>06</td>
<td>Kefulwa Primary</td>
<td>Primary school</td>
<td>40 km north of CBD</td>
</tr>
<tr>
<td>07</td>
<td>Mutono Junior secondary</td>
<td>Junior secondary</td>
<td>4 km northeast of CBD</td>
</tr>
<tr>
<td>08</td>
<td>Chandwe Primary</td>
<td>Primary school</td>
<td>3 km north of CBD</td>
</tr>
<tr>
<td>09</td>
<td>Shanyemba Primary</td>
<td>Primary school</td>
<td>23 km south of CBD</td>
</tr>
<tr>
<td>10</td>
<td>Kabuta Primary</td>
<td>Primary school</td>
<td>21 km north of CBD</td>
</tr>
</tbody>
</table>

*Source: Field data (2014)*

### 3.8.1 Sampling of Teachers and Pupils

Selection of teachers and pupils was done with the help of school administrators who provided the staff lists and class registers then names of respondents were selected by using simple random sampling method. At each school teachers were assigned numbers and written on separate pieces of paper, folded and put in a box. The researcher carefully shook the box and randomly picked 2 pieces of papers from the box one at a time. Whatever number was found on the paper represented the respondent to be interviewed at that station. The same method also applied to the pupils. This method was used to provide equal chances for all the teachers and pupils to be sampled. A total of 20 teachers and 20 pupils in different grade levels were sampled. The distribution of the sampled teachers and pupils by gender and age as shown in Table 3 was important to this study. This was important in order to ascertain the variations among age group concerning knowledge levels about environmental issues so that interventions are applied appropriately.
### Table 3: Composition of Teacher and Pupil Respondents by Gender and Age.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Teachers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26-36</td>
<td>37-47</td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Pupils</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-16</td>
<td>17 and above</td>
</tr>
<tr>
<td>Male</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The distribution of teachers in Table 3 shows that (75%) representation of teacher respondents were male of which 11 aged between 26-36 years and 4 aged between 37-47 years, while (25 %) representation of the teacher respondents were female and all of them aged between 26-36 years. For the pupils, 55% with 9 between the age of 11-16 years and 2 aged 17 and above years were boys. While 45% with 9 between the age of 11-16 years and 2 with 17 years and above were girls. This was important in order to ascertain whether level of awareness among respondents could have been associated with age and gender.

#### 1.10 Validity and reliability

According to McMillan and Schumacher (2006), validity refers to the degree of congruence between the explanations of the phenomena and the realities of the world. Validity of qualitative design, therefore, refers to the degree to which the interpretations have mutual meanings for the participants and the researcher. These people should agree on the description and interpretation of the events being discussed. In this study the researcher used three appropriate methods to ensure triangulation which adds to the validity of scientific research (White 2003). Since the study was mainly descriptive, the researcher employed semi-structured interviews, questionnaire and observation checklist.

According to Muzumara (1998), reliability refers to the consistency between independent measurements of the same phenomenon. The same methods used by different researchers at different times under similar conditions should yield same results. To ensure reliability, the researcher accurately described the various aspects of the respondents such as status and their roles, the concepts and the methods used. In addition, the researcher’s questionnaire and semi-
interview questions were all about Environmental awareness, and were based on the participants’ experience and practices in their communities. This study is considered trustworthy because the findings were based on a well-founded research design as well as relevant informants and questions asked to respondents were related to the research topic.

3.9 Summary
This chapter presented the research methodology used in this study. It included a brief description of the study area; it also covered the research design, target population, study sample, sampling procedures, research instruments, processes and analysis of both primary and secondary data.
CHAPTER FIVE

PRESENTATION OF RESEARCH FINDINGS

4.0 Introduction
This chapter presents the findings of the study on environmental awareness among selected Zambian schools of Nchelenge district in Luapula province. The findings on types of awareness are presented first, followed by types of sensitization. Findings for actions that could have been taken are presented last. The chapter also includes comparisons of the findings from the pupils, teachers, head teachers, parents and the DEBS. The location of the school from CBD will be considered to determine if it has an effect on the implementation of environmental awareness programmes in learning institutions.

4.1 Types of Environmental Awareness among Selected Schools of Nchelenge District.
The item on the interview schedule aimed at determining types of environmental awareness conducted in schools. The question sought to find out types of environmental awareness activities provided in institutions. This was important because of environmental mismanagement in schools and surrounding communities. Therefore, to address this variable, respondents were asked this question; what types of environmental awareness activities provided in school and surrounding communities? The responses were as follows; formal awareness activities are acquired through teaching and learning in classroom. Informal awareness activities are planned and organised environmental programmes provided by stakeholders, clubs and committees outside the school system. Non – formal awareness activities are unplanned and lifelong activities acquired through media, peer interaction and so on. Table 4 shows the responses.

Table 4: Type of Environmental Awareness among Selected Schools in Nchelenge District

<table>
<thead>
<tr>
<th>TYPES OF ENVIRONMENTAL AWARENESS</th>
<th>Details of respondents</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H/TR: 5 TR: 10 PPL: 10</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Formal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal</td>
<td>3 5 5</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Non-formal</td>
<td>2 5 5</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>10 20 20</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field data (2014)
Findings from table 8 show that the highest number of respondents (50%) Head teachers, teachers and pupils indicated formal type of environmental awareness activities, while the average number of respondents (26%) indicated informal types of environmental awareness activities and the lowest number of respondents (24%) indicated non – formal types of environmental awareness activities.

### 4.1.1 Examples of Formal, Informal and Non-formal Types of Environmental Awareness

Furthermore, another item on the interview schedule aimed at finding out examples of the three types of awareness. Respondents were asked to give examples of formal, informal and non-formal environmental awareness. This was important because it helped to explore the understanding of types of environmental awareness by key actors. Therefore, to address this variable, respondents were asked this question; what are the major sources of information on types of environmental awareness? Table 5 shows examples of types of environmental awareness.

#### Table 5: Examples of Formal, Informal and Non-formal Type of Awareness by Respondents

<table>
<thead>
<tr>
<th>EXAMPLES</th>
<th>Respondents</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teachers</td>
<td>Pupils</td>
<td>Parents</td>
</tr>
<tr>
<td>Inside and outside classroom activities (Formal)</td>
<td>8</td>
<td>7</td>
<td>_</td>
</tr>
<tr>
<td>Literatures (Informal)</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Radio and Television (Informal and Non-formal)</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Peer interaction (Informal)</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Others (Non-formal)</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>19</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

*Source: Field data (2014)*

The findings in table 9 show the highest number of respondents (30%) indicated teaching and learning from inside and outside classroom, the average (25%) of respondents indicated radio and television, while the lowest (15%) of respondents indicated peer interaction, literatures and others. However, respondents further indicated that some non-formal awareness activities were provided by collaborative stakeholders. These were provided through stakeholders’ programmes,
co-curricular and unprecedented programmes from the Ministry of Education Science Vocation Training and Early Education (MESVTEE) and cultural practices.

4.1.2 Provision of Types of Awareness among Selected Schools in Nchelenge District.

The other item on the interview schedule aimed at finding out the provider of these types of environmental awareness in schools as well as communities. The question sought to establish the providers who were facilitating these types of environmental awareness. This was important because it helped to ascertain the provider of these types of environmental awareness. Therefore, to address this variable, respondents were asked this question; who provides types of environmental awareness in schools? Table 6 shows the responses in details.

**Table 6: Provision of Environmental Awareness in Schools by Respondents**

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>Respondents</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H/Tr</td>
<td>Pupils</td>
<td>Pupils</td>
</tr>
<tr>
<td>Formal education system</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Non-governmental Organisation</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Government departments</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Media</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>16</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

*Source: Field data (2014)*

The findings in table 10 show that the highest number of respondents (50%) indicated formal education system as a major provider of environmental awareness programmes. While the average (25%) of respondents indicated Non-governmental Organisation (NGO) and the lowest (5%) indicated media as provider of different types of environmental awareness.

4.1.3 Cultural Practices as another Non – formal Environmental Awareness.

The fourth item on the interview schedule was aimed at finding out if environmental cultural practices were practiced both in schools as well as communities. The question sought to find out whether there were some environmental cultural practices bordered on environmental management. This was important because it helped to answer objective number one which aimed at determining types of environmental awareness among key actors of selected schools.
Therefore, to address this variable, respondents were asked this question; what cultural practices are embraced in raising environmental awareness in school and surrounding communities? Table 7 shows the responses.

**Table 7: Perceived Environmental Cultural Practices**

<table>
<thead>
<tr>
<th>CULTURAL PRACTICES</th>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H/Trs</td>
<td>Teachers</td>
<td>Pupils</td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

*Source: Field data (2014).*

The findings in table 11 show the highest number of respondents (80%) parents, Head teachers, teachers and pupils indicated that there were some cultural practices which bordered on environmental management among local communities in Nchelenge district. While the lowest number of respondents (20%) indicated that there were no environmental cultural practices. However, some of the cited cultural practices by respondents were as follows; each household had a rubbish pits, pit – latrine, out – door bathroom, washing dirty kitchen utensils near the source of water was prohibited, cutting of trees in grave yards and indigenous forest reserves was not allowed and general cleanliness of the surroundings. Respondents stated that these practices were enforced by traditional leaders whose influence was extended to some schools.

**4.1.4 DEBS’ Views on Existence of Environmental Cultural Practices in Schools.**

Using fourth question on the interview schedule aimed at finding out if environmental cultural practices were found in schools. However, DEBS response on the existence of environmental cultural practices in schools indicated that, cultural practices were there since schools were found in communities where various cultural practices are practiced. However, it may be very difficult to specify these practices because they could vary from one school to the other depending on the prevailing customs and cultural beliefs of each particular community. The DEBS further stated that, *the effectiveness of environmental cultural practices in schools cannot be ascertained due to lack of clarity and conformity in nature.* Additionally, norms, beliefs and cultural practices of the community dictate the behaviour and attitude of the people.
4.1.5 Implementation of Environmental Cultural Practices

The ninth item on the pupils’ questionnaire aimed at finding out how effective these cultural practices were implemented in school as well as surrounding communities. This question sought to find out if environmental cultural practices had a bearing on the good management of the environment. This was important in order to determine the usefulness of indigenous knowledge in raising environmental awareness among key actors in schools and surrounding communities. To achieve this, pupils were asked this question; are there cultural practices that border on good management of environment? Table 8 shows the response by pupils on the implementation of Environmental cultural practices.

<table>
<thead>
<tr>
<th>PUPILS’ RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective implementation</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Partial implementation</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Not implemented</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings in table 12 show the highest number of respondents (30%) indicated that, implementation of cultural practices was effective. The average number of respondents (45%) indicated partial implementation of environmental cultural practices in schools. The lowest number of respondents (25%) indicated that environmental cultural practices were not implemented in schools.

4.1.6 Parents’ Views on Environmental Cultural Practices

The fourth item on the interview schedule aimed at finding out if environmental cultural practices were used to improve environmental management. The question sought to find out whether environmental cultural practices were significantly contributed to good management of environment. This was important because it provided an answer for objective number one. In this regard this question was posed to respondents; what cultural practices are practiced to promote environmental awareness? The findings show the highest number of respondents (80%) parents acknowledged the presence of environmental cultural practices. Respondents cited following examples; *each home must have a pit latrine, rubbish pit, outdoor bathrooms, utuntamba* (a
simple structure made with small poles where women put kitchen utensils after washing), each house to keep surrounding very clean all the time, not to grow maize in their backyard, not to cultivate and cut trees from grave yards, not to wash dirt pots and plates along the lake shore, streams and near the source of water, tying their goats during summer season and so on. If anyone found guilty of having transgress any of the above he or she was subjected to disciplinary action which was in different form. While the lowest number of respondents (20%) failed to give a detailed account on existence of environmental cultural practices in their communities. To justify their inability to explain fully, they claim not to have stayed in those communities for some time.

4.2 Types of Sensitisation Concerning Environment among Selected Schools in the District
In order to adequately address the second objective of the study which was to establish types of sensitisation concerning the environment, the researcher sought to achieve this through the following sub – themes.

4.2.1 Perceived Environmental Sensitisation Programmes by MESVTEE
The tenth and eleventh item on the teachers` questionnaire aimed at finding out if education curriculum contained environmental awareness components. These questions sought to determine whether the curriculum contained environmental awareness contents and study areas in which these contents were integrated most. This was important because it helped to establish environmental sensitisation activities drawn from existing educational curriculum. In this regard, these questions were posed to respondents: does the current curriculum contain contents that promote environmental sensitisation activities? If your answer is yes to question ten, mention the name of the subjects and specific contents. The highest number of respondents of teachers, (76%) teachers indicated that environmental contents were integrated in education curriculum.

However, respondents further alluded that environmental awareness activities in schools were facilitated through co-curricular and core-curricular activities. They further stated subjects which contained topics concerning environment. Examples of subjects cited were; SDS, CTS, integrated science, geography, civic education, civics and so on. They argued that, both teachers and pupils became aware of the environmental problems that were caused by both human activities and natural calamities through these subjects. They further indicated that teachers and pupils learnt about good environmental management practices outside the classroom.
environment through PMS, SHN and clubs such as Chongolo and Chipembele. For Chipembele club, respondents explained that it was a newly introduced clubs by the MESVTEE in schools which specifically dealt with wildlife conservation. The lowest number (24%) teachers indicated that there were no environmental contents in the current curriculum to promote awareness.

4.2.2 Teachers’ views on Implementation of Environmental Awareness

The twelfth item on teachers’ questionnaire and item number six on the interview schedule aimed at finding out whether teachers were being sensitised on environmental management through continuous professional development (CPD). This was important because it helped to establish types of sensitisation teachers experienced. Therefore, to address this variable, respondents were asked this question: How many times does school include environmental sensitisation activities in school based continuous professional development (SBCPD)? Table 9 shows the responses.

**Table 9: Views on Implementation Awareness Programmes through CPD/TGMs among Teachers**

<table>
<thead>
<tr>
<th>TEACHERS’ RESPONSES</th>
<th>RESPONSES PER</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools</td>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Very often</td>
<td>Kefilwa, Ntoto,</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Often</td>
<td>Mulanga, Kabuta,</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Chandwe.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rare</td>
<td>Mutono,</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Nchelenge, Isokwe,</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Mukumbwa, Shanyemba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings in table 13 show the highest number of teacher respondents (35%) indicated that environmental awareness activities were rarely implemented in CPD/teacher group meetings (TGMs). While the lowest number of them (10%) indicated that implementation of environmental awareness activities in CPD/TGMs were very often.
The thirteenth item on the teachers’ questionnaire aimed at finding out if MESVTEE through the offices of PEO and DEBS had conducted environmental sensitization activities in schools. This question sought to find out whether environmental sensitization activities were conducted in schools by MESVTEE through the office of PEO and DEBS. This was important because it provided an answer to the research objective number two. In this regards, this question was posed to respondents; how often do the PEO and DEBS offices conduct environmental sensitisation activities concerning environment in schools? Table 10 shows the responses.

Table 10: Views on Implementation of Environmental Sensitisation Programmes by DEBS/PEO Offices among Teachers

<table>
<thead>
<tr>
<th>Teachers’ Responses</th>
<th>Frequences</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Regular</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Regular</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Irregular</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Very irregular</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings from table 14 show the highest number of teacher respondents (45%) indicated irregular implementation of environmental sensitization programmes in school by MESVTEE through DEBS or PEO offices. The average number of them (30%) indicated regular implementation of environmental sensitization programmes in schools by MESVTEE through PEO or DEBS offices. The lowest number of them (5%) indicated that implementation of environmental sensitization was very regular.

The fourteenth item on teachers’ questionnaire aimed at finding out how often stakeholders conducted environmental sensitization activities in schools. The question sought to find out how regular did stakeholders conduct environmental sensitization programmes in schools. This was important because it helped to establish types of environmental sensitisation programmes conducted in schools by stakeholders. Therefore, to address this variable, respondents were asked this question; how regular do collaborative stakeholders conduct environmental sensitisation programmes in school? Table 11 shows the responses.
Table 11: Respondents views on Implementation of Environmental sensitization Programmes by Stakeholders

<table>
<thead>
<tr>
<th>TEACHERS’ RESPONSE</th>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Monthly</td>
<td>Kabuta, Mulanga</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Termly</td>
<td>Kefulwa, Ntoto, Isokwe</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Annually</td>
<td>Mukumbwa, Shanyemba, Nchelenge, Mutono, Chandwe</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Very irregular</td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>9</td>
<td>11</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings in table 15 shows that the highest number of teacher respondents (55%) indicated that implementation of environmental sensitization programmes by stakeholders in schools were very irregular. The average number of teacher respondents (20%) described the implementation of environmental sensitization programmes in schools to be done annually or termly. While the lowest number of them (5%) indicated weekly implementation of environmental sensitization programmes in schools by collaborative stakeholders.

4.2.3 Head teachers’ Views on the Integration of Environmental Awareness Activities in CPD/TGMs Action Plan

The ninth item on the interview schedule aimed at finding out whether environmental awareness activities were integrated in CPD or TGMs action plans. This question sought to establish how often teachers were sensitized on environmental awareness activities through CPD or TGMs. This was important because it helped to establish whether teachers were sensitised on environmental management. In this regard, this question was posed to respondents; how often does the institution (s) integrate environmental content in school based continuous professional development (SBCPD/TGM). Table 12 shows the responses.
Table 12: Views on Integration of Environmental Awareness Programmes in TGM/CPD among Head Teachers

<table>
<thead>
<tr>
<th>HEAD TEACHERS’ RESPONSE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Not regular</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Not included</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings in table 16 show the highest number of Headteacher respondents (50%) indicated that integration of environmental awareness activities in CPD or TGMs was not regular. The average number of them (30%) indicated that environmental awareness activities were not included in CPD or TGMs action plans. The lowest number of them (20%) indicated that environmental awareness activities were regularly incorporated into CPD or TGMs action plans.

4.2.4 Stakeholder Participation in Promoting Environmental Sensitisation Activities

The eleventh item on the interview schedule and eleventh item on pupils` questionnaire aimed at finding out sensitization programmes conducted by stakeholders in school. These questions sought to find out stakeholders participation in promoting environmental sensitization activities in schools and surrounding communities. This was important because it helped to establish types of sensitisation programmes concerning environmental management provided by stakeholders. Therefore, to address this variable, respondents were asked these questions, what type of environmental sensitisation activities do stakeholders conduct in institution (s) and surrounding communities? Do stakeholders conduct environmental sensitisation programmes in school and surrounding communities? Table 13 shows the responses.

Table 13: Participation by Stakeholders in Conducting Environmental Sensitisation Activities

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H/teachers</td>
<td>Pupils</td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Rare</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Not there</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings in table 17 show the highest number of respondents (50%) indicated that there was no participation by stakeholders in conducting environmental sensitization activities in schools. The average number of respondents (27%) indicated that stakeholders’ participation in
promoting environmental sensitization was rare. The lowest number of them (23%) indicated that, there was no environmental sensitisation programmes conducted in schools by stakeholders.

Another item on the interview schedule aimed at finding out whether school management promoted environmental sensitization activities in schools. This question sought to find out the rate at which school management implemented environmental awareness activities in schools. This was important in order to establish types of sensitisation activities concerning environment that were implemented by school managements in their institutions. In this regard, this question was posed; what environmental sensitisation programmes does the school management have been implementing in order to improve environmental management in school? Table 14 shows head teachers’ responses.

**Table 14: Perceived rate of Sensitisation Programmes for Environmental Awareness by School Management**

<table>
<thead>
<tr>
<th>HEAD TEACHERS’ RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>There were environmental awareness sensitizations</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Sensitizations were there but very few</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>There were no environmental sensitizations activity</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*Source: Field data (2014)*

The findings in table 18 show the highest number of respondents (50%) indicated that only few sensitization activities were implemented by the management in schools. The average number of respondents (30%) indicated that there were no environmental sensitization activities implemented by school management. The lowest number of respondents (20%) indicated that environmental sensitization activities were implemented in schools by managements.

**4.2.5 Pupils’ Views on the Provision of Environmental Awareness Sensitisation Programmes.**

The eleventh and twelfth items on pupils’ questionnaire aimed at finding out examples of environmental sensitization programmes conducted in schools by collaborative stakeholders. These questions sought to establish different types of environmental sensitization programmes conducted in schools by different stakeholders. This was important in the sense that, it helped to identify specific environmental sensitisation activities conducted in schools by collaborative partners. Therefore, to address this variable, respondents were asked these questions: Are there environmental sensitisation programmes conducted by collaborative partners concerning
environmental management? If there is environmental sensitisation programmes conducted by collaborative partners what are those? Table 15 shows the responses.

**Table 15: Types of Environmental Awareness Sensitisation Campaigns among Selected Schools in Nchelenge District by Stakeholders.**

<table>
<thead>
<tr>
<th>PUPILS’ RESPONSE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand wash by health dept and UNICEF</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Tree planting by forest dept and UNICEF</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Malaria control by CHAZ</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>School-Led-Sanitation by DEBS</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Keep the environment clean by World vision Zambia</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(Source: Field data (2014))

The findings in table 19 show the highest number of pupil respondents (60% indicated hand wash programme by health department and UNICEF. The average number of them (10%) indicated tree planting by forest department, school – led – sanitation by DEBS office and keep the environment cleaning programmes by World Vision Zambia. The lowest number of them (5%) indicated malaria control programme by churches health association of Zambia (CHAZ).

The fifteenth item on the pupils’ questionnaires aimed at finding out the effectiveness of clubs and committees in conducting environmental sensitization activities in schools. This question sought to find out if there were clubs and committees in schools that were promoting good environmental practices. This was important because it helped to establish the effectiveness of club and committees in schools in promoting environmental awareness. Therefore, to address this variable, pupil respondents were asked this question; how do you describe the usefulness of clubs and committees in promoting environmental awareness activities in school? Table 16 shows the responses.

**Table 16: Views on Effectiveness of Environmental Sensitisation Campaigns**

*By Pupils*

<table>
<thead>
<tr>
<th>PUPILS’ RESPONSE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very adequate</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Adequate</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Few</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Very few</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(Source: Field data (2014)).
The findings in table 20 show the highest number of pupil respondents (35%) indicated that there were very few clubs and committees promoting environmental sensitization activities in schools. The average number of them (30%) indicated that there were few clubs and committees promoting good environmental management in schools. The lowest number (10%) indicated that clubs and committees conducting environmental sensitization activities were very adequate.

The fourteenth item on pupils’ questionnaire aimed at finding out how often schools participated in commemoration of environmental world days such as earth day, water day, environmental day, forest day and so on. This question sought to establish types of sensitization activities conducted during commemoration of these important days. This was important because it helped to explore types of sensitisation activities conducted during commemoration of these important days. In this regard, this question was posed to respondents; how often does the school participate in commemoration of international world days such as earth day, environmental day, and water day and so on? Table 17 shows the responses.

**Table 17: Pupils views on Sensitisation Campaigns through Commemoration of World Environmental Days**

<table>
<thead>
<tr>
<th>PUPILS’ RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very regular</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Regular</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Irregular</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Very irregular</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*Source: Field data (2014)*

The findings in table 21 show the highest number of pupil respondents (65%) indicated that schools’ participation in commemoration of environmental world days was very irregular. The average number of them (20%) indicated that schools’ participation in commemoration of these days was very irregular. The lowest number of (5%) indicated that schools’ participation in celebrating of World environmental days was very regular.

**4.2.6 DEBS’ views on Stakeholder Participation in Conducting Sensitisation Campaigns**

The eleventh item on the interview schedule aimed at finding out stakeholder participation in conducting sensitization campaigns in schools. This question sought to find out forms of sensitization activities conducted by stakeholders in schools through DEBS office. This was important because it helped to establish a link between DEBS office and stakeholders in implementation of environmental sensitisation programmes in schools. Therefore, to address this
variable, respondents were asked this question; what type of environmental sensitisation programmes does stakeholders implement in conjunction with DEBS office? The DEBS described stakeholder participation in implementing of sensitisation programmes in schools as inadequate. He stated that there were very few stakeholders who were Partnering with the DEBS office to implement environmental awareness programmes in schools.

However, he gave examples of stakeholders and the programmes they are were conducting in schools; *UNICEF implementing environmental awareness in five schools namely: Kabuta, Mukeya, Kashikishi, Nchelenge, Mukumbwa and Kanyembo primary schools. CHAZ organization also conducted environmental sensitization in some schools; Forest department promoted environmental protection through tree planting projects, Health department also carried out some environmental awareness campaigns concerning water and sanitation management especially during summer season. He further explained that, UNICEF was running a solid waste management program in some selected schools through his office.*

4.3. Perceived Actions to Improve Environmental Awareness

The sixteenth item on the interview schedule and eighteenth item on teachers’ questionnaire aimed at finding out if implementation of environmental school policy could have improved environmental awareness among key stakeholders. These questions sought to find out whether the absence of environmental school policy had significantly contributed to environmental mismanagement among selected schools. In this regard, this question was posed to teacher respondents; what measures could you use to ensure that the school environmental policy was effectively implemented? Table 18 shows the responses by Head teachers.
Table 18: Significance of Having Environmental School Policy as Perceived by Head Teachers

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through intensive supervision and monitoring.</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>Assigning specific activities to specific clubs/committees.</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>By evaluating the implementation of environmental programmes by responsible group.</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field data (2014)

The findings in table 22 show the highest number of respondents (60%) stated that intensive supervision and monitoring the implementation of environmental school policy could have improved awareness levels among key actors. The lowest number of respondents (10%) indicated that environmental school policy could have effectively improved levels of awareness among key actors in selected schools, if evaluation of implemented programmes was regularly conducted.

The seventeenth item on the interview schedule and twentieth item on pupils’ questionnaire aimed at finding out whether establishment of clubs and committees dealing with environmental issues could have significantly improved management of the environment in schools. These questions sought to find out if schools had relevant clubs and committees to promote environmental awareness. This was important because it helped to establish the significance of clubs and committees in promoting environmental awareness. In this regard, this question was posed to respondents; how do you ensure that clubs and committees are actively executing out their programmes? Respondents indicated that schools had no clubs and committees to implement specific environmental awareness programmes effectively.

They further alluded to the fact that schools administrations were to intensify monitoring and supervision of clubs and committees in promoting environmental awareness activities. They also explained that supervising the responsible officers, motivate them and provide enough resources to execute environmental awareness programmes were necessary. Respondents further explained
that each school could have developed environmental policy that could lead to the alleviation of existing environmental challenges. Respondents further indicated that clubs and committees could successfully implemented environmental activities if there were regular monitoring and supervision. They further alluded to the fact that establishing specific clubs and committees to implement environmental awareness activities could have resulted into successful implementation of environmental awareness activities in schools.

Another item on the interview schedule and nineteenth item on teachers’ questionnaire aimed at improving partnership between schools and other stakeholders. These questions sought to explore the fact that effective partnership between schools and stakeholders could have significantly improved the implementation of environmental awareness programmes. This was important because it helped key actors to acknowledge the importance of partnership in promoting environmental awareness. In this regard, this question was posed to respondents; *how do you intend to partner with other stakeholders (NGOs, churches, government departments, local communities) in promoting environmental awareness?* Respondents’ response was that, schools could have explored ways and means of partnering with stakeholders in addressing environmental problems facing the institutions. They further stated that relevant stakeholders could have been continuously involved in addressing environmental activities in schools. Respondents further explained that schools in collaboration with stakeholders could have introduced dust bins and put them in strategic points for easy management of solid wastes in schools.

Another item on the interview schedule aimed at behavior change by all actors involved. This item sought to explore ways of changing peoples’ attitude towards good management of environment. This was significant in addressing objective number three of this study. In this regard, this question was posed to the respondents; *how do you intend to instill positive attitude and behavior among key actors?* Respondents’ response was that behavior change among key stakeholders could be achieved through continuous sensitization on the importance of good practices of environmental management, conducting environmental awareness activities at the time, teachers to lead by examples for the pupils to emulate. They further acknowledged the importance of commemoration of important environmental days such as earth day, water day, and world environmental day and so on. Additionally, schools could have implemented
environmental rules and regulations to deter actors from indiscriminate littering in schools and other environmentally unsound practices. Respondents sought that the above stated reasons could have changed peoples’ behavior towards environment.

4.5 Summary
The chapter has presented the findings from the field as obtained by the researcher. The findings cover the following components; types of environmental awareness in Zambian schools. This was begun by looking at the definition of environmental awareness by actors involved. Other themes discussed under this component are; formal, informal and non-formal type of awareness. Existence of environmental cultural practices in local communities is also one of the components presented. Next components were types of environmental sensitization activities in schools, environmental awareness campaigns by stakeholders and responses from respondents on these components. Finally, the actions that could have been taken in order to improve environmental management in schools as well as surrounding communities are presented.
CHAPTER SIX
DISCUSSION OF RESULTS

5.0 Introduction
This chapter presents the discussion of the findings based on environmental awareness among key actors of selected Zambian schools in Nchelenge district in Luapula province. The findings will be discussed in the sequence they have been presented in chapter four. The aim of this chapter is to discuss the findings in order to provide answers to the main research question of this study.

5.1 Types of Environmental Awareness among Key Actors
5.1.1 Types of Environmental Awareness

Formal awareness refers to environmental awareness knowledge and skills acquired through core curriculum provided in schools. The awareness acquired from this type ranged from forms of pollution, deforestation, hygiene, keeping the environment clean and so on. Informal awareness refers to organised and planned environmental programmes provided by stakeholders outside school environment. Informal awareness refers to organised and planned environmental programmes provided by stakeholders. These activities ranged from tree planting, discussion on water and sanitation and health sensitisation. Non – formal awareness refers knowledge and skills acquired through unorganized and unplanned activities and it is also known as lifelong process. These activities ranged from radio and television programmes on environment, literatures on environment and oral discussions on environmental. However, provisions of these types of awareness vary amongst selected schools in the district and their effectiveness differs from one school to the other. Although respondents acknowledged the prevailing of these types of awareness among selected schools, prevailing conditions were not corresponding with physical environment in the institutions.

5.1.3 Examples of Formal, Informal and Non – formal Types of Environmental Awareness

Example of formal awareness activity that was cited by respondents was teaching and learning in a classroom and outside classroom using standardised curriculum.
And they gave examples of non–formal awareness activities they engaged in as follows; radio and television programmes on environment, sensitisation programmes on deforestation, waste management and so on. This was following the establishment of community radio station in the district called “radio Luapula”, where environmental awareness programmes were being promoted by various organisations. Instances of informal awareness activities cited were as follows; encouraging people to attend Environmental World Day celebrations were environmental awareness messages were conducted through drama and poems, listening to routine public announcements on environmental management by the Forestry Department.

Due to the differences in economic activities, it is not all the people that benefit from informal and non–formal environmental awareness activities. That meant that much of information on environmental management was acquired from school through integration of environmental contents in existing subjects such as social and development studies (SDS), integrated science, community and technology studies (CTS) and so on (GRZ, 2003). This reflection was in conformity with the recommendation by UNEP (2007) which acknowledged the importance of mainstreaming environmental education programmes into schools as a regular part of the curriculum. This would increase public environmental awareness and demonstrates a commitment to environmental protection. Therefore, environmental awareness programmes can be integrated into existing disciplines or design other disciplines were it can be taught as an independent components in its own right to raise awareness. These awareness activities could be taught as early as primary school as well as in tertiary education programmes. It is well known fact that, young people are majority in the national population and would be the decision makers of the future. This is the reason why the involvement of today’s youth in environment and development, decision-making and in the implementation of programmes has been internationally recognised as critical for sustainable development.

5.1.4 Provision of Awareness Programmes by Stakeholders

Though Stakeholders have not performed with uniformity in creating environmental awareness, their contributions have made it possible for the communities to have a base of knowledge on environmental protection and management which is cardinal in awareness development. “These stakeholders are instrumental in establishing the various projects and activities in the fields of environmental awareness from the early years” (Loubser 2005:155). For the purpose of this
study, stakeholders being to are: NGOs, Faith Base Organisations, the community, United Nation agencies and government departments. For instance, Professional insurance promotes environmental awareness in schools from Southern and Copperbelt provinces by donating posters on climate change, good nutrition and value of traditional food for distribution to various basic schools.

Making a donation of 2400 posters to be distributed to 800 basic schools on the copperbelt, Professional Insurance Ndola branch manager Webster Twambo said the donation of the posters was a way of strengthening the education system and help reduce on the problems affecting the world. "Providing reading materials to schools is a step further in improving the quality of education in the country. As you know climate change is a hot topic involving every nation across the world and the Ministry of Education is also contributing to this topic so that as a country we can try and see how we can help reduce effects of climate change, ..." (The Post News Paper, March 2010).

According to responses gathered on the participation of stakeholders in promoting awareness in schools and surrounding communities, it was clearly shown that there was low participation of stakeholders. To that effect respondents indicated that, stakeholders’ involvement in environmental awareness campaigns left much to be desired. It was revealed that, a number of stakeholders who took part in promoting awareness campaigns were only concentrated in fewer schools.

The primary aim of stakeholders in environmental awareness campaign could have been to changing peoples’ attitude and perception towards the environment. For example, churches could have drawn environmental teachings from the bible and help their members to develop attitudes that could appreciated nature and protect it. “There are many biblical passages indicating that all living things should be valued and that the natural world should be treated with care and respect. The correct attitude towards environment should be that of caring stewardship” (Loubser, 2005:102). In this era many church leaders are now preaching on the degradation and mismanagement of the environment, and a good number of Christians believe that the only successful response to this should be grounded in correct beliefs about the creation and in faith.
It is a widely believed fact that community involvement in environmental awareness could bridge the gap between environmental degradation and management by providing people with values and attitudes that could enable them to effectively manage the environment, the communities in this research however were discovered to have a low level of participation in environmental awareness programmes and activities. Study by Chola (2008:9) acknowledged community dependability on environment by stating that, “natural resources have been harvested by rural communities for food, shelter, fuel, beverages, fibers, tools, religious purposes and as a source of income since humanity existence.” Therefore, it was worth to justify the fact that environmental problems exhibited in schools were partly due to lack of adequate involvement by all relevant stakeholders.

Stakeholders should take active role in participating in environmental awareness activities and programmes in schools and surrounding communities. This would lead to greater environmental awareness in communities under this study.

5.1.5 Cultural Practices as another form of Non – formal Awareness

Cultural practices are acknowledged as an effective way of raising awareness on environmental issues. Nonetheless, it was discovered that the effectiveness of cultural practices was not effectively utilised in raising environmental awareness in all communities covered by this study.

Some of practices by local communities have been proved to enhance and promote biodiversity at the local level and aid in maintaining health ecosystem (UN, 2010). Utilisation of indigenous knowledge in research and management plans gives it legitimacy and credibility in the eyes of both local people and outside scientists, increasing cultural pride and thus motivation to solve local problems with local ingenuity and resources. UN (2010:1) defines traditional knowledge as;

*the knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over centuries and adapted to the local culture and environment, it is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds.*
Culture has a great bearing on the extent of environmental awareness. In places where great regard is given to cultures that promote sustainable utilisation of natural resources, regarding them as sacred, they tend to exist a considerable level of awareness. The opposite is obvious for areas where culture appears to go against the tenets of environmental conservation.

Respondents indicated Cultural practices that were supposed to be adhered to were as follows; each home must have a pit latrine, rubbish pit, akantamba (a simple structure made with small poles where women spray kitchen utensils after washing them). People were not allowed to wash dirty kitchen utensils along the shore of the lake or near any source of water. Each home was to ensure that home environment is clean all the time and not to grow maize and banana plants in the backyards. They were also prohibited from cultivating and cutting trees from grave yards and selected reserves. At the time of this study, one of the head men from Isokwe Island explained how some residents were appearing before Chief Kambwalis’ council for depleting the forest reserve by cultivating in it and cutting trees for energy. This reserve was locally known as Mufuka, it was considered to be most sacred and acted as a symbol of identity for the island. Geographically, this forest regulated the hydrological cycle on the island, acted as wind breaker for the island and prevented desertification since the large part of the island was sandy.

Accordingly, cultural activities, values and attitudes held by studied communities were found not to support environmental awareness. For instance, it was not regarded as cultural immorality for a peasant farmer to cut hundred of trees along the Kenani stream as there exist no positive regard towards cultural provisions against such vices; it is regarded as normal. Burning of forest every after the summer harvest was considered worthwhile as traditional animal hunters would be freely engaging escapades, so was it for peasant farmers whose farming preparations are made easy after a summer fire. To a large extent using illegal fishing was regarded as a means of survival, as culture itself was not interested in conserving but having a catch in order for a person to survive. Waste disposal and management do not have a place in the culture of all the communities focused by this study. Subsequently, attitudes that have evolved over time do not create a platform for the development of constructive awareness of the destructive effects of poor management and disposal of waste – Cholera, typhoid, cough and many diseases are a common feature in this communities. Instead of finding their causes, the “cheap culture” that exists has
inculcated an irresponsible attitude into the people to live in suspicion “accusing wizards for their problems” instead of scientifically confronting a problem.

Scientists now recognize that indigenous people have managed the environments in which they have lived for generations, often without significantly damaging local ecologies. Many feel that indigenous knowledge can thus provide a powerful basis from which alternative ways of managing resources can be developed. Indigenous knowledge technologies and know-how have an advantage over Science in that they rely on locally available skills and materials and are thus often more cost-effective than introducing exotic technologies from outside sources. Local people are familiar with indigenous knowledge system and so do not need any specialised training (ibid). The following were some of the features of indigenous knowledge, which have relevance to conservation and sustainable development:

i. Locally appropriate: indigenous knowledge represents a way of life that has evolved with the local environment, so it is specifically adapted to the requirements of local conditions.

ii. Restraint in resource exploitation: production is for subsistence needs only; only what is needed for immediate survival is taken from the environment.

iii. Diversified production systems: there is no overexploitation of a single resource; risk is often spread out by utilizing a number of subsistence strategies.

iv. Respect for nature: a 'conservation ethic' often exists. The land is considered sacred, humans are dependent on nature for survival, and all species are interconnected.

v. Flexible: indigenous knowledge is able to adapt to new conditions and incorporate outside knowledge.

vi. Social responsibility: there are strong family and community ties, and with them feelings of obligation and responsibility to preserve the land for future generations (Dewalt, 1994:65).

However, in the context of this study cultural practices were enforced by traditional leaders who were the custodian of customs, beliefs, values and traditions of the society. This was similar to the study by Dahl (1998) in Caledonia which shows that cultural practices among the Kanak people was entirely in the custody of the old and traditional leaders who was mandated to transmit to the young people preferably within the family.
It was generally acknowledged that most of these cultural practices were meant to protect and conserve biodiversity within communities. Therefore, cherishing of these cultural practices by the local people could have greatly contributed to the preservation of the biodiversity and sustained the carrying capacity of the natural environment. It was the illusion of these cultural practices which was greatly contributed to the deterioration of natural environment in most communities. Although there could be other factors such as escalating poverty, population increase, and modernity and so on, traditional cultural practices could significantly regulate peoples’ attitude and behavior towards good environmental management. However, embracing of these cultural practices differ from one community to the other depending on the prevailing conditions, but the sole purpose was to safeguard environment for the wellbeing of both human and that of ecosystems. Therefore, there was need for institutions to acknowledge the importance of traditional cultural practices and incorporate them in the normal teaching and learning processes.

Olsson and Folke (2001) suggest a local fishing association in a Swedish community displayed management practices that enabled them to protect crayfish from extinction, an example of local ecological knowledge. In contrast, traditional ecological knowledge implies a historical and cultural context to knowledge generation and dissemination. For example, the Turkwel Riverine Forest in Kenya has been managed for many years by an indigenous system known as ekwar which refers to a parcel of riverine forests whereby the owner and family has exclusive rights to collect building materials, firewood and edible fruits. Outsiders require permission from the ekwar owner to graze their livestock in the area (Stave et al, 2007). This was in line with the response from one of the head teachers who indicated that, for them to harvest bamboo plants near school boundary; they had to seek permission from the traditional leaders. Besides, local people were prohibited from harvesting timber, poles and grasses for domestic purposes from grave yards and other designated places. Thus, the MESVTEE should ensure that cultural practices are incorporated in the national curriculum.

Additionally, Masuku (1997:26) noted that in 1987, the World Commission on Environment and Development had already “advised that society at large has a lot to learn from traditional skills and knowledge to manage complex ecological systems”. Furthermore, in 1992 the United Nations Conference on the Environment and Development (UNCED) resolved to promote
diversity in general and bio-diversity in particular. To achieve this, the Conference committed itself to be assisting and encouraging indigenous communities to protect and utilise natural resources.

Cultural practices are a great necessity in creating environmental awareness and where the community fails to adhere them; the rate of creating awareness among all stakeholder becomes incapacitated by lack of values and attitude that induces responsibility productivity and conservation that give way to development.

5.1.6 Implementation of type of Environmental Awareness Programmes in Schools by Administrators

Implementations of environmental awareness programmes in schools were not well coordinated but rather they were done in up hazard manner. Response from the respondents on the effectiveness of awareness campaigns were that of great disparities between the response and what was prevailing on the ground in reference to general management of school environment.

Respondents (pupils) further indicated that implementation of awareness campaigns in schools was very affirmative. In their own understanding they referred environmental awareness activities to weekly routine announcements by the school managers and teachers on duty during school assemblies. It was through such gatherings where pupils were reminded and caution on the importance of keeping the school premises clean and avoid any form of littering both inside and outside classroom environment. According to the understanding by the respondents, these routine exercises were EA programmes. This was the reason why the concept of AE was not seriously executed by the actors in schools effectively. Generally, what they considered to be EA activities were just mere activities meant to keep the school premises clean and not to inculcate values, skills and knowledge in the peoples’ mind that would enabled them to change their attitude and behaviour towards environment.

Therefore, teachers, pupils and stakeholders could have been involved in developing EA strategy that could improve knowledge and skills. Thus the MESVTEE could have taken a leading role in initiating changes by involving of teachers, researchers and concerned stakeholders. According to Benedict’s study (1999) the Norwegian EA strategy was developed by the Ministry of Education with the engagement of all relevant actors. This was the reason why Norway has successfully implemented EA which was targeting whole system, not individual schools or
programs. However, for the effectiveness of this approach it must aim at achieving the following goals:

i. Clarify the goals and contents of environmental education.

ii. Contribute to organizational development in schools.

iii. Ensure that the strategy is implemented.

iv. Clarify and coordinate efforts in environmental education between the school system and its co-operative partners.


According to Benedict (1999) the most important lessons learned from the Norwegian case are:

First, shortcuts do not work. Teachers who struggle to implement systemic environmental awareness within the framework of an educational system that isn’t made for it may succeed in the classroom in the short term, but their efforts are usually not sustainable. Teachers cannot succeed without support from the higher levels and the MESVTEE cannot do well in conducting educational development without full cooperation from teachers and head teachers.

A second lesson is that, the process of bringing about systemic changes in priorities, competence, curricula and patterns of cooperation and communication is a long term process. Experiences from Norway indicated that raising teacher’s competence in environmental awareness would require much more than short in-service training courses. Understanding the cross-cutting elements between natural and human systems is intellectually challenging and requires openness to a wide range of disciplinary paradigms, from history, anthropology and literature to economics, biology and political science.

A third lesson is that structural changes in communication and cooperation require patience, goodwill and commitment. Vertical communication between the Ministry of Education and local bodies such as universities, colleges and schools was full of tensions. Some sort of compromise by both parts and understanding of the roles and responsibilities must be reached if change is to be possible.

The general response from the respondents over the implementation of EA in schools gave a superior impression that environmental awareness activities were conducted in schools. For
pupils environmental awareness activities referred to daily routine activities of sweeping the surrounding and cleaning the toilets and so on. Thus most of the schools lacked specific awareness programmes that could have stimulated positive change in pupils and the community at large. For example, the highest (80%) of respondents from visited schools indicated School Healthy Nutrition (SHN) and hand wash programmes but only three schools had put in place facilities and materials to facilitate the sustainability of these programmes. Another observation was that solid waste management in schools needs much to be desired. Apart from having rubbish pits there were no bins or boxes mounted in strategic points for people to drop litters easily. Lack of such facilities has led to the indiscriminate disposal of wastes in schools and made it very difficult to regulate pupils, teachers and community members’ behavior toward waste management.

Furthermore, respondents indicated that CDP/TGM played important role in improving environmental awareness programmes for environmental protection and conservation. Eluzai (2012:1) define CPD as “the process by which individual teacher maintain and improve standards of education practice through development of knowledge, skills, attitudes and behaviour.” These meetings support changes in practice and should be embraced by all schools. CPD is accepted as an integral part of teacher education because only a continuing learning and training assures a high level of expertise and enables the teachers to keep their professional skills and knowledge up-to-date in order to solve emerging challenges. These challenges may range from academic, professional, political, social and cultural spheres. In these meetings cross-cutting issues such as HIV/AIDS, environmental education are also incorporated. However, respondents’ response on the inclusion of EA activities in CPD/TGM was that of negative.

In CPD/TGMs more comprehensive measures to promote EA in schools could be developed and implemented. CPD/TGMs are very important for development of any institution in the sense that most of the activities discussed in these meetings are locally designed and aimed at addressing specific challenges. Therefore, including EA programmes in CPD/TGMs action plans could have greatly contributed to the raising of environmental awareness among teachers, pupils and community at large. This is in line with the study conducted by Teacher Education in Scotland (2012) which shows that CPD enabled teachers and lecturers respond favorably to the emerging concepts such as climate change in Scotland. It was in these meetings where the institutions
discuss modalities on how to bring on board the community and other relevant institutions to promote EA in schools. Most of programmes initiated through these meetings were successfully implemented. This has been due to commitment attached to it by concerned stakeholders. The degree of achieving goals developed through these meetings is very high because teachers as well as pupils own such programmes.

However, the response from the respondents clearly indicated that EA activities were not regularly featured in CDP/TGM action plans. This translated into a low understanding of EA concept by teachers which was reflected in the attitude and behavior of the actors toward environment. It was very difficult for someone with less information to behave responsibly or in the manner that may reflect desirable values and norms. Therefore, absence of AE activities in CPD/TGM action plans made the gap wider. Having reflected on the importance of CPD, it is quit imperative for institutions to effectively use CPD to respond to the environmental challenges. The study by Eluzai (2012) in South Sudan revealed that, environmental issues are seriously included in CPDs action plans in all levels of education and it has been proved to be a vehicle for self development and improvement.

Additionally, respondents (head teachers and teachers) did acknowledge the presence of environmental awareness contents in the current curriculum. They further cited subjects containing some environmental contents. Although the response from the respondents on the existing of environmental contents was so positive, the teaching of these contents have not influenced behavior change among the concerned groups rather they are just taught like any other contents. This was the reason why environmental problems such as depletion of biodiversity, poor solid waste management, poor health and sanitation are on the increase in schools and surrounding communities. The way teachers and pupils managed environment in their respectful institutions did not correspond with the claim on the existing of environmental awareness activities in the current study areas.

Besides, the essence of EA is to make people aware of the skills of gathering information, developing desirable attitudes, values and habits. Then if the above results were correct then why having so many environmental challenges in schools and communities at large? The meaning to such a reflection was that, those contents are taught orally and did not impart values in learners to enable them manage the environment responsibly. The actor’s behavior toward environment
showed that, the integrated environmental contents did not bring the needed change in the way actors related themselves to the environment. Thus there was a need for drastic changes in education and training systems which could be outcome – based. Gough (1997) recognised the integration of environmental awareness contents into various career trainings significance to resolve environmental issues and risks. The observation by Gough is very similar to the Zambian situation in the sense that, most current environmental training takes place in the context of business and management training systems that are essentially technical, individualistic and reductionist. Therefore, environmental awareness activities should target all people in the whole society in order to avoid gaps in information flow among stakeholders.

Moreover, respondents (Head teachers) indicated that, they were talking about environmental problem during school assemblies. However, learners seemed to be taking a very passive profile in environmental awareness activities in schools due to the fact that there were very few co-curricular activities specifically for EE. Most of pronouncements that were made by the administrators were not taken seriously or rather there were no necessary follow – up prior, during and after implementation of such programmes. Therefore, implementation of awareness activities in schools were vague that is why there were so many environmental problems in schools and the surrounding communities at large.

5.2 Types of Sensitisation Programmes

5.2.1 The role of MESVTEE in Promoting Environmental Sensitisation Campaigns

According to the results in section 4.2.1, the highest number of respondents (65%) indicated that the ministry of education was facilitating the provision of EA in schools. The lowest (35%) indicated low sensitization programmes by the ministry. However, most of environmental awareness sensitization programmes coordinated by the ministry through PEO and DEBS offices were either initiated or financed by stakeholders, such as School-Led-Sanitation (SLS) programme by UNICEF.

The main goal for Agenda 21 (UN) is that all signatory countries incorporate EE into their educational systems at all levels. Agenda 21 signals the need for a clear lead from the top and for facilitation of collaboration between the main interests concerned, in national and local government, government agencies, formal education, the business sector, cultural, community
and youth organizations and the voluntary sector. All of these are concerned in different ways with direct educational activity and services, whether formal or informal, with staff training and with exemplary environmental practice. In response to this agreement the government of the republic of Zambia through MESVTEE has integrated “cross-cutting issues and themes such as HIV/AIDS, life skills, gender, human rights, reproductive health, good governance, environmental education and water and sanitation across the curriculum” to ensure holistic development of the learner (GRZ, 2003:vii).

After introducing EE in curriculum as a cross-cutting issue, the ministry was expected to run series of environmental sensitization campaigns in schools. Nevertheless, the ministry was not doing enough to meet the growing environmental challenges, instead much of programmes were being carried out by NGOs and other stakeholders. However, ministry of education has provided a platform for various stakeholders to conduct environmental programmes in both public and private schools. Moreover, during the research, respondents indicated that, most of environmental sensitization campaigns were provided by collaborative partners. For example the program of solid waste management in some selected schools were being coordinated and financially supported by World vision Zambia.

Furthermore, respondents (teachers, Head teachers and DEBS) lamented that, they had never attended any training or orientation organized by the ministry of education for EE as compared to other cross-cutting issues in the curriculum. Another role of the ministry was to ensure that implementers who are teachers are well trained in the area of EE for them to be equipped with knowledge, skills and relevant approaches to successfully implement EA in schools. It was this lack of training for the teachers, head teachers which made it difficult for them to appreciate the importance of EE. The ministry has a responsibility to provide learning and teaching materials for effective implementation of EA in schools. But respondents (teachers, head teachers and DEBS) indicated that, provision of environmental sensitization activities by the ministry of education in schools was that of inadequate as compared to other cross – cutting issues in the curriculum.

According to the results in table 14 of section 4.2.2, the highest (45%) respondents indicated that the ministry did not promote environmental sensitization programmes in schools. The average
(30%) respondents indicated that, there were very few or to some extent no sensitization activities by MESVTEE in institutions. While the lowest (35%) revealed that, environmental sensitization programmes initiated by the ministry were prevailing in schools. Some of the cited types of sensitizations conducted by MESVTEE in schools were; water and sanitation, school-led-toilet campaign and so on. These responses demonstrated lack of divergence and consistence modes of initiating environmental awareness by the ministry to intensify implementation of environmental sensitization activities. Generally, the ministry has only ended by integrating EE components in different subjects without providing a mechanism on how it could effectively respond to the environmental challenges emanating from peoples’ actions. The ministry was not providing in – service training on EE programmes for the teachers. EA sensitization programmes were not well coordinated by the ministry rather, they were not implemented in the manner that could enabled actors to acquire knowledge, values and ultimately develop positive attitude towards environment.

The MESVTEE should ensure that, EE through which EA is promoted does not just end by appearing in the curriculum as a cross-cutting issue, but it had to be effectively implemented in order to achieve its primary objective which is raising public awareness. Hence, if the government and MESVTEE are serious about achieving even a modest degree of national environmental awareness, the primary objective of raising public awareness must enlighten people in ways that would overcome the Enlightenment fallacy. The effective implementation of environmental sensitization by MESVTEE could have persuaded all sectors of the society to adopt life-style and behaviour commensurate with the carrying capacity of the environment. And more importantly, to radically change the attitude to nature and the environment from one of gross exploitation as at present to that of genuine respect, concern and care. This radical prescription which may even appear surreal to some is not new, and it is hard to see how meaningful progress towards global sustainable development could even be made without it. Public awareness by overcoming the Enlightenment fallacy is crucial because, once people become enlightened in this regard, their attitude to nature and environment would genuinely respectful. They would then exert pressure on their leaders to develop and implement effective policies for EA (Bhaskar, 2005).
Nevertheless, political decisions in Zambia have been working against the core requirement of environmental protection and conservation, which was to consume within earth's carrying capacity. Arguably, this has been causing the deep malaise of which adverse environmental impacts are occurring on all sectors of life. Lack of political will was similar to the findings by UN in Georgia where “NGOs complains that barriers to public access to information in Georgia include; poor dissemination of environmental information by public media and a lack of periodic environmental publications aimed at the general public” (UN, 2010:49). Therefore, the onus is on the government through MESVTEE to demonstrate serious concern by performing its role that would bring about necessary changes in peoples’ attitude to nature and natural environment conducive to the realization of national environmental sustainability without which good environmental management cannot be achieved.

5.2.2 Sensitisation Programmes by Stakeholders

According to the findings in section 4.2.4, the highest number of respondents (45%) indicated that implementation of environmental sensitization programmes by stakeholder was irregular. The average (20%) respondents indicated regular implementation of environmental sensitization by stakeholder. The lowest (5%) respondents indicated that implementation of sensitization activities was done weekly. In this study stakeholders included the following; World vision Zambia, CHAZ, UNICEF, UNESCO, government departments, communities and faith base organisations. From these responses one could deduce that stakeholder participation in implementing of environmental sensitization programmes was not effective and consistence. Environmental awareness sensitization programmes by stakeholders were not well organized. At the time of study, it was noted that some schools performed well in some specific environmental issues (water and sanitation, solid waste management) due to stakeholder participation. For example, Mukumbwa and Chandwe schools did well in the area of solid waste management due to environmental sensitization activities implemented by World Vision Zambia and UNICEF.

Respondents reaffirmed the importance of stakeholder engagement in EA programmes after recognizing significant roles some stakeholders were playing in improving environmental management in selected schools. For example, UNICEF has sunk boreholes in some selected schools, construction of pit latrines, conducting sensitization programmes on hygiene and so no. Therefore, increase in participation by diverse stakeholders in AE activities would greatly
improve peoples’ understanding and help them to make informed decisions for good management of environmental. In most cases stakeholders` programmes are action oriented in nature aimed at mitigating the perceived challenges.

Good partnerships and intensive collaboration with stakeholders are key factors for successful implementation of environmental programmes in any given society. This means involving citizens, environmental, energy, and educational organisations as well the local authorities, energy companies, media and so on. Increasing economic activities, poverty and population increase in rural areas increase pressure on environment, which generally lead to environmental degradation. However, there is a conventional belief that such environmental degradation would resolve as soon as people acquire relevant knowledge and skills. This would enable them to embrace environmental friendly practices as well as pro-environmental regulations and policies. However, several studies indicated that many developing countries already equipped with environmental policies, legal frameworks and economic instruments, which are regarded as highly sophisticated by international standards and yet face the worsening of environmental conditions (Fujisaki et al, 1997). Major difficulties these countries confront with are not only lack of legal and economic framework for environmental protection, but also lack of participation by relevant stakeholders in pro-environmental behaviors.

Environmental sensitization programmes are multidisciplinary in nature and they cannot be effectively accomplished without stakeholder participation. Hence, the role of stakeholders in promoting EA was very important and it cannot be over emphasized. However, it was very imperative to recognize the fact that most of rural communities in Zambia are usually poor and very dependent on the environment for their daily living. Since they are cut off from the outside world due to lack of some important social amenities; their skills and knowledge lacked the finances of the outside world. This was the reason why stakeholder participation was very significance in promoting EA to supplement government effort by reaching the communities in rural areas like that of Nchelenge district.

The complexity nature of the issue has compelled stakeholders to adopt various approaches to environmental problems. And one of these approaches was participatory rural appraisal (PRA). This approach could be described as a family approaches, methods and behaviour that enable
people to express and analyse the realities of their lives and conditions. It could be seen that this approach could be an important thrust behind many of environmental programmes. Many of these stakeholders working in the field of environmental education have either used the above strategies during their work in various communities. Many NGOs did contribute to environmental health, job creation, improvement of living conditions, and improvement of social structures, conservation, and environmental justice and so on. (Loubser, 2005). This approach was used by UNICEF and DEBS office during the implementation of school-led-sanitation programme in schools.

5.3 Perceived Actions to Improve Environmental Awareness

Results from the research showed low level of environmental awareness among selected schools in the district. This was similar to a study conducted by UN (2010) indicating low level of awareness due to poor participation in public hearing by local community in Georgia. The findings were in conformity with the escalating environmental issues facing schools and local communities. Some of the commonest issues were; water bone diseases, poor solid waste disposal, and depletion of fish stocks, deforestation, land degradation, and other forms of pollutions. All these challenges were as a result of actions by local people who were not very much enlightened with regard to environmental management. It was this lack of environmental awareness among the local people both young and old which made them not to change their attitude towards environment. However, implementation of intensive environmental awareness activities and campaigns could help to mitigate these problems. These measures could have been initiated and implemented by the MESVTEE (headquarter, PEO and DEBS offices) and collaborative partners including the actors at local level (head teachers, teachers, pupils and parents).

5.3.1. Actions could be taken at School Level to Improve Environmental Awareness

In order to improve environmental awareness in schools, respondents acknowledged the fact that every school could have developed school environmental policy (SEP) which was not found in schools. The findings in table 22 of section 4.3, shows the highest (75%) respondents strongly acknowledged that school environmental policy had a role in improving environmental management. The lowest (25%) respondents agreed that school environmental policy could have
improved environmental management. SEP could have acted as a starting point for organizing and managing of environmental activities and learning at school level in coherent way. In the context of environment, a policy can be defined as an agreed expression of principles and values to guide actions on the environment. UNEP (2007) define a policy as a statement of intentions and principles for improving a school’s environmental performance. Developing a school environmental policy provides a useful framework for managing an action plan for improving school – based environmental activities. SEP stimulates the introduction of an environmental care system in a school.

The establishment of SEP would inculcate credible education which expresses itself through exemplary behaviour. It could have put theoretical EE into practice and teach pupils, teachers and the community to pay attention to their own impact on the environment in everyday life. ESP could lay a foundation for environment – friendly behaviour in future lives of the young people so much that their actions could not compromise the life of ecosystem. The policy could have made schools take-up their responsibilities and set up initiatives to lower the burden they imposed on the environment. When seen in broader context, it was providing a template for infusing programmes in schools life that could have created opportunities for integration of EE and other cross cutting themes in the school curriculum (UNEP, 2007). Thus successful implementation of ESP could have helped schools to mitigate environmental challenges facing the institutions. Therefore, regular monitoring and effective supervision was the key factors for implementation of SEP.

However, in chapter two GRZ (1997) states that Livingstone environmental education project was piloted. This project has been involved in the development of the SEP to be adopted by all schools. Nevertheless, by the time of this study none of the visited school had environmental policy in place. Therefore, the assertion by GRZ that schools are adopting SEP was not the reflection of reality in all visited institutions.

Other action was that, schools were to come up with clubs and committees to effectively deal with specific environmental programmes. It was further suggested that school administrations should intensify monitoring in order to keep track the performance of clubs and committees assigned to implement environmental awareness activities. They further suggested that
supervising responsible officers, motivating individual groups and provide enough resources to execute environmental awareness programmes could help people acquire knowledge, skills and value that could have changed their attitude towards environment. At school level, administrators could have explored means and ways of partnering with stakeholders in addressing environmental issues. And school administrations could have achieved this partnership by inviting stakeholders to the meetings concerning specific developmental programmes for the school. USAID (1999) in chapter two acknowledged that Chongololo clubs, government funded groups organized in public and private schools play a very important role in raising EA. However, such clubs and groups were not found in schools by the time of study.

School management could have engaged all relevant stakeholders in environmental programmes and ensure that any environmental campaigns initiated by the stakeholders continued until the intended goals are achieved. Besides, managements should have introduced dust bins either modern or traditionally made for effective management of solid wastes, each school should draw up an action plans on how to address trespassing and promote good environmental practices such as hand washing, tree planting and protect those that are already in place. They also acknowledged the fact that, behavior change was important for environmental management. Therefore, schools could come up with activities which aimed at changing actors` behaviour towards environmental management. Moreover, schools could have conducted continuous sensitization campaigns for environmental awareness.

Both teachers and pupils could have taken keen interest in environmental issues by ensuring that rubbish pits are available to facilitate proper solid wastes management and allocate more resources to environmental programmes. School administrations should develop a culture of participating in commemoration of world environmental days such as water day, earth day, and environment day and so on. This could have stimulated peoples’ desire to care for the environment. Schools should come up with localized rules and regulations to deter people from littering and other negative vices.

5.3.2. Proposed Actions by MESVTEE to Improve Environmental Awareness

The MESVTEE is charged with the responsibility to provide EE through curriculum which is offered either as a co-curriculum or core curriculum in schools. Currently the ministry has
integrated EA activities into existing disciplines within the curriculum. However, the outcomes from this approach are not mitigating environmental problems facing the country. This was the reason why EE could be taught as a discipline on its own and it should be taught as early as pre-school level through to adult education programmes. There was need to reorient education that recognize traditional compartments and other categories that could work increasingly at the interface of disciplines in order to address the complex problems of today’s world.

However, one of the actions that could have been undertaken was partnership in providing environmental awareness in schools. However, MESVTEE was to intensify and appreciate partnership with relevant stakeholders in providing EE and EA in both public and private institutions. It was generally accepted that, partnership play significant role for successful completion of progressive programmes. Therefore, the ministry could have created enabling environment that would allowed interesting partners to work with the ministry in promoting awareness in schools. Besides, activities of these stakeholders were to be in conformity with the prevailing social, natural, political and cultural conditions of local communities in order for programmes to be implemented effectively and ensure continuity.

The MESVTEE is charged with the responsibility of training human resource and provision of teaching and learning aids in learning institutions in order to facilitate quality education in the country. At the time of this study, there was serious shortage of learning and teaching aids for environmental education in schools. Additionally, teachers were not very much aware about the existence of EE in a curriculum as a cross-cutting theme. This was in contrast with the assertion by GRZ (2006) that teachers’ resource centers were positioned in selected areas around the country to provide environmental information to teachers for use in lesson plans. Thus lack of knowledge on EE by the teachers and insufficient environmental related teaching and learning aids had ultimately contributed to the low level of EA among key actors. Hence, the government through the MESVTEE had to come up with deliberate policy to improve teachers’ qualifications and resource base for effective delivery of EA in schools. This was confirmed by the study conducted in Zambia by Mweemba (2008:8) who stated that, “insufficient training of high school teachers in environmental education remains the most critical constraint in the improvement of teaching methodologies. Lack of methodological approaches to environmental education which stress active learning across disciplines and adaptation to local conditions, is a serious deficiency.
in Zambia’s high schools and should be looked into urgently.” This strategy could have positively contributed to the recognition of benefits of EA to the community and the nation at large throughout generations.

Similarly, respondents indicated that CPD/TGMs were critical component for raising awareness among actors. Therefore the ministry could have prioritized provision of EA programmes in continuous professional development or teachers’ group meetings in the curriculum. Inclusion of EA activities in these meetings could have helped teachers to develop strategies that would help to mitigate environmental issues in schools. Therefore, teacher education development (TED) department in the MESVTEE was to restructure the existing CPD/TGM manuals in order to include EA components. This step could have enabled teachers to become enlightened and more aware about the impact of human activities on the environment and how to manage the environment in a more sustainable manner.

5.3.3 Proposed Actions by Stakeholders to Improve Environmental Awareness

Stakeholder participation in environmental awareness programmes was very important and it cannot be over emphasized. As already alluded, stakeholders includes; community, faith base organisations, NGOs, international agencies and other government departments. In most cases activities of these institutions were centered on specific problems facing a particular community. Stakeholders are identifying specific environmental problems and try to provide mitigation measures to environmental challenges. A practical example can be drawn from the action taken by Standard Chartered bank plc which was trying to mitigate climate change by planting of trees in Livingstone and Victoria cities. Saturday post December 2013.

*Standard Chartered bank chief executive officer Andrew Okai says environmental protection has a very important role to play in the economic, social, the material and physical life of Zambians. The Stanchart Zambia has partnered with standard chartered Zimbabwe to plant 1000 trees to help offset the carbon-foot prints of the UNWATO conference held in Livingstone and Zimbabwe’s Victoria falls last augsut. We hope that the trees planted at the Victoria Falls will save as a permanent reminder about the importance of protecting the environment... (Saturday Post December 2013).*
From the findings it was very clear to deduce that there was low level of participation by stakeholders in promoting environmental activities. Hence, there was need for effective participation by the stakeholders to effectively address environmental issues. UNICEF (2000) conducted a similar study in Bangladesh were stakeholder participation was low despite being considered as paramount in promoting awareness. Low level participation by stakeholders in schools was in contrast with the assertion by GRZ (2007) that NGOs have been on the front line in creating environmental awareness through diverse means and further states that most NGOs have news letter, periodicals, brochures, magazines and other publications.

The key actors would acquire more information about environmental protection and conservation through public sensitization campaigns. However, the findings showed that most of schools in the district were not observing or participating in public awareness campaigns such as celebration of worlds’ environmental days like earth day, water day, environmental day and so on. Respondents indicated that at times they did not even know when these important events were taking place. Besides they were very few organisations conducting public environmental awareness campaigns in schools. Nevertheless, it was very important for the schools to be proactive and take part in public environmental awareness campaigns for the pupils and teachers acquire more knowledge and skills that would enable them to act responsibly. During public awareness campaigns, schools could participate by performing sketches and singing songs concerning environmental protection and conservation. In these campaigns people would be sensitized on how to mitigate various environmental challenges such as solid waste management, land degradation and so on.

Intensifying public environmental awareness campaigns in schools was very critical in the sense that, many people were being captured within a single event. Therefore, school administrators would ensure that every individual (teachers, parents and pupils) are actively involved in all EA campaigns. Therefore, these public awareness campaigns should be conducted in a continuous and progressive manner. A study conducted in the town of Quebrada Ganade, Costa Rica by Vaughan et al (2003), revealed that if EA programmes for children are guided in a proper way, parents and adults could also benefit from them. Knowledge gain pass on from children to parents (and other parents) indicates that awareness can be delivered in a way from the school to the community. Public EE and applied communications are the key tools for expansion and
effective delivery of awareness campaigns to different types of audiences. Campaigns and programmes should be designed in a sustainable way to assist target groups with the acquisition of knowledge, skills, and attitudes that are necessary to solve actual and local environmental problems.

**5.5 Reflections on extent to which Research Questions have been addressed**

The research was a great success as the respondents were able to give the relevant information with regards to the research questions. Firstly the research sought to determine types of awareness which pupils, teachers and pupils had about environmental mismanagement in Nchelenge district. This was addressed in chapter six of the document from section 5.1.2 to 5.1.6. The sections outlined the main types of awareness such as formal, informal and non-formal. Examples of formal, informal and non-formal awareness are also highlighted. Besides, traditional cultural practices were also recognised by respondents as another type of environmental awareness. These types of awareness ranged from solid waste management, water and sanitation, healthy issues, management of trees, general management of environment and so on. Medias through which these types of awareness were provided are cited in table 10, practicing of environmental cultural aspects is shown in table 12. Additionally, implementation of these types of environmental awareness by MESVTEE through the relevant systems is shown in tables 14, 15 and 16 in chapter five.

In the same vein, the research sought to establish types of sensitization that had been done concerning the environment among selected schools of Nchelenge district in Luapula province. Consequently the research question was addressed in chapter six sections 5.2 and 5.2.2 under tables 13, 14, 15, 16, 17, 18, 19, 20 and 21 of chapter five of this document. Therefore, the type of sensitization programmes among selected Zambian schools of Nchelenge district in Luapula province were as follows; WASH program by UNICEF, solid waste management and general cleanliness of the environment by World Vision Zambia, water and sanitation by health department and UNICEF, and so on. Some of these sensitizations activities were further conducted during environmental world days celebrations such as international world water day, earth day, forest day environmental day and so on. The research has further indicated the effectiveness of these sensitizations campaigns in raising awareness among respondents and the rate at which these types of sensitizations were being implemented.
The third research question was addressed in the sense that the respondents (pupils, teachers and parents) were able to explore actions that could have been undertaken to address environmental mismanagement in Nchelenge district. This was addressed in chapter six sections 5.3 to 5.3.3 of this document and section 4.3 of chapter four. Some of the actions alluded by the respondents were as follows; developing of environmental school policy (SEP) as indicated in table 22, establishment of clubs and committees to deal in specific environmental activities, fostering partnerships with relevant stakeholders in combating environmental issues both in schools and communities, embracing of environmental cultural practices, promoting continuous environmental awareness activities in schools, promoting community participation and so on. Table 22 in chapter five has shown the response from the respondents on the importance of having ESP in schools.

5.6 Summary
This chapter presented the discussion on the environmental awareness among selected Zambian schools of Nchelenge district in Luapula province. In order to provide answers to the general research question, the discussion centered on the following themes within the chapter; types of environmental awareness prevailing in schools which includes; formal, informal and non-formal. The chapter has also discussed the types of sensitisation of activities conducted in schools and the surrounding communities by institutions charged with the responsibility to educate people on environmental management. Further, the chapter discussed the actions that could have been undertaken by actors and relevant stakeholders to mitigate the rising environmental challenges. Others are the role of traditional cultures in raising environmental awareness, implementation of environmental awareness programmes by school administrators, importance of partnership in raising environmental awareness and the role of MESVTEE in promoting environmental awareness.
CHAPTER SEVEN
CONCLUSION AND RECOMMENDATIONS

6.0 Introduction
This chapter gives the conclusions and recommendations derived from the findings in this study. From the data analysis, a number of issues concerning EA in Zambian public schools were raised from which the conclusions were drawn. Therefore, the outlined recommendations in this chapter seek to address the issues raised in the study.

6.1 Conclusion
The interpretation of findings and discussion of themes which emerged from the literature and the study provided us with the long awaited answers to research questions of this study on; what pupils, teachers and parents` knowledge and conceptions about environmental awareness, what type of sensitization are conducted and how appropriate actions could bring about good environmental management practices both within and outside school environment. It is hoped that the results and discussion of the study findings presented in this study would have a practical application for awareness in two ways: Firstly, this study could be seen as a basis for designing a range of activities which would help teachers, pupils and parents extend their levels of conceptual understanding of environmental issues. Secondly, commonly help gaps in knowledge, misconceptions and mismanagement environment could be borne in mind when utilizing the environment. As for policy makers, the findings of this study have indeed a revelation and should enhance effective designing of programmes that would aim at increasing peoples` knowledge and skills.

With increasing teachers, pupils and parents’ environmental awareness and attitude, they increase their environmental knowledge and values. Some of the findings in the present studies gave a negative indication of environmental awareness and attitude among teachers and pupils which may as a result of inadequate sensitizations on environmental issues. Different forms of programmes should therefore, be used more intensively to facilitate the transmission of environmental information and promote more positive environmental attitudes. The environmental awareness and attitude of the pupils in this study showed that the level of environmental awareness among actors was very low.
This study showed that although environmental awareness was embedded in EE, which was integrated into school national curriculum, it was not necessarily taught frequently or effectively. Teachers were not adequately trained in environmental education so much that they could effectively promote environmental awareness. Teachers identified a number of obstacles to environmental awareness campaigns and sensitization in schools, including insufficient teacher training in EE, scarce teaching resources, inadequate funding and less consideration by administrators. Therefore, there was need to accelerate efforts to improve environmental awareness through three approaches namely; a systematic approach to education, integrated and sustainable socio-cultural approach. These approaches could strengthen and developed local knowledge about environmental protection, and it could take the substance of law and consistent enforcement. The study further recognised that, actors needed to be part of the whole process of planning, development and management of any environmental awareness programmes. Actors should therefore be considered as the main driving forces behind the implementation of awareness programmes.

6.2 Recommendations
Based on the findings of the study, the following recommendations are made;

i. To develop and implement environmental school policy. It was found that all (10) sampled schools had no environmental policies in place to guide the implementation of environmental awareness activities. This action would bring to an end the haphazard way of doing things as opposed to the current scenario in most schools.

ii. Establishment of committees and clubs to raise environmental awareness. Generally, all the (10) visited schools had no viable committees and clubs to significantly raise environmental awareness in institutions and surrounding communities.

iii. Integrating of environmental education components in CPD/TGMs action plans in order to raise awareness among teachers. At a time of this study it was observed that, teachers` knowledge on environmental management was very limited. Therefore, it could be of help to raise teachers` knowledge and skills on environmental management through integration of environmental education components into CDP/TGM activities.
iv. Stakeholders to be consistency in the implementation of sensitisation activities in all institutions. It was generally observed that all the (10) visited schools lacked consistency in implementation of environmental awareness activities. Therefore, this action would improve management of environment.

v. Critical shortage of learning and teaching materials to promote awareness. In most of the schools, there was completely nothing to talk about in terms of material resources for EE. It was one of the prevalent conditions that had greatly contributed to low level of environmental awareness among the actors in schools. Therefore, the MESVTEE should provided substantial learning and teaching resources in schools in order to facilitate smooth delivery of knowledge and skills that will raise awareness among the learners. For example, posters showing environmental crisis as a result of human activities such as garbage, land degradation, air pollution, discharge of effluents into water bodies and so on.

vi. Embedding of traditional cultural practices in environmental sensitisation campaigns. During the research it was observed that there were some environmental cultural practices that are being practiced in the communities. However, all the (10) visited institutions in the district did not embrace these practices effectively. Therefore, it is recommended that school managements and community leaders to work together in promoting these practices.

vii. To accelerate the implementation of types of environmental awareness programmes in schools. During the study, informal awareness activities were not adequately addressed. There was need for school managements to effectively implement environmental awareness activities by prioritising areas of critical concerns.

viii. Commemoration of world environmental days in order to explore types of sensitisations. During research it was revealed that sensitisation campaigns were poorly observed. Therefore, it is recommended that schools should effectively take part in commemoration of these important world days. This would improve people’s knowledge and skills for better management of the environment.

ix. School managements to accelerate environmental awareness sensitisation campaigns in schools adequately. During the study, it was observed that implementation of environmental awareness campaigns were not done in a manner that could stimulate
positive attitude towards environment. However, most of the campaigns were done haphazardly.

x. MESVTEE and collaborating partners to develop and implement actions that would raise environmental awareness. It was very important to acknowledge the fact that raising environmental awareness in schools and other institutions could not be done by school management alone without the involvement of collaborative partners. Therefore, participation by private sector and community is very important in dealing with specific environmental problem facing a particular institution or community.

6.3 Suggestions for Future Research
To thoroughly investigate the scope of this study, a number of other studies should be conducted specifically to each of environmental issues highlighted such as depletion of fish stocks in Lake Mweru, deforestation, outbreak of water borne diseases, poor solid waste management and so on. Besides, research concentrating particularly on environmental attitudes as outlined through the UNEP should be conducted.
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APPENDICES

APPENDIX A: QUESTIONNAIRE FOR PUPILS

RESEARCH TOPIC: ENVIRONMENTAL AWARENESS AMONG KEY ACTORS OF SELECTED ZAMBIAN SELECTED SCHOOLS OF NCHELENGE DISTRICT IN LUAPULA PROVINCE

Am a student from University of Zambia and I am conducting a research to determine the level of environmental awareness among selected Zambian schools of Nchelenge district of Luapula Province. If you could take a few minutes to complete the questionnaire I would be very grateful. This information will be purely used for academic purposes only and privacy is highly assured.

Thank you for your time.

INSTRUCTIONS
Do not write your name on this questionnaire

Tick in the first boxes to your and write in the space provided.

SECTION A

1. SEX
   a. Male [ ]
   b. Female [ ]

2. AGE
   a. 5 – 10 years [ ]
   b. 11 – 16 years [ ]
   c. 17 and above years

3. What is the status of your school?
   a. Senior secondary school [ ]
   b. Junior secondary school [ ]
   c. Primary school [ ]

4. In which grade are you?
   a. Grade 1 – 4 [ ]
   b. Grade 5 – 7 [ ]
   c. Grade 8 – 9 [ ]
   d. Grade 10 – 12 [ ]

SECTION B

TO DETERMINE THE TYPE OF AWARENESS

5. Environmental awareness refers to the condition of being aware, having knowledge, positive attitude and conscious of the environmental issues such as drought, land degradation, water and air pollution.
   a. Strongly agree [ ]
   b. Agree [ ]
   c. Disagree [ ]
   d. Strongly disagree [ ]
6. Which of the following is your major source of information about environment?
   a. School [ ]
   b. Magazines [ ]
   c. Books [ ]
   d. Radio [ ]
   e. Television [ ]
   f. Peer groups [ ]
   g. Others [ ]

7. How often do other stakeholders (NGOs, Faith based organisation, government departments and others) conduct environmental awareness campaigns at the school or in the village?
   a. Very regular [ ]
   b. Regular [ ] [ ]
   c. Rare [ ]
   d. Very rare [ ]

8. How often do you learn about environmental protection and conservation both at school and home?
   a. Very often [ ]
   b. Often [ ]
   c. Rare [ ] [ ]
   d. Very rare [ ]

9. Are there cultural practices that border on good management of environment?
   a. Yes [ ] [ ]
   b. No [ ]

10. If your answer to question nine (9) is yes, list down any two of such practices.
    ……………………………………………………………………………………………………………………
    ……………………………………………………………………………………………………………………
    …………………………………………………………………………………………………………………… [ ]

TO DETERMINE TYPE OF SENSITISATION
11. Are there environmental sensitisation programmes conducted by collaborative partners concerning environmental management?
   a. Yes [ ]
   b. No [ ]

12. If your answer to question eleven (11) is Yes what environmental sensitisation programmes have been conducted by collaborative partners?

………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………………………………………………………………[ ]

13. How often does the Head teacher and teachers talk about protecting and conserving the environment?
   a. Very often [ ]
   b. Often [ ]
   c. Rare [ ]
   d. Very rare [ ]

14. Observing the celebration of international world days such as earth day, environmental day, and water day and so on is another form of sensitization. How often does the school participate in commemorating of international world days such as earth day, environmental day, water day and so on?
   a. Every regular [ ]
   b. Regular [ ]
   c. Irregular [ ]
   d. Very irregular [ ]

15. How do you describe the effectiveness of clubs and committees in promoting environmental awareness activities in schools?
   a. Very adequate [ ]
   b. Adequate [ ]
   c. Partially [ ]
   d. Very inadequate [ ]

**ACTIONS COULD DO TO ADDRESS ENVIRONMENTAL MISMANAGEMENT**
16. Learning about good environmental practices every time may help to change people’s attitude towards environment management.
   a. Strongly agree [ ]
   b. Agree [ ]
   c. Disagree [ ]
   d. Very disagree [ ]

17. Taking part in environmental programmes both at school and outside the school can enable a person to take actions that will protect the environment. What environmental activities would you like to take part in?
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   ………………………………………………………………………………………………… [ ]

18. What environmental programmes should be implemented in order to make the school and that of the community to be incompatible with nature?
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   ………………………………………………………………………………………………… [ ]

19. To take part in commemoration of international world days like earth day, environmental day, water day help people to acquire the skills, knowledge and develop positive attitude towards environment protection.
   a. Strongly agree [ ]
   b. Agree [ ]
   c. Disagree [ ]
   d. Strongly disagree [ ]

20. Taking part in school clubs and committees that deal with good environmental actions help both teachers and pupils understand the importance of conserving the environment. Do you support this idea?
   a. Yes [ ]
   b. No [ ]

21. If your answer to question twenty (20) is Yes, what environmental activities would you like these clubs and committees to undertake?
APPENDIX B: QUESTIONNAIRE FOR TEACHERS

TOPIC: ENVIRONMENTAL AWARENESS AMONG KEY ACTORS OF SELECTED ZAMBIAN SCHOOLS OF NCHELENGE DISTRICT IN LUAPULA PROVINCE

I am a student from University of Zambia and am conducting a research to determine the level of environmental awareness among selected Zambian schools of Nchelenge district in Luapula province. If you could take a few minutes to complete the questionnaire I would be very grateful. This information will be purely used for academic purposes only and privacy is highly assured.

INSTRUCTIONS

1. Do not write your name on the questionnaire.
2. Tick in the first boxes and write in the spaces provided.

SECTION ‘A’
PERSONAL INFORMATION

1. SEX
   a. Male [ ]
   b. Female [ ]

2. AGE
   a. 15 – 25 [ ]
   b. 26 – 36 [ ]
   c. 37 – 47 [ ]
   d. 48 and above [ ]

3. How long have you been in the service?
   a. 1 – 5 years [ ]
   b. 6 – 10 years [ ]
   c. 11 – 16 years [ ]
   d. 17 and above years [ ]

4. What is your position?
   a. Deputy Headteacher [ ]
   b. Senior/Head of Department [ ]
   c. Class teacher [ ]
   d. Assistant teacher [ ]

5. What is the status of the school?
   a. Secondary school [ ]
   b. Junior secondary school [ ]
   c. Primary school [ ]

SECTION ‘B’

TYPE OF ENVIRONMENTAL AWARENESS

6. Environmental awareness skills refer to ‘the knowledge, abilities, values and attitudes in the general population needed to live in, develop and support a society which reduces the impact of human activity on the environment.
   a. Strongly agree [ ]
7. Environmental awareness is acquired from different organisations. Which of the following is most common? Tick which is applied
   a. School [ ]
   b. Radio and Television [ ]
   c. Non-governmental Organisation [ ] [ ]
   d. Government department [ ]
   e. Others [ ]

8. Taking part in the celebration of international world`s days such as earth day, world water day, environmental worlds` day is also another type of environmental awareness. How often these celebrations do are conducted in the district?
   a. Very regular [ ]
   b. Regular [ ]
   c. Rare [ ] [ ]
   d. Very rare [ ]

9. How often does the school conduct workshops and induction trainings about environmental awareness?
   a. Very often [ ]
   b. Often [ ]
   c. Rare [ ] [ ]
   d. Very rare [ ]

10. Does the current curriculum contain contents that promote environmental awareness?
    a. Yes [ ]
    b. No [ ] [ ]

11. If your answer is yes to question ten, mention the name of the subjects and specific content?
    …………………………………………………………………………………………………
    …………………………………………………………………………………………………
    …………………………………………………………………………………………………
    …………………………………………………………………………………………………
TYPES OF SENSITISATION

12. How many times does school include environmental sensitisation activities in School Based Continuous Professional Development (SBCPD)?
   a. Very often [ ]
   b. Often [ ]
   c. Rare [ ]
   d. Very rare [ ]

13. How often do the District Education Board Secretary (DEBS) and Provincial Education Office (PEO) conduct environmental sensitization activities concerning environment in schools?
   a. Very regular [ ]
   b. Regular [ ]
   c. Irregular [ ]
   d. Very irregular [ ]

14. How regular do collaborative stakeholders conduct environmental sensitisation programmes in school?
   a. Weekly [ ]
   b. Monthly [ ]
   c. Termly [ ]
   d. Annually [ ]
   e. Very irregular [ ]

15. Which of the following organisations conduct environmental sensitization programmes at your?
   a. Church [ ]
   b. Non-governmental Organisations [ ]
   c. Local council [ ]
   d. Donor agencies [ ]
   e. International Organisation [ ]
   f. Government departments [ ]

16. Are there any traditional practices that talks about conservation and protection of the environment that are being practiced?
a. Yes  [  ] 

b. Non   [  ]

17. If your answer to question sixteen is yes, what are these practices?

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…………………………………………………………………………………………………………………
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ACTIONS TO ADDRESS ENVIRONMENTAL MANAGEMENT

18. If the school develop and implement environmental school policy effectively would help to address environmental mismanagement?
   a. Strongly agree  [  ]
   b. Agree          [  ]
   c. Disagree       [  ]
   d. Strongly disagree  [  ]

19. How do you intend to partner with other stakeholders (government departments, NGOs, donor agencies, international organisations) in promoting environmental awareness?
   a. Strongly agree  [  ]
   b. Agree          [  ]
   c. Disagree       [  ]
   d. Strongly disagree  [  ]

20. How often would you like the school to take part in international worlds` days for environmental management?
   a. Very often      [  ]
   b. Often          [  ]
   c. Rare           [  ]
   d. Very irregular [  ]

21. What remedies should be taken in order to improve environmental management both at home and institution?

…………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………
22. How often would you like environmental awareness programmes being carried out in schools and communities?
   a. Very regular [ ]
   b. Regular [ ]
   c. Irregular [ ]

APPENDIX C: INTERVIEW SCHEDULE

RESEARCH TOPIC: ENVIRONMENTAL AWARENESS AMONG KEY ACTORS OF SELECTED ZAMBIAN SCHOOL OF NCHELENGE DISTRICT IN LUAPULA PROVINCE

SECTION A

Sex
   a. Male [ ]
   b. Female [ ]

STATION:………………………….  POSITION:………………………………

SECTION B

TO DETERMINE TYPE OF AWARENESS

1. What do you understand by the term environmental awareness?
2. What type of environmental awareness activities provided in schools and surrounding communities?
3. What are the major sources of information on types of environmental awareness?
4. What cultural practices are incorporated in raising awareness campaigns in schools?
5. What cultural practices are incorporated in raising awareness campaigns in schools?
6. Who facilitates these types of environmental awareness in schools?
7. How do you describe the effectiveness of stakeholder participation in conducting environmental awareness campaigns in schools?
8. How effective does the international world days such as the earth day, water day, environmental day and so on contribute to the environmental awareness?

**TO DETERMINE TYPES OF SENSITISATION**

9. How often does the institution(s) integrate environmental awareness activities in School Based Continue Professional Development (SBCPD/TGM)?
10. What sensitization programmes have been put in place in order to raise environmental awareness?
11. What types of environmental sensitization activities do stakeholders (NGOs, faith based organisation, government departments) conduct in institution(s) and surrounding communities?
12. What environmental sensitisation programmes does school management have been implementing in order to improve environmental management in school?

**TO FIND OUT ACTIONS TEACHERS, PUPILS AND PARENTS COULD DO TO ADDRESS ENVIRONMENTAL MISMANAGEMENT**

13. Change of attitude towards the environment is one of the most important aspects for environmental protection and conservation. How do you intend to instill positive attitude and behavior among key actors?
14. What environmental practices would you like to be implemented in institution(s) in order to improve environmental management?
15. How do you intend to partner with other stakeholders (NGOs, churches, government institutions, local communities) in promoting of environmental awareness?
16. Having environmental policy in institutions help in promoting awareness. What measures could you use to ensure that school environmental policy was effectively implemented?
17. Having effective clubs and committees dealing with environmental issues in institutions is very significant. How do you ensure that clubs and committees are actively executing their programmes?