

**THE INFLUENCE OF PRESBYTERIAN CHURCH OF EAST AFRICA ON THE
ENVIRONMENTAL STATUS IN KIMUKA AREA OF NGONG HILLS, KENYA**

BY

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DECLARATION

This research project is my original work and has not been submitted for a degree award in any other university

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DEDICATION

This project is dedicated to my beloved husband James Mbaria, who tirelessly encouraged and supported me during the entire time of my studies, and to all my children. I also dedicate it to my mum who encouraged me greatly.

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DEFINITION OF TERMS

Congregation: Is a body of believers in the true God, baptized and participating in the Lord's Supper it includes adherents and their children associating together in a particular locality of Christian worship, instructions, fellowship, witness and service (PCEA Practice and Practice Manual, 1998: 52).

Environment: Natural environment may be understood as a system which includes all living things and the air, water and soil which are their habitat (Ogutu, 1992: 36, 37).

Members: Are those in full communion of the congregation including those persons who have been admitted as such on profession of faith based on presentation of PCEA certificate of transfer from another congregation or those sessions accepts without the above conditions (PCEA Practice and Practice Manual, 1998: 52).

Ordinary people: Citizens who have received only basic formal education or none at all and their access to resources are minimal.

Parish: Refers to a sphere of pastoral duty encompassing one or more congregations, to which minister/ministers may be appointed under rules laid down from time to time by the General Assembly, according to PCEA constitution (PCEA Practice and Practice Manual, 1998: 52).

Rehabilitation: Refers to the act of restoring something to its original state, like the rehabilitation of the forest by human activities in planting of trees and prevention of soil erosion (<https://www.vocabulary.com/dictionary/rehabilitation>).

Session Clerk: The person charged with the keeping the record of a meeting in the courts of the Presbyterian Church of East Africa.

Kirk Session: The lowest court of the Presbyterian Church, Comprising of Elders elected by the local congregation(s) and the clergy of those congregation(s).

LIST OF ACRONYMS AND ABBREVIATIONS

ACLCA	American Center for Life Cycle Assessment
ACTS	African Centre for Technologies Studies Press
AIC	African Inland Church
AIM	African Inland Mission
AMREF	Africa Medical and Research Foundation
ASAL	Arid and Semi-Arid Lands
ATR	Africa Traditional Religion
CMS	Church Mission Society
CSM	Church of Scotland Mission
EASM	East Africa Scottish Mission
FCS	Free Church of Scotland
GA	General Assembly
GAC	General Administrative Committee
GBM	Green Belt Movement
GOK	Government of Kenya
HGF	Holy Ghost Fathers
H₀	Null Hypothesis
HSRC	Human Sciences Research Council

IBEA	Imperial British East Africa Company
KenGen	Kenya Electricity Generating Company
LUCID	Land Use Change Impacts and Dynamics
MA	Master of Arts
NACOSTI	National Commission for Science Technology and Innovation
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organisations
PCEA	Presbyterian Church of East Africa
PCMF	Presbyterian Church Men Fellowship
REV	Reverend
UMM	United Methodist Mission
UN	United Nations
UNCED	United Nations Conference on Environment and Development
WFFS	White Fathers Faith Societies

ABSTRACT

This study aimed at determining the influence of Presbyterian Church of East Africa (PCEA) on knowledge, attitudes and practices of the environmental conservation and rehabilitation in Kimuka area of Ngong Hills, Kenya.

Data collection was by questionnaire, interviews and focus group discussions. The key informants were the Parish Minister, Evangelist and Church elders while the discussions were with the 6 church groups. The questionnaires were filled by a randomly selected sample (n-77) of members of the 6 congregations in the Parish out of a total of the 251 families. Data was generated on the introduction and spread of the PCEA, knowledge, attitudes and practices on environmental conservation and rehabilitation. Demographic characteristic of respondents was also studied. Information on exotic and indigenous plants growing in the area was recorded and plants mentioned were identified using local names by participants and sample collected and submitted for botanical identification at University of Nairobi, Chiromo Campus. The data obtained was entered into an excel spread sheet and analyzed.

The results showed that PCEA was introduced to Kimuka area in 1970s but although the community had converted to Christianity, they still retained some aspects of beliefs and cultural practices of African Traditional Religion including traditional uses and preservation of important natural resources. On demographic characteristics, the literacy is high with 91% of the respondents having formal education. Male gender is dominant and family values are highly regarded. Christianity, development and education have influenced environmental activities in the area hence modifying ecosystem. The negative environmental impacts reported by respondents were; soil erosion caused by activities like excessive land tilling, deforestation and overgrazing. Other environmental challenge reported were climate change, poor waste disposal, desertification, water scarcity and increased human-wildlife conflict. Majority of respondents (91%) were knowledgeable on environmental issues, were creating awareness on environmental matters and participated in environmental awareness through seminars, sermons and activities like control of soil erosion, planting of trees, sinking of borehole, harvesting rainwater and protection of water catchment areas. Natural vegetation is valued as source of rain, shade, beauty, traditional medicine, and pasture among others. Majority of respondents (51.9%) had the attitude that environmental matters should be a concern for multiple stakeholders. Others thought it was the responsibility of only individual (36.4%), government (6.5%), environmental groups (3.9%), and industries (1.3%) to take care of the environment. This study established that in Kimuka, Christians belonging to PCEA have traditional knowledge on the vegetation passed through generations. Different plants species with important traditional uses especially as remedies for human and livestock illnesses were known to 73% respondents who included the youth.

It was concluded that PCEA Ntashat Parish members did not discard some cultural and traditional knowledge but practiced them while being members of PCEA. It was recommended that further studies should be conducted to tap useful traditional environmental practices and utilization of natural resources in Kimuka. Christians who ignored important ATR knowledge should be encouraged to inculturate it for the benefit of African communities. However, it is important to use modern technologies to validate this knowledge before utilizing it.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Natural environment refers to the entire surroundings of the living organism and it mainly consists of living and non-living matter. In addition, nature has natural forces. Among the non-living matter are substances like rocks, soil, water and air bodies. The forces found in nature include sunlight, thunder, and wind. The living components of natural environment are divided into the plants and animal kingdoms all of which were created by God for a purpose (Genesis 1: 26-31). Prof. Ogutu in the book, *“God, Humanity and Mother Nature”*, defines natural environment as all living and non-living. This can as well be referred to as the ecosphere (Ogutu, 1992: 36-37). The mutual coexistence of every aspect of natural environment is essential to the survival of God’s creation. In the contemporary world, environmental moralists prefer to use the term “natural ecosystem” which refers to the assembly of ecologically inter-related living things that maintain their existence of the populations of different species of living organism. According to scientific principles, man and other living organisms have been experiencing the evolutionary processes of heritable variation and natural selection without any human control (Taylor, 1986: 3).

Human activities such as farming, grazing and use of poisonous chemicals may influence the balance of natural environment or ecosystem either positively or negatively. The negative impacts of human activities lead to environmental degradation while the positive effects are geared towards environmental conservation and rehabilitation. In many parts of the world, environmental rehabilitation has interested various types of human populations. It is important to constantly monitor the status of ecosystem in order to institute mitigation of environmental degradation. This study has focus on the influence of Presbyterian Church of East Africa (PCEA) on the environmental status in Kimuka area of

Ngong Hills, Kenya. Religious communities are increasingly becoming involved as caretakers of environment in order to fulfill the role humans were assigned by God, their creator.

According to Gustavo in his book entitled *Job*, God created human beings and gave them full responsibility to be stewards and caretakers of the earth and all that it contains (Gustavo, 1987:65-75). This has also been reflected by Saint Francis of Assisi in Encyclical letter by Holy Father Francis entitled “*Care for our Common Home*” where St. Francis of Assisi is cited comparing man’s home (earth) with a sister who opens her arms to embrace her relatives (Laudato si’, 2015: 7).

Human has lived in harmony with the environment and enjoyed the products of nature for his survival. Proper utilization of the natural resource does not lead to depleted because of the great capacity for environmental regeneration. However, due to greed and selfishness, depletion of natural resources may result if the current trend of overexploitation of environmental resources continues uncontrolled. This has been cited by Henry Okullu in his book “*Church and Politics in East Africa*”, where a letter in the Daily Nation of November 1973 entitled “*Plain Greed is Running the Kenya Coast*”. The article reported that trees in use of charcoal burning were being cut down extensively despite the ban of this practice. In addition, hotels were being built replacing the natural habitats of birds and other animal life in the area (Okullu, 1974: 31). There is need to conduct studies on community knowledge, attitudes and practices on activities that affect the environment in order to assist communities to conserve and rehabilitate their natural environment. In the current study data was generated on knowledge, attitudes and practices of members of PCEA Ntashat Parish in Kimuka area, Ngong Hills, Kenya to establish their involvement on environmental issues such as rehabilitation and utility of the natural vegetation.

According to Mahatma Gandhi, the “Earth has enough to satisfy every man’s need, but not every man’s greed”. Every individual should make simpler his or her life; to share his or her possessions and to care for his and her environs. (<http://www.mkgandhi.org/environment/envcrisis.htm>). Unfortunately, it has now

been observed that in many parts of the world including some parts of Kenya, the natural environment is continuously being degraded by irresponsible human activities that may be religious, cultural and economic in nature. The negative environmental effects of human activities include draining rivers, new technology, deforestation, and air pollution (<https://dirt.asla.org/2010/04/06/six-ways-that-human-activity-is-changing-the-planet/>). The current study aim at generating data from members of PCEA Ntashat Parisha in Kimuka, regarding environmental conservation and rehabilitation and to understand whether man's greed influences the environmental activities as pointed out by Mahatma Gandhi.

Environmental stewardship has been picked up by denominations like PCEA in Kenya, which have formulated environmental policies at national level and cascaded them down to Parish and Congregation levels. The success of the church based policies on environment, have not been thoroughly investigated in Kenya. However, some Kenyan scholars in religious studies have participated in environmental work. In a book titled "*Christian Theology and Environmental Responsibility*", Mugambi and Vahakangas have observed that environmental conservation has currently preoccupied the human race more than ever before. This is also evidenced by the many environmental themes, books and papers which have been published on environmental issues. In addition to the publications, students and scholars from many disciplines including theological studies are increasingly becoming interested in research on environmentalism. Seminars, Consultation, workshop and Conferences are continuously being organized all over the world regarding the environmental rehabilitation (Mugambi and Vahakangas, 2001: 2).

The environmental conservation concerns have gained the momentum overtime, particularly since 1992 when the United Nations held a Conference on Environment and Development (UNCED) at Rio de Janeiro (Mary, 1993: 35-51; Mwikamba, 1993: 8; Otim, 1992: 37). Though scholars from many different disciplines have published books on ecological perspectives, the seriousness of conserving, improving and rehabilitating the environment is not witnessed. There

are ecological challenges locally, nationally and globally. A power for total commitment should be found to bring change as far as conservation and rehabilitation of the environment is concerned. Berry Thomas in his book *“The Dream of the Earth”* observed that inadequate efforts have been put in the conservation of the earth’s natural state. According to him, the power for drastic change should be a “psychic and social transformation”. How we value, select, take action on the environment and understand our relationship to the earth is important for the successful care for the environment (Berry, 1988: 42).

Therefore environmental studies in many parts of the world need to be continuously undertaken. The current study was designed to generate data on the current knowledge, attitudes and activities that the PCEA Ntashat Parish community has towards conservation and rehabilitation of the environment with the aim of assisting in decision making as to what information may be beneficial or destructive to the environment in the area. Mugambi and Vahakangas have reckoned that churches have become “Advocates” of the green politics movement to ensure that the good and beautiful creation is sustained and rehabilitated (Mugambi and Vahakangas, 2001: 2).

During a visit to PCEA Ntashat Parish in Ngong, located in Kajiado County, the researcher witnessed several aspects of environmental negligence that needed to be addressed. These included destruction of vegetation and pollution. It was also observed that Christianity is well established in the area with PCEA being one of the denominations. This study aimed at investigating how PCEA Ntashat Parish is contributing towards environmental rehabilitation in order to recommend how the church can be a good entry point for environmental rehabilitation and conservation. In the literature review, the researcher found that the Presbyterian Church of East Africa (PCEA) is among the denominations that have embraced the green politics movement, and it has been encouraging her members to conserve and rehabilitate the environment to maintain the original beauty of earth (<http://www.arcworld.org/downloads/Kenya-PCEA-plan.pdf>).

The PCEA church was started in Kenya in 1891 as a Christian Mission at Kibwezi and named 'The East Africa Scottish Mission' (EASM) and later in 1898; the mission was transferred to Kikuyu due to unfavorable weather condition. Thereafter, EASM expanded to Tumutumu in Nyeri, Meru and other places in the East African countries of Kenya, Uganda and Tanzania. Since then, PCEA has continued to experience tremendous growth leading to the establishment of numerous Parishes and Presbyteries in East Africa. PCEA Ntashat Parish in Ngong Hills Presbytery is one of the PCEA parishes. At parish level, the management of PCEA denomination is done by sessions that comprises of ordained elders under the leadership of an ordained Parish Minister. At National level, the church is steered by the General Assembly comprising of committees with the overall leader being the Moderator of the General Assembly. At the national level, PCEA has a policy that has identified and programmed environmental conservation activities to be undertaken by members at national and grassroots levels in the organizational structure of the denomination. (PCEA, 1998: 71-81)

During the implementation of the PCEA environmental policy, trees have been planted and rain water harvesting done. In addition, utilization of sustainable energy, efficient waste management has been practiced; recycling of the waste and reuse of what has been recycled are among the activities recommended. Therefore, the PCEA echoes the call for efficient environmental management. This takes into consideration that God has commanded Christians to be responsible environmental stewards. This should be observed by not only Christians but also all human beings in the world to retain the natural beauty (<http://www.arcworld.org/downloads/Kenya-PCEA-plan.pdf>). In the current study the PCEA was selected for the study of the environmental issue because of its being wide spread in the study area and the diversity of its member's activities that may impart the environment.

1.2 Statement of the Problem

The PCEA in Kimuka area is comprised of six congregations namely; Kimuka, Oloishoi-bor, Iingaroojj, Olasiti, Nairode and Olkudate that constitutes PCEA Ntashat Parish. This Parish is located in Ngong Hills, in Kajiado County Kenya, and has a history of environmental disaster as explained above. The immigration of people into Ntashat Parish introduced foreign human activities that have influenced the environment negatively. The area is at a risk of desertification due to environmental destruction especially through indiscriminate destruction of vegetation for development of houses, burning of charcoal and replacement of indigenous trees with exotic ones. The first environmental disasters in Maasailand were experienced when the Maasai were invaded by the British colony and the vast land sub-divided in 1900 (Sankan, 1971: 22).

The area is currently experiencing a continuous introduction of new religions especially the increase in Christianity. In addition modern agriculture and western medicine is replacing pastoralism and plants based indigenous traditional system of medicine. People in PCEA Ntashat Parish are no longer able to maintain the environment due to population pressure and increased demands for natural resources leading to their overexploitation. There is an urgent need to institute measures to mitigate environmental degradation and increase community based environmental rehabilitation measures. Like most parts of Kenya, Christianity is the dominant religion and it is prudent to use members of church congregations for environmental rehabilitation. Members of the community in the study area are followers of many denominations that include Catholic, Dominion, Baptist and PCEA. The later was identified as being the dominant denomination and therefore its members were selected for participation in the study as source of data.

1.3 Research Questions

1) How and when was the PCEA denomination introduced into Kimuka and what are trends of its spread and demographic characteristics of the current members?

- 2) What is the level of knowledge, attitudes and practices undertaken by members of PCEA Ntashat Parish on environmental conservation and rehabilitation?
- 3) What are the current environmental conservation and rehabilitation activities that are undertaken by members of PCEA in Kimuka
- 4) What are the types of vegetation and their uses by members of PCEA Ntashat Parish?

1.4 Objectives of the study

The general objective of the study was to establish how the Presbyterian Church of East Africa has spread into Kimuka and how it has continually influenced the environmental status in the area. The Specific objectives were as follows:

- 1) To investigate how PCEA denomination was introduced into Kimuka, trends of its spread and demographic characteristics of the current members
- 2) To assess the knowledge and attitudes of PCEA members in Kimuka towards environmental conservation and rehabilitation
- 3) To establish current environmental conservation and rehabilitation activities being undertaken by members of PCEA in Kimuka
- 4) To determine the types of vegetation and their uses by members of PCEA in Kimuka

1.5 Justification

The Stockholm Declaration 1972 was a milestone in the history of the rights of nature. It sought to give guidelines and principles to inspire communities all over the world in the conservation of the environment. There is need to generate data on status of the environment in PCEA Ntashat Parish in order to implement environmental conservation and rehabilitation strategies. The community in Kimuka require suitable environment for physical sustenance, intellectuality, ethical, social and spiritual development. Natural and man-made environment are essential for satisfaction of crucial individual requirements. Environmental

conservation, improvement and rehabilitation are urgent desire for many communities in the world living in stressful conditions related to poor environment. Governments and churches are intertwined, and must work together to restore the land (Mugambi and Magoti, 2014: 67). This gave basis of investigation on the contribution that PCEA Ntashat Parish gives towards environmental rehabilitation.

1.6 Literature Review

1.6.1 Introduction

Literature review was compiled by obtaining relevant information to give a background of the study and to identify knowledge gaps to which this study was addressing. The information contained in this section is published in books, journal articles and the internet.

1.6.2 Maasai Community and Environment

Environmental issues have been documented in the history of Kajiado County, Kenya. However, more studies are still required. There is no literature concerning the environmental effects of introduction of Christianity in Kimuka area of Ngong Hills. In the beginning of 19th century, the Maasai community is reported to have been devastated by environmental related calamities. A disease that was later eradicated from the world known as smallpox ravaged the Maasai community affecting humans'. While this was happening, the Maasai herds were being seriously faced with risk of elimination by rinderpest, a serious disease livestock which has also been eradicated (<http://travel.cnn.com/myfirstmaasai094676>; <http://14cowsforamerica.com/history>). It is thought that the two diseases were as a result of oppressive activities by British and Germany colonists who divided the land into British Kenya and German Tanganyika and also introduced the disease causing organisms that led to infections that affected the health of both the Maasai community and their livestock (<http://www.philtar.ac.uk/encyclopedia/sub/maasai.html>).

The British and Germany colonies introduced policies of land hostility and culturally eradicated members of the African communities. The settlers forcefully acquired the resourceful lands that were relied on by the Maasai community for their livelihood. The lands were forested areas and origin of the streams and rivers which provided water for human and livestock. The lands were also a source of traditional medicine, making life in the arid land possible. In a book entitled “History of the Church in Africa” (Hilderbrandt, 1990: 242-246), the author reports that Kenya and Tanzania attained their independence in the early 1960's after fierce fights with the colonial governments. However, these independent African states of Kenya and Tanzania still retained some policies introduced by their colonial predecessors. In another book, it is documented that weakened economy caused by the assault, introduction of new system of education, increased disease prevalence and insufficient water and food supply were the main effects of colonization on Maasai community. The long term effects of colonization have been that the Maasai people continue to struggle for basic human needs, and for the survival of their culture (Goodman and Stanger, 2002: 51-55). The current study aimed at generating data on the extent to which traditional or indigenous knowledge on conservation of the environment has been retained or disappeared in Kimuka due to the cultural changes emanating from colonization of the Maasai community.

Personal communication with the PCEA Ntashat Parish Minister revealed that some parts of Maasailand like the Kimuka area of Ngong Hills highlighted the effects of colonization of community. He explained that the introduction of Christianity negatively affected the preservation of cultural knowledge, attitudes and practices of environmental conservation and rehabilitation of the Maasai community. According to the informant, these effects may have persisted to date. An example is that some vegetation in the PCEA Ntashat Parish in Kimuka area that existed naturally during pre-colonial era are currently scarce and maybe threatened with extinction and require serious conservation efforts. This is because land has been demarcated and sold to individuals from different ethnic groups for residential purposes, while others have been converted into

commercial real estate properties. The vegetation has been affected through cutting down of the indigenous trees and replacing them with modern homes, population growth and crop agriculture among other modern use of natural resources which has affected the environment creating need for rehabilitation efforts (Personal Interview, 17th December 2016). There is no data available in the literature on the efforts to conservation indigenous plant species that still exist in the area and the traditional uses. The current aimed at establishing the identity and availability of the commonly used natural vegetation. The uses of indigenous plants and knowledge of these plants by the various categories the PCEA Ntashat Parish members with regard to their demographic characteristics such as gender, age and level of formal education.

1.6.3 Culture and Environment

Literature review indicates that culture and environment are interrelated (Mugambi, 1996: 28-30). The natural environment has been damaged by detrimental human religious and cultural behaviors and practices that results in environmental degradation and climate change. The environmental effects include decreased water quality, loss of biodiversity, deforestation, pollution and soil erosion. Some of the environmental effects result from direct result of human activities such as Industrial agriculture, charcoal burning, Carbon Dioxide emission whereas others are due to secondary effects that are a series of action and reaction such as climate change and desertification (<http://www.conserve-energy-future.com/causes-and-effects-of-environmental-degradation.php>).

Protection, improvement and sustainability of environment are divine mandates given to man by God and therefore man must be a steward of environmental sustainability. In a book on Environmental Education, it is suggested that the creation of environmental awareness is important but it should go hand in hand with the development of positive concern for maintaining the quality of life on earth (Otiende *et. al.*, 1991: 18-22). Ngong area in Kajiado County, Kenya is an area where land that was previously been used for grazing by the Maasai has been subdivided and converted into residential and commercial real estate properties,

thus causing environmental degradation. This area has been predominantly inhabited by the Maasai who have been forced by prevailing circumstances to over-exploit the natural resources to sustain their livelihood through agricultural activities. There has been introduction of new crops, exotic trees, livestock keeping, source of energy in form of firewood and charcoal, medicinal use of plants, ornamental requirements among other uses. As the population increases, there occurs over-use of natural resources due to agriculture and other activities that utilizes the natural resources at a faster rate than they can be regenerated. In these areas, like any other part of Kenya, religion guides the daily activities of the majority of the population ((Mugambi, 1996: 28-30).

Before colonization of Kenya by the British, African Traditional Religion (ATR) had activities that helped to sustain the environment. These included prayers for rains during drought, conservation of forests used as sacred places for worship and preservation of medicinal plants among other activities prescribed in ATR (Goodman, 2002: 280-286). Information on the extent of retention of this indigenous knowledge by communities that have been modernized by formal education and Christianization is scanty and should be studied and documented. PCEA Ntashat Parish in Ngong Hills, Kenya is an area where documented literature on this subject is missing.

1.6.4 Religion and Environment

Currently, ATR has been replaced by other religions especially Christianity. Traditional plant based medicine has been replaced by Western (modern) medicine and natural environment is being replaced by buildings farms and other types of land utilization. During a recent visit to PCEA Ntashat Parish, the researcher witnessed several aspects of environmental degradation in the form of deforestation, soil erosion, charcoal burning and overstocking of livestock, scarcity of water and paper dumping. An informal discussion with a few opinion leaders gave the researcher the impression that there is need to investigate the religious activities in environmental conservation and rehabilitation in the area.

Religion, culture and environment cannot be separated because the three are inter-related. In the book *“The Relevance of Theology for the 1990’s”*, it is argued that humanity is engaged in an interdependent and interrelated relationship with nature as man undertake his daily activities (Mouton and Lategan, 1994: 501). In another book, entitled *“The Environmental Crisis: A Challenge for African Christianity”*, environment is defined as the summation of social and cultural conditions that control the life of an individual or community. The author also explains that environment is an intricate of physical, chemical and biotic factors such as climate, soil, and living things that influence or interact with a given organism in nature. In addition, he concludes that, “The status of the environment of any living community determines its form and survival” (Gitau, 2000: 33).

The Bible describes that the earth originated through creation by God. All living and non-living things that exist in the natural environment were created by God, who then gave man dominion over the world (Genesis 1:26-31). God expects man to live in harmony with the creation, both the living and non-living and in so doing protect and conserve the environment. The ways through which human activities have affected environment have differed from one part of the world to another. Some parts of the earth have experienced negative environmental impacts leading to destruction and require rehabilitation. This study was designed to investigate how the PCEA Ntashat Parish Community is currently coexisting with the environment. The current study aimed at identifying, knowledge, attitudes and practice that influence the environment in the study area. The study was conducted in an area where Christianity has been introduced and replaced some cultural and traditional methods of caring for the environment.

It is common to hear Christians who follow ‘Dominion Theology’ claiming that it is not only a right, but a God given right to do anything they want with non-human on the planet (Wayne and Thomas, 1988; 141). Whether it is polluting or destroying the land, air or water, or using and abusing animals in any way they value because they know that God himself said it was okay. Therefore, man uses the resources in his environment as sources of his basic needs including food,

shelter, medicine, clothing, water and air. As the steward of nature, man is supposed to take care of the creation. The environment consists of ecosystems involving very complex relationships of the various components of the ecosystems. Man has several activities referred to as anthropogenic activities which impact environmental health and biodiversity. According to Uchegbu, effects of man arise from economic and domestic activities like for instance use of firewood for energy, burning of charcoal, dumping of industrial and others lead to environmental degradation through deforestation and environmental pollution (Uchegbu, 1988: 12). Environmental degradation is basically anything and everything that deviates from a natural process or structure. This has been increasing with the increase in human population, industrialization and development in technology. Due to environmental degradation, living organisms that were created by God may in the future become extinct as the number remaining on earth keep on decreasing and the over time. Some species of organism have been critically endangered or vulnerable. The lives of human are also becoming endangered due to environmental degradation. Therefore, there is need to mitigate the risk factors that are associated with deterioration of environmental health. Religion(s) have valuable activities to enhance environmental rehabilitation in rural communities for example the PCEA Ntashat Parish, which is the study area of this work.

In addition to the current work undertaken in Kimuka, literature has revealed numerous environmental studies conducted in other parts of the world including Kenya. One of the document study conducted in Kenya is found in the book entitled “*More People, Less Erosion; Environmental Recovery*” conducted in Machakos County. Rainfall, population, land use and tenure, crop and livestock production, soil and vegetation have been described as the profiles of the environmental change in Machakos. Several measures such as soil conservation, creation of awareness on the need to conserve the environment and tree management have been explained as being methods of environmental management to mitigate environmental damage. In the same book, population growth leading to scarcity of natural resources due to over utilization displacing

other kinds of organisms, has been describes as a major driver of environmental degradation (Tiffen *et. al.*, 1994: 33-64).

Man's relationship with his environment has always changed with time depending on his understanding and knowledge of the physical environment. Human activities and the environment are interrelated. This is because activities of man are done in the environment and the resultant effect is either positive or negative to the environment. The negative effect of human activities arises from such economic and domestic activities as agriculture, industry, burning of fossil fuels and exhaust fumes among others. Human activities have been associated with numerous environmental problems such as aggravated soil erosion and flood disasters. In addition the effect of agricultural activities in fragile soils, clearing vegetation in erosion and flood prone areas, overgrazing, poor construction and maintenance of roads results in affected areas becoming deserts. Water and air pollution are experience in areas where there is poor disposal of waste of domestic and industrial origin, insufficient drainage, poor planning (land use control), illiteracy and poverty all these affect human well-being especially in effects of environmental degradation (Ofomota, 2000: 252-255). No published information is available for the interaction of Christian communities with the environment in Kimuka area of Kajiado County in Kenya and therefore the current study was undertaken to fill in this knowledge gap.

The Brundtland Commission in its 1987 report on "our common goal" stated that there is need to meet the requirements of the current generation without compromising that of the future generations. Compromising with the future generation may cause greater complications (World Bank, 2004). The orientation of technological development and institutional changes should be in harmony in order to enhance current and future potentials to meet human needs and aspiration. Sustainable development is an old concept; it is an expression of a long standing ethnic design involving people's relationship to the environment and therefore very much related to the concept of human relationship to the environment and their adaptation pattern. Some of these patterns are changes in

consumption and investment towards pattern that enhance environmental resources (Njuguna, 2007: 29, 30).

The perspective that people have on the world will be influenced or determined by their faiths (Nash, 1996: 5-15). There is no literature on how religion in the study area has influenced the maintenance and rehabilitation of the environment, thus the purpose of this research project. Religion is an essential part of the tradition that helps to promote both stability and creative innovation (<http://worldviews.igc.org/awpguide/relig.html>). It is written in the Bible that the earth originated from creation, and all living and non-living things that exist in the natural environment were created by God who then gave man dominion over the world (Gen 1:26-31). In an article titled “*Historical Roots of our Ecologic Crisis After 50 Years*” it has been claimed that modern science and technology are products of Western culture. Therefore since Western culture has Christian attitudes and principles, Christianity may be considered as being arrogant towards nature. Nature has no other reason for existence except to serve mankind hence Christianity should have the burden of guilt for the current ecological crisis (Lynn, 2015: 396-341). In the current study, the involvement of members of PCEA Ntashat Parish in environmental stewardship was investigated. The study population involved was Christians and it was therefore important to investigate whether they adhere to the guidelines of the Bible on the intended role of Christians as stewards of the environment. Unlike the Christians being blamed for environment exploitation, the blame cannot be justified in some areas like in Kimuka. The results of the current study revealed that PCEA members in Ntashat Parish have positive attitudes, are knowledgeable and involved in activities that are geared towards protecting and rehabilitating their local environment.

Christians in Kimuka can be compared with Saint Francis of Assisi who cared for the ecology. He believed that all creation have the right to live the human species, along with all other species, are integral elements in a system of interdependence such that the survival of each living thing, as well as its chances of faring well or poorly, is determined not only by the physical conditions of its environment but

also by its relations to other living things. All organisms are teleological centers of life since each is a unique individual pursuing its own good in its own way. Therefore humans are not naturally superior to other living things. Francis of Assisi was the patron saint of all who studied and worked in the area of ecology. His declaration on care and importance of environment is widely referred to in the literature (Laudato Si', 2015:12).

1.6.5 Ecosystem

The environment consists of ecosystems involving very complex relationships of the various components of the ecosystems. Man has several activities referred to as anthropogenic activities which impact environmental health and biodiversity. Some of these human activities such as use of firewood for energy, burning of charcoal, dumping of industrial wastes and others lead to environmental degradation through deforestation and environmental pollution. Environmental degradation is basically anything and everything that deviates from a natural process or structure. This has been increasing with the increase in human population, industrialization and development in technology. Due to environmental degradation, living organisms that were created by God may in the future become extinct as the number remaining on earth keep on decreasing and the over time. Some species of organism have been critically endangered, or vulnerable. The lives of human are also becoming endangered due to environmental degradation (Smith, 2000: 186-187). Therefore, there is need to mitigate the risk factors that are associated with deterioration of environmental health. Religious communities have valuable activities to enhance environmental rehabilitation in rural communities for example the PCEA Ntashat Parish of Ngong Hills Presbytery in Kajiado West Constituency, Kenya which is my study area. There is no documented literature on how the introduction and spread of Presbyterian Church of East Africa in Kimuka has continually influenced the ecosystem.

1.6.6 Historical background of the Natural Environment of Maasailand in Kenya

The Maasai's occupied large portions of land in Kenya mainly the present Narok and Kajiado Counties. These areas are commonly known as Maasailand in the literature. The current study was undertaken in part of Ngong Hills which is in Kajiado County. One of the geographical features near the study area is the Ngong Hills (Figure 1.1), which attracts many people from far and near because of its interesting sites for hiking

the human species, along with all other species, are integral elements in a system of interdependence such that the survival of each living thing, as well as its chances of faring well or poorly, is determined not only by the physical conditions of its environment but also by its relations to other living things. (c) The belief that all organisms are teleological centers of life in the sense that each is a unique individual pursuing its own good in its own way. (d) The belief that humans are not inherently superior to other living things (Taylor, 1981)



Figure 1.1: Photograph of Ngong Hills, Kenya displaying the natural environment with vegetation on the natural hilly topography and human activities such as crop agriculture, permanent human settlement and industrial activities like generation of electricity.

Ngong area is located on the slopes of Ngong Hills about 20km from Nairobi. The Hills are along the Great Rift Valley, at the southwest of Nairobi. The name "Ngong" is a Maasai word meaning "knuckles", referring to the four hill peaks, which stand rising from the plain around Nairobi. The Ngong Hills, from the Eastern slopes, faces the Nairobi National Park game reserve and, to the North Nairobi city. The Ngong Hills, from the Westside slopes, faces the Great Rift Valley dropping over 4,000 feet below, where nomadic Maasai used to live. Today, Ngong is a cosmopolitan area that is well-developed and residence for many people some whom are working in Nairobi, the capital city of Kenya. It is a remarkably growing town with modern buildings where supermarkets, wholesales shops, petrol stations and other facilities are being put up within the township replacing the natural environment (breakaway expedition-tour "four days - ologasaile/ magadi (beas 08)"). The current study was important since it investigated the activities undertaken by the PCEA Ntashat Parish concerning conservation and rehabilitation, for the interest of giving good care of the environment for the benefit of all species

According to Kenya population 2009 Census, the population of Ngong is 107,188, and the elevation of Ngong town is 1,961 meters in altitude, but the altitude of the hills is about 2,460 meters above sea level. In addition to the Masaai who are the initial inhabitants, the other occupants include Kikuyu, Kalenjin, Meru, Luhya and Luo among others. Some of these ethnic groups have intermarried with the Maasais, others have bought land and settled, others have settled to do business while some are government workers and non-government organizations such as Africa Medical and Research Foundation (AMREF) and Action Aid (<https://www.opendata.go.ke/Population/2009-Census-Vol-1-Table-3-Rural-and-Urban-Populati/e7c7-w67t/1>). It has been observed that there is a tremendous population growth at Ngong according to the above web, but the impact of the huge population on the knowledge on environmental conservation and rehabilitation has not been documented. Population growth goes hand in hand with advancement of urbanization. As human populations grew and their technology advanced, there are adjustments of lifestyle leading to exploitation of

resources, leading to exploitation of ecosystems. The level of loss or retention of indigenous knowledge of how the Maasai community interacted with the environment has not been fully reported in Kimuka. One of the specific objectives of the current study was to investigate how natural vegetation has been historically used and whether the information of important plant species is still being passed across the generation in the Christian community.

Literature found in an article entitled “Community Based Interventions as Strategy to Combat Desertification in the Arid and Semi-Arid Rangelands of Kajiado” explains that some people in Ngong area of Kajiado County in Kenya have turned to agricultural activities, livestock keeping, cutting of trees as source of energy in form of firewood and charcoal, medicinal use of plants, among other uses for their daily requirements. These aspects of environmental changes have caused deterioration of environmental condition expressed as a reduction of forest cover. The evolution of the lifestyle of the Maasai community has been reported. In the same article, it also reported that today, the Maasai community rely more on foods of plant origin like maize compared to their traditional source of food from livestock which has been mainly meat, milk and other edible animal products as source of nutrients. These changes have resulted to the evolution of the Maasai culture (Macharia, 2004: 141-147). The change in lifestyle according to Macharia has been reported resulting to the progress of the Maasai community culture, but the impact of the change has not been reckoned, especially concerning the environmental change. This study was meant to establish the influence of a particular Christian denomination, PCEA Ntashat Parish on environmental conservation and rehabilitation. The occupation of the community in Kimuka has now been modified from pure pastoralism to crop agriculture and other systems of livestock keeping for example zero grazing and other types of intensive animal rearing.

In the era of the British colonial rule in Kenya, the area around the Ngong Hills was a major settler farming region and to date numerous traditional colonial houses exist (https://www.geocaching.com/geocache/GC4Z81A_ngong-hills).

Currently Ngong is a developed region providing a popular residing place for many individual working in Nairobi, the capital city of Kenya. Ngong division of Kajiado County is now cosmopolitan with well-established towns, the main ones being Ongata Rongai, Kiserian and Matasia. The inhabitants of the towns have built residential and commercial estates some of which are located in what may be considered as the quiet regions of Nairobi cosmopolitan. In a 1985 film entitled “Out of Africa”, the four peaks of the Ngong Hills appear as the background of numerous scenes at Karen Blixen's house (https://www.tripadvisor.co.nz/ShowUserReviews-g294207-d649051-r203113702-Ngong_Hills-Nairobi.html).

According to Goodman and Stanger on “Guide to Environment Management Law and Practice”, the Maasai harmoniously interacted with nature in a migratory style of life in order to allow the grass to regenerate. The wildlife-human conflicts were minimal, and the natural vegetation was healthy (Goodman and Stanger, 2002: 51-55). Traditionally, the Maasai were herders, who moved their cattle seasonally, northwards and southwards along the Rift Valley, from Lake Turkana in Kenya to Serengeti in Tanzania. They followed the rain, wherever the grass was green. Encroachment of these grasslands by agricultural settlers interfered with this nomadic mode of existence.

The historical lifestyle of the people of Maasailand has been changed by the Western culture which was introduced by the colonialists and missionaries when Kenya became a British colony. Europeans introduced their culture into all resourceful parts of Kenya including Maasailand leading to the diminishing most of the African traditions and cultural practices. In addition to the changes in culture, ancestral land of people like the Maasai was forcefully snatched from them and used by the colonial masters for their own settlement for agriculture. This cruel action affected the Maasai since their culture's survival depended on the survival of the land. As a rural, traditional people, their culture instilled a strong code of honesty, that the Westerners used as a tool to humiliate them” (Macharia, 2004: 141-147).

The original trees were cleared to give room for the tall storey buildings that are witnessed in Ngong today. The researcher observes the ignorance that the colonizers had about conservation of the environment, thence wants to investigate how PCEA Ntashat Parish has contributed towards rehabilitating it after the big damage. However, Ngong is experiencing pollution problem after the population growth and poor management of the dumpsite. The government of Kenya has recently taken measures to improve the status of the environment in Ngong through ordering the closure a dumpsite that failed to meet recommended environmental standards. This was through a directive by the Environmental Principal Secretary, Charles Sunkuli who directed the National Environment Management Authority (NEMA) to initiate the process of proper management of solid waste that was at the verge of causing an environment disaster in the area (<http://www.environment.go.ke/?p=2554>).

1.6.7 Human activities affecting the environment in Ngong Hills

There are several environmental activities taking place in Ngong Hills among them being generation of electricity. One major wind farm in Kenya, the Ngong Hills Wind Farm, is located in the area. The station produces around 5.1 MW of electricity and is owned by KenGen, the country's main electricity generating company ("Ngong Hills wind farm".*thewindpower.net*).

Macharia in his article on “Community Based Interventions as Strategy to Combat Desertification in the Arid and Semi-Arid Rangelands of Kajiado District, Kenya”, Kenya Soil Survey” said that traditionally, the Maasai people had employed several approaches to reverse the desertification process. Research has identified useful trees to plant around homes for shade, to use as woodlots on their farms to provide fuel, and to act as wind breaks. These specific trees include: *Grevillea robusta*, *Cassia spectabilis*, *C. siamea*, *Schinusmolle*, *Croton megalocarpus*, *Leucaena leucocephala* and *Azandirecta indica*. Researchers have also specified trees useful for fencing, because cut wood has to be annually replaced due to termites. The suggested trees include: *Commiphora africana*, *C.*

stuhlmanii, *Euphorbia tirucalli*, *Erythrina abyssinica*, *Carissa edulis* and *Agave sisalana* (Macharia, 2004: 141-147).

There is need to create more awareness and empower to the Ngong Community of the practical ways to contribute on rehabilitation of environment. As the forest is depleted, the likelihood of drought and flooding increase significantly. In order for Kenya's delicate ecosystems to be preserved, the world must take action to combat this global problem. The Kyoto Protocol is a great first step in this direction, but to protect the people of Kenya who depend on the land for their well-being, more extensive action must be taken by global bodies such as the United Nations (UN). In order to get rid of these problems, the government and Non Government Organisations (NGOs) must be involved. Organizations need to start taking progressive action to reverse the effects of these problems. The government, with the help of the UN, must put into place studies and programs to combat desertification and deforestation and help reverse the effects of global warming. Fortunately, in Kenya, positive actions are being taken to change the deforestation trend. Wangari Maathai, who won the Nobel Peace Prize in 2004, for standing at the front of the fight in order to promote ecologically viable social, and cultural development in Kenya and in Africa to conserve the environment . (http://www.nobelprize.org/nobel_prizes/peace/laureates/2004/press.html), founded the Green Belt Movement (GBM), which plants trees throughout Kenya and other parts of Africa (<http://www.greenbeltmovement.org/who-we-are/our-history>).

Despite the establishment of organizations that are engaged in environmental protection like the Green Belt Movement (GBM) which have been of great importance, there is still a lot to be done to promote community involvement in the implementation of the strategies advocated by such organization at community level to halt the degradation of the environment. In Kenya, the PCEA has formulated an environmental policy whose practice in many parishes may not have been investigated. There is need to investigate the influence of Presbyterian Church of East Africa members on the environmental status in Maasailand.

Therefore, this study aimed at establishing whether members of the PCEA Ntashat Parish in Kimuka, Kajiado County have activities geared towards improvement of their environment by virtue of being members of this particular church.

1.6.8 Modern Church and Environment in Maasailand

Before colonization, the Maasai's conserved the natural environment using their cultural and traditional practices (Sankan, 1971: 60-61). When they were doing this they were guided by ATR. Today, modern western religion has established itself in many parts of Maasailand including Ngong Hills where this work was carried out. There are many differences between the tradition Maasai way of utilization of natural resources and the style of modern churches. Today, the western religious churches are formulating environmental policies to guide rehabilitation. In Kenya the PCEA church is among the religions with a documented environmental policy. The literature below describes how PCEA was spread and how it has continued to influence the environment in Maasailand.

1.6.9 PCEA Policy on environment

The PCEA is a protestant Church that has withstood since the time of the British colony in Kenya. The Chairman of the Imperial British East Africa Company (IBEA), Sir William Mackinnon and a fellow director, Low Bruce approached their church leadership of The Free Church of Scotland (FCS) in 1891 to appoint Rev Dr James Stewart for the East Africa Mission. The Rev Dr J Stewart was to offer the pastoral care to the workers of IBEA. The IBEA leadership formed the East Africa Scottish Mission (EASM) to carry out the ministry in Kenya. They had instructions to start a mission in Machakos or Dagoretti. After considerations, they started a Mission Station at Kibwezi which turned out to be an unfortunate affair. Regrettably, the Mission failed to pick up due to unfavorable climate, attack from the local community, diseases and deaths. The mission was transferred to Kikuyu land at a place known as Baraniki and later to Thogoto at Kikuyu in 1897, led by Thomas Watson. The Kikuyu station grew and became a

foothold for the in-land mission to TumuTumu in Nyeri and Chogoria in Meru together with the establishment of settlers' congregations of St. Andrews (Nairobi), St. Margaret (Mombasa), St. Columbus (Dar es Salaam), and St. Ninian's in Nakuru (PCEA, 1994: 5-11).

The missionaries planted a church, hospital and a school, including artisan training, wherever they started a mission, and this became a model of church planting. Thus from beginning, the mission of the PCEA was directed towards evangelism, education and provision of medical services, as well as development of income generating projects and creation of employment opportunities. Among the early accomplishments of the Mission at Kikuyu were language translation, rationalization of agricultural development program, and the instituting of an apprentice system for masons, carpenters, gardeners, teachers, and hospital dressers. By 1956, the PCEA was fully incorporated and recognized as an ongoing denomination populated mostly by Africans. The church by this time had tremendously influenced in the affair of the nation politically, economically, and socially. For this reason we can surmise that the church had from the beginning helped shape the destiny of the nation in all spheres. What have the church done as far as environment conservation and rehabilitation is concerned? There isn't much documentation from the many religions particularly in Kenya on the environmental matters. The church is being woken up to lead the way in the environmental agenda. This is because the church has the spiritual, social and economic capacity to potentially do so. The call to a balanced environmental management programme is both a divine command and a responsibility for all earth inhabitants. It is known that the major religion in Kenya is Christianity, which is widely distributed in nearly all counties in the country. Therefore, when pushing for an agenda for example implementation of environmental conservation and rehabilitation activities at community level, a Christian church congregation or parish in Kenya constitutes a viable entry point. There is need to study and to document what the church is doing concerning the environmental agenda. The current research project will contribute to the establishment of the current environmental conservation and rehabilitation activities that are undertaken by

Christians using the case of members of PCEA Ntashat Parish in Kimuka as an example. The data generated will assist in mitigating threat to the planet whose survival is reported to be at stake due to the current trends in environmental destruction (<http://www.arcworld.org/downloads/Kenya-PCEA-plan.pdf>).

The great ecological challenges and needs facing the world today and East African nations in particular, provides the PCEA church a great opportunity to worship and glorify God, serve the people and to take care of the environment. The church leadership has the political will and mechanism to tie together the potential of the people and set aside assets and resources to fulfill the stated biblical mission (ARC Documents and Guideline). According to the PCEA environmental policy, the PCEA 2nd General Administrative Committee (GAC) of the 19th General Assembly made a crucial decision under RESOLUTION NO. 6445; which states inter alia: “the church has noted with concern the adverse effects of climate change on survival and livelihood of the communities and the entire creation”. Therefore, the Presbyteries have been advised to take active role in activities that mitigate negative effects of climate change”. The GAC has also instructed the Presbyteries to direct Parishes and Congregations to carry out activities that will moderate pleasant change effects such as water harvesting, planting drought resistant crops, forest conservation, on farm tree planting and environmental awareness (<http://www.arcworld.org/downloads/Kenya-PCEA-plan.pdf>).

The policy highlight examples of environmental issues that require prompt action, such as undefined forest destruction in the country, proper waste materials disposals including water pollution, agrochemical wastes, non-biodegradable wastes and prompt general strike of destruction of water towers for example, Mau forest complex, Aberdares, Mt Kenya, Cherangani and Mt. Elgon Forest covers among others. The policy also holds interventions to address environmental degradation suggesting that tree planting should be encouraged especially Agro forestry, community participation in forestry conservation and management to be enhanced. The policy expresses that the church should implement the Forest Act

2005, which provides for community involvement in forestry through tree planting (<http://www.arcworld.org/downloads/Kenya-PCEA-plan.pdf>).

1.7 Theoretical Framework

Taylor's Biocentrism Theory

This study will make use of the Biocentrism theory on environmental ethics formulated by Paul Taylor (1981-1986). Taylor is a deontologist who viewed environment within the context of the entire creation and acknowledged its place in influencing the thinking and behavior of the members of society. He argues that each individual living thing in nature, whether an animal, a plant or a micro-organism is a "teleological-center-of-life" having a good or well being of its own which can be enhanced or damaged, and that all individuals who are teleological-centers-of life have equal intrinsic value or inherent worth which entitles them to moral respect. Taylor further maintains that the intrinsic value of the wild living things generates a *prima facie* moral duty on our part to preserve or promote their good as ends in themselves, and that any practices which treat those beings as mere means display a lack of respect for them and are intrinsically wrong.

Taylor's Biocentrism theory of the environment exemplifies the study's view on environmental rehabilitation in PCEA Ntashat Parish. According to Taylor, all living beings are "teleological centers of life" with inherent worth, and all "teleological centers of life" with inherent worth are objects of respect. Taylor's theory differs from utilitarian doctrines (like those of Bentham, Singer *et al.*) which maintain that moral duties to human and non-human animals are grounded in sentience. Since Taylor argues that only individual living beings (for example, individual plants, and animals) are the bearers of inherent moral worth, his theory also differs from other non-anthropocentric theories like ecological holism (for example deep ecology) that attribute inherent value to other things like species, ecosystems, habitats, and ecological integrity. While Taylor would presumably agree that no species has more worth than another, the locus of moral worth in his "Respect for Nature" is on the equal value of individual living beings (not entire

species). Whereas Taylor's "respect for nature" is an attitude (that is, the attitude a person has when viewing all living beings as having inherent value), the biocentric outlook that Taylor advances is constituted by four beliefs namely: (a) The belief that humans are members of the Earth's Community of Life in the same sense and on the same terms in which other living things are members of that Community. (b) The belief that the human species, along with all other species, are integral elements in a system of interdependence such that the survival of each living thing, as well as its chances of faring well or poorly, is determined not only by the physical conditions of its environment but also by its relations to other living things. (c) The belief that all organisms are teleological centers of life in the sense that each is a unique individual pursuing its own good in its own way. (d) The belief that humans are not inherently superior to other living things (Taylor, 1981). Taylor's biocentrism theory is relevant to this study as it cultivates a sense of need to conserve and rehabilitate the environment for the benefit of the inhabitants.

1.8 Hypotheses

The research was tested using the following null hypotheses

- 1) Christianity especially PCEA has not widely spread in Kimuka and its introduction has not influenced the demographic characteristics of the indigenous people in the area
- 2) Majority of PCEA members in Kimuka area have no knowledge and have negative attitudes on the need for environmental conservation and rehabilitation
- 3) There are no environmental conservation and rehabilitation activities currently being undertaken by members of PCEA in Kimuka
- 4) The types of vegetation in Kimuka are not diverse and their uses by members of PCEA are not many

1.9. Scope of the Study

This study was designed to generate data on the role of a Christian Parish on the care of the environment. It was a case study focusing on the influence of PCEA Church on the environmental status in Kimuka area of Ngong Hills in Kajiado County Kenya. Although the area has other denominations like Dominion, Catholic and Baptist, the scope of the study was limited to a random sample of adherents of the PCEA Church. This area which was originally Maasailand has a history of successful traditional means of environmental conservation. Due to the influence by human activities, religions and cultures of foreign origin the area is at a risk of desertification due to environmental destruction. The data generated was focused on the general objective of the study which was to establish how the Presbyterian Church of East Africa has spread into Kimuka and its continuous influence on the environmental status in the area. The work was based on the theoretical framework described in the Biocentrism Theory on environmental ethics formulated by Paul Taylor (1981-1986). The methodology used involved administration of questionnaire, focused group discussion, interviews, collection of samples of vegetation in the area and their identification.

1.10 Limitations of the Research

This work was self sponsored hence the sample size was limited to a strict affordable budget hence the researcher was limited to collecting data only on Sundays when members of the Parish gathered for worship. Some members selected for the study declined to participate this may have caused missing of some important information. There was a language barrier, some participants could not directly respond to the questionnaire and required an interpreter because they could not read or write.

1.11 Methodology

The methodology used described the study design, data collection instruments, procedure for sample size determination, data analysis and presentation.

1.11.1 Study area

The PCEA Ntashat Parish of Ngong Hills Presbytery in Kajiado County was purposively selected for the study. The area was selected for study because of its accessibility, composition of population and the risk of environmental degradation due to the expansion of Nairobi. The Parish emerged as a result of the rapid growth and spread of the PCEA in Kajiado County which is cosmopolitan part of Kenya bordering other counties. It borders Narok County to the West, Nakuru, Kiambu and Nairobi counties to the North. To the Eastern part of Kajiado County borders Machakos, Makueni and Taita Taveta Counties, and Tanzania to the South (Figure 1.2). The position of the county has created opportunities for many people to migrate in it and bringing on board diverse views on environmental matters. PCEA Ntashat parish consists of six congregations namely Kimuka, Oloishoi-bor, Olasiti, Naironde, Iingarrojj and Olkudate. Initially, the main inhabitants of Ntashat Parish were the Maasai who harmoniously interacted with nature in a migratory style of life in order to allow the grass to regenerate. The serious wildlife-human conflicts being experienced today were minimal while pastoralism was the main style of living since natural vegetation was healthy and natural resources were adequate for both humans and the animals. The immigrants have come in with new cultural backgrounds and have certainly imparted on the environment, hence there is need to establish the current trends on the status of the environmental rehabilitation.

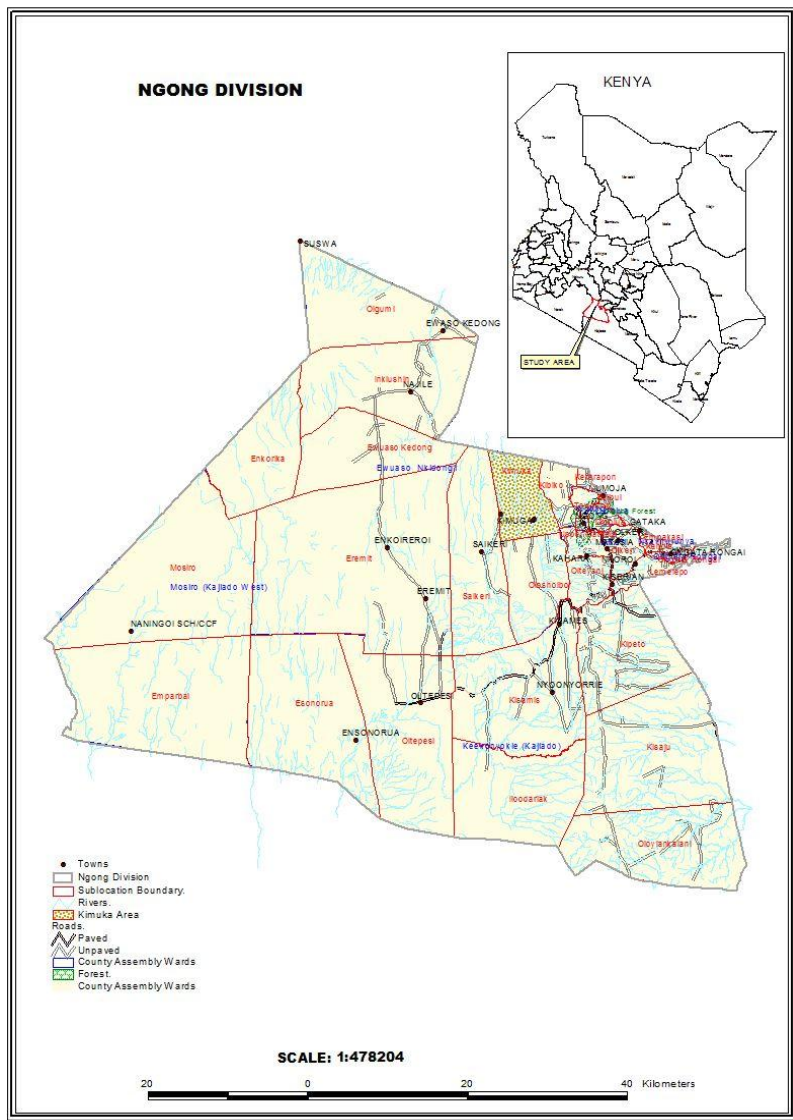


Figure 1.2: Map of Kenya showing the geographical location of PCEA Ntashat Parish, in Ngong Hills

1.11.2 Study design

This was a survey in which data on contribution of PCEA Ntashat Parish towards environmental rehabilitation in Ngong, Kajjado, Kenya was taken and analyzed.

1.11.3 Sample Size Determination

The number of respondents to fill the questionnaire was determined using a published method for sample size determination. The Fisher's formula for calculating sample size of less than 1000 using means was applied in the current study (John, *et al.*, 2014).

1.11.4 Data Collection

Data was collected through administration of questionnaire, interviews and focused group discussions. The type of vegetation was studied by identifying the plants in their natural habitat and collection of plant specimens that were then submitted for identification by a botanist.

1.11.4.1 Administration of questionnaire

The questionnaires were developed pretested and administered to a group of respondents determined as described above. Well-constructed questionnaires were used with open and closed ended questions; this was mainly through primary source (Appendix 1). These questionnaires were organized starting with the demographic data which included, age, primary language, level of education, ethnic background, marital status, place of residence and length of time, place of birth (urban/rural/sub-urban), family size in a household, profession, occupation, and health status. The questionnaire was administered to a statistically representative sample of respondents who are residents of PCEA Ntashat Parish.

The questionnaire administered a sample of 100 representative informants out of which 77 informants responded positively, while the rest 23 declined. Information was gathered from respondents (n=77) from among the 251 families of PCEA Ntashat Parish in Ngong Hills, by use of questionnaires.

Samples of vegetation in the study area were collected and taken to the botanical herbarium of the University of Nairobi for voucher specimens. The PCEA Ntashat Parish of Ngong Hills Presbytery in Kajiado County was purposively selected for the study due to its accessibility and prior knowledge that the area's population is

rapidly growing hence residence are likely to be facing challenges of maintaining an intact natural environment. These questionnaires was organized starting with the demographic data which included, age, primary language, level of education, ethnic background, marital status, place of residence and length of time, place of birth (urban/rural/sub-urban), family size in a household, profession, occupation, and health status. The questionnaire was administered to a statistically representative sample of respondents who are residents of PCEA Ntashat Parish. The Questionnaire was administered to a sample of 100 representative informants out of which 77 informants responded positively, while the rest 23 declined.



Figure 1.3: A photograph showing one of the researcher assistants helping the respondents who were not able to read and write to fill in the questionnaire in PCEA Ntashat Parish

1.11.4.2 Interviews and Focus Group Discussion

Interview and focused group discussion was conducted with Ntashat Parish Minister, Church leaders, and a selected group (n=20) of members comprising the young adults (youth), Woman's Guild and Presbyterian Church Men Fellowship (PCMF), Boys and Girls Brigade, Evangelists and Church School teachers.

1.11.4.3 Collection and Identification of Selected Plants Species

The PCEA Ntashat was visited by a team comprising of the researcher, research assistants, and a group of religious residents from the area. A walk was undertaken to identify the plants used by PCEA Ntashat members. The data collected include; the local name, local use of the plant and the part used. In addition, data on the level of adoption of trees plant as means of environmental rehabilitation. The data collection was conducted between November and December 2016.

1.11.5 Data analysis and presentation

Data was entered into an excel spread sheet in a computer for processing and analysis. The information was presented in form of figures and tables.

CHAPTER TWO

ORIGIN AND SPREAD OF PCEA IN KIMUKA AND DEMOGRAPHIC CHARACTERISTICS OF CHURCH MEMBERS

2.1 Introduction

Kimuka area in Ngong Hills in Kajiado County like most areas of Kenya is currently occupied by a community whose members predominantly belong to the Christian religion. One of the main denominations in the area is PCEA Church. The history of the spread of Christianity is well documented in many parts of Kenya. However, published literature on the origin and spread of PCEA Church and demographic characteristics of the current members of this denomination in the area is missing. This study aimed at filling in this knowledge gap by conducting a study on these aspects using the church members as the source of information.

Kimuka which is in Ngong Hills area of Kenya was originally Maasai land and the inhabitants practiced ATR before colonization (Sanka, 1971: 60-61). Today, the area has changed in many ways including the religion and types of human activities. The current study generated data on the introduction of Christianity in the area focusing on the PCEA denomination. In addition the spread of the church and the demographic characteristics of the members were established. The data obtained was used for comparison of the environmental effects as a result of changing from ATR to Christianity based on the opinions of informants selected from the study area.

Historically, Kimuka like other parts of Maasailand followed ATR before introduction of Christianity by European and American Missionaries. Prior to the establishment of various missionary stations in the interior of Kenya, some of the Maasai communities had come into contact with the Europeans during the era of their exploration and colonization in the mid-nineteenth Century. The British Government had already established its authority and many mission groups

covering different ethnic communities flooded in the country immediately after the accomplishment of the Kenya-Uganda Railway. An example of the mission societies that were established in Kenya were Protestants. It has been reported that the leading society was Anglican under the Church Mission Society (CMS). The Anglican worked together hand in hand with the reputable British society, Presbyterian, the Church of Scotland Mission (CSM). The other mission societies established in Kenya were United Methodist Mission (UMM), the Lutherans, the Church of Germany, Holy Ghost Fathers (HGF), and White Fathers Faith Societies (WFFS) from America such as African Inland Mission (AIM), out of which grew the African Inland Church (AIC) among others, whose impact was felt mostly in Kenya and Uganda (Baur, 1994: 242-259).

Christianity was introduced to the Maasai community in 1904 by AIM Mission Society which was the first Mission Society to evangelize in Maasailand. Their Mission Station was established at Rumuruti in current Laikipia County of Kenya, where the Maasai had settled. The Maasai people were independent, self-supportive and able to affirm and defend their rights. The A.I.M Mission Society had problems with the Maasai community since they came to realize that the Missionaries were interested with their land (Welbourn, 1965: 65).

2.2 The origin of PCEA in the area

In the current study, it was established that PCEA was introduced into the area by missionaries. The information on how Christianity (PCEA) spread into the area currently structured into what is known as Ntashat Parish was based on information provided by key informants recruited for the study. All informants, regardless of age, gender, marital status and level of education gave information willingly through responding to the questionnaire and participation in discussions.



Figure 2.1: Photograph of a sign post showing the direction to PCEA Kimuka Church one of the six congregations of PCEA Ntashat Parish in Ngong Hills Presbytery.

One of the sources of information was the parish minister currently in charge of PCEA Ntashat Parish. The other sources of data were church elders and secondary data in the form of church brochures. Figure 2.2 displays the researcher participating in a service in PCEA Ntashat Parish during a visit to collect data from informants. One of the key informants Rev Joseph Katampoi stated that the introduction of Christianity in the area has been gradually replacing ATR and has introduced foreign human activities such as farming, charcoal burning and overgrazing among others, which have affected the status of the environment. This is because the inhabitants are no longer able to fully observe the traditional environmental conservation practices that existed prior to the introduction of Christianity. According to the PCEA Ntashat Parish Church Minister Reverend Joseph Katampoi, the late Rev Moses Waweru allowed in some missionaries from Ngenda Kikuyu, who brought with them some food stuffs, clothing and Bibles to Oloishoibor (Personal Interview, 25th November. 2016). They embarked on teaching the word of God under a tree, which still survive today as a witness as what transpired those years. When the church started, just like other mission areas in Kenya, three important pillars guided them; Church (spirituality), Schools (education) and Hospitals (health). Church and nursery schools were the entry points. In the 1970's, the late Denny Crendal, came in the area and started his mission work together with the late Patrick Simon Sakuda, a local, who accommodated him in his homestead at Oloisho-ibor. Denny Crendal came with

the idea that, for him to reach the community with the word of God, he must train some Bible classes to some locals who would help him reach the community which was unreached and uneducated with the word of God. Among the trained locals and given the title of evangelists included; the late Wilson Lekuka and Paul Kisompoi. In addition, Peter Sakuda, Simon Sakuda, Josphat Nagurro, Emmanuel Nkukuu, Joseph Serpepi, Samuel Nkiliyai and Moses Kako who is currently a retired elder in the PCEA Ntashat Parish. The results of the study established that the Parish comprises of about 251 families belonging to six congregations namely: Kimuka, Oloisho-ibor, Nairode, Inga'arogg, Olasiti and Orkudate of the PCEA Ntashat Parish (Personal Interview, 17th December 2016).



Figure 2.2: Photograph showing the researcher's participation in Kimuka Congregation Choir during a church service at Oloisho-ibor Church when collecting data on the role of PCEA Ntashat Parish on environmental rehabilitation

2.3 Establishment of PCEA Ntashat Parish

In the study, the informants reported that PCEA is among the most widespread Christian denomination in the area and it is still spreading. The Parish was established after a long history through the old Olooseos, which was later divided into three parishes namely; Oloolotikoishi, Olooseos, and Ntashat. According to the informants, Ntashat was made a parish in 2007, amidst speculation and

discontent among dissatisfied individuals who resolved to convince a few members to move out of Olooseos Parish to form another church. It was a big blow to a newly formed Parish but was able to steer away from the storm under the leadership of the Rev Samuel Koipa. In this study, the respondents (n=77), indicated PCEA as being among the earliest Christian denominations to be established in the area with some members having being in the church for over 45 years. Majority of the members of PCEA Ntashat Parish, 56 out of 77(73%) have been in the church since childhood after being introduced to the church by their parents. Like other PCEA Parishes, the Ntashat Parish comprise of various church groups, elders and evangelists as shown in Figure: 2.3, which displays the percentages of the categories of respondents who filled in the questionnaires. It was established that PCEA Ntashat Parish had a total 251 families which are further divided into six congregations distributed in Kimuka area

The results of interviews and focused group discussion conducted with Ntashat Parish Minister, Church leaders, and a randomly selected group (n=20) of members comprising the Choir, Youth, Woman's Guild and Presbyterian Church Men Fellowship (PCMF), Boys and Girls Brigade, Elders, Evangelists and Church School gave important information regarding establishment of PCEA Church in the area. Data obtained showed that the PCEA Church in the Parish has all the Church groups and leadership that is common to all PCEA Parishes as shown in Figure 2.3 below. According to the results of the study, the PCEA Church has a bright future for further spread and establishment in the area considering that 66% of the members are between 18 and 35 years of age (youth) as displayed in Figure 2.3.

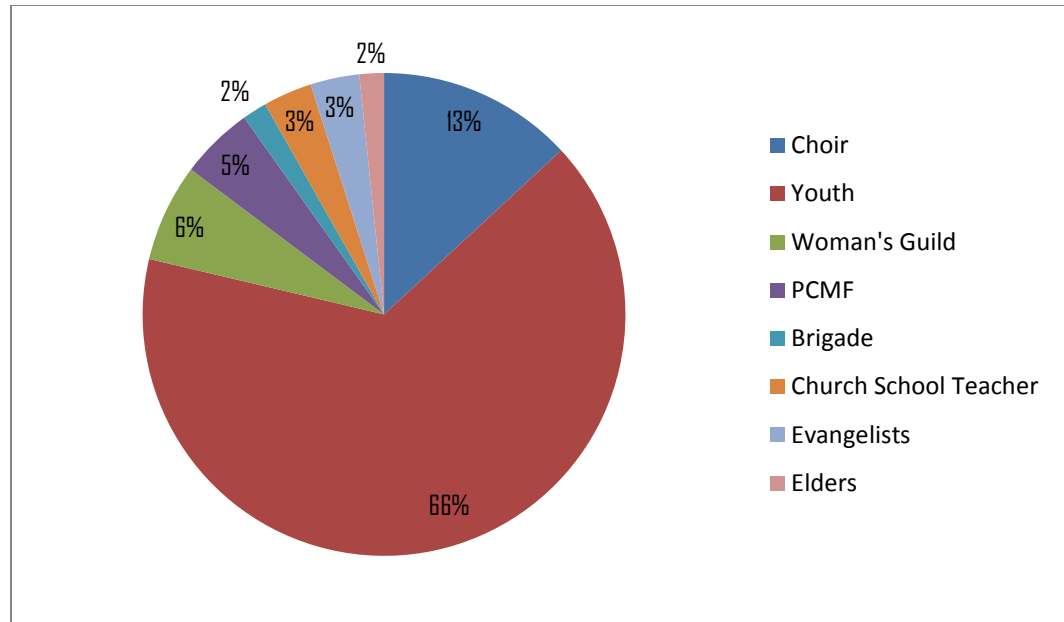


Figure 2.3: Distribution of Church Groups and Position in the Church during a Survey of the factors associated with the Spread of PCEA denomination in Ngong Hills, in Kajiado County, Kenya

2.4 Demographic Characteristics of Members of PCEA Ntashat Parish

This study established the demography of the church members based on the composition of the respondents recruited for data collection. Gender, marital status, level of formal education, profession and occupation of the members were established. The majority of the informants were male 67% while females were the minority 33%. The characteristics of the population are that the male are more learned and better informed than the female portraying the problem of gender inequality (Table 2.1).

Majority of the female informants were not able to fill in the questionnaire without assistance and were not as confident as their male counterparts. This is in agreement with documented literature on the level of illiteracy among the Maasai women (<http://maasaigirlseducation.org/the-need/the-life-of-a-maasai-woman>). According to the data obtained family values are well embedded in their culture with 39% of the non-youth married with children and only negligible

percentage of unmarried and divorces. The human activities in PCEA Ntashat Parish are diverse and related to the level of education, profession and occupation of the population. The results of the interviews and focused group discussion established that historically the area was inhabited by pastoralists, and land was owned communally. The community practiced ATR and the lifestyle was migratory allowing for environmental restoration. According to respondents, the ATR has majorly been replaced by Christianity and the land is mainly owned individually for permanent settlement by both indigenous and immigrants. The change in land tenure system and increase in population has led to introduction of different lifestyles and human activities that have changed the status of the environment and utility of natural resources.

Data obtained by questionnaires and focused group discussion in the current study established that activities which destroys the environment like deforestation through charcoal burning was being discouraged by the community. The PCEA Ntashat Parish is undertaking activities that are geared towards conserving and rehabilitating of the environment through implementation of the PCEA environmental policy formulated.

The PCEA Environmental Policy mission statement states that “For God’s Glory, the Presbyterian Church of East Africa desires to equip Christians through the Presbyteries to worship God, to reach the world for Christ, and to responsibly manage all of Creation.” The policy promotes planting of trees, community participation in forest protection and conservation, income generating projects like bee keeping, medicinal trees for example Muringa as food among others, to, maintain and sustain the beautiful creation as good stewards to entrench the policy formulation (<http://www.arcworld.org/downloads/Kenya-PCEA-plan.pdf>).

Table 2.1: Demographic Characteristics of Informants Showing, Gender, Marital Status and Education Background in a Study of PCEA

Ntashat Parish

Name of Congregation	Number of Respondents	Gender		Marital Status				Level of Formal Education				
		M	F	Married	Single	Widow	Divorced	Primary	Secondary	Tertiary	University	No Formal Education
Kimuka	23	11	12	9	13	1	0	3	6	9	2	3
Oloishoibor	19	15	04	9	10	0	0	4	6	4	5	0
Olasiti	6	3	3	3	3	0	0	1	2	1	0	2
Nairode	7	6	1	2	5	0	0	0	3	3	1	0
Olkudate	6	4	2	2	4	0	0	1	3	2	0	0
Iingarooj	6	6	0	1	5	0	0	0	4	1	0	1
Total	67	45	22	26	40	1	0	9	24	20	8	6
	Ratio (%)	67	33	39	60	1.5	0	13	36	30	12	9

NB Out of the 77 respondents 10(13%) did not include their congregations and were therefore not included in the calculation of the % of gender, marital and level of education

CHAPTER THREE

KNOWLEDGE, ATTITUDES AND PRACTICES OF ENVIRONMENTAL CONSERVATION AND REHABILITATION AMONG MEMBERS OF PCEA NTASHAT PARISH

3.1 Introduction

In any community, human activities are directly related to the status of the environment. This is because human activities may maintain or destroy the natural environment. Overexploitation of the natural resource such as vegetation and pollution have caused environmental degradation and called for the need to undertake environmental rehabilitation. In order to achieve sustainable environmental conservation in any given area, the inhabitants should have the relevant knowledge on how the environment should be conserved and why. In addition, they should have the right attitudes towards environmental stewardship so that they can willingly participate in activities geared towards environmental conservation and rehabilitation. Research on knowledge and attitudes on the environmental status in many rural areas in Kenya is scanty. This study aimed at generating data on the level of knowledge and attitudes of the members of PCEA Ntashat Parish located in Kimuka area of Ngong Hills, Kenya.

It is documented that African religious heritage linked Africans with creation of the world, whether visible, invisible, above or below (Mbiti, 1970: 129-143). The Africans believed that they were dependent on the earth for their existence. In Ghana, for example the Ashanti community is said to believe in this through various expressions that depict the earth as a source of many benefits (Bryant, 1992: 315)

Human beings have to take care of the environment in order to preserve what God created including all forms of life, whether animals or vegetation. Clean water, fresh air and unpolluted environment are among the requirements for the maintenance of a healthy ecosystem. Worldwide, due to factors like advances in

technology and increase in population, humans are increasingly destroying or polluting the environment (Mbiti, 1970: 108). Mankind should be partners of other components of nature rather than being the masters over the nature. Therefore, whatever an individual does is bound to affect the wider community in nature either positively or negatively. According to Mbiti, “I am because you are and since you are, therefore I am”, while commenting on the African wisdom of social relations (Mbiti, 1970: 108).

Today, there is need to increase the efforts for environmental rehabilitation to restore what has been damaged as well as environmental conservation to arrest further destruction. One of the justifications of the current study is based on the fact that due to the rate at which environmental degradation is taking place, researchers in areas that deal with culture, religion and environment should contribute to environmental conservation and rehabilitation. Christians need to increase their participation on matters of environmental conservation and rehabilitation. The students of religious studies should therefore be encouraged to study the role being played by the church on environmental matters. Based on the foregoing, assessment on the knowledge and attitudes of PCEA Ntashat Parish members of Kimuka area on environmental conservation and rehabilitation which is not documented, it was found to be a good justification of the current study. The study has generated information on the current practices by members of PCEA Ntashat Parish members for environmental conservation and rehabilitation.

3.2 Knowledge on importance of environmental conservation and rehabilitation

The levels of awareness on environmental rehabilitation and conservation among PCEA Ntashat Parish members were established in the study. The results of the study on knowledge of environmental issues showed that 26(55%) respondents out of 73 respondents to the question indicated that there was some environmental degradation that would be reserved using little effort, 26(36%) said that the environment was in good shape, while 7(10%) said that the environment was in bad shape requiring efforts to rehabilitate it. Asked whether they were interested

in environmental issues and whether they participated in programmes related with environment, 70(91%) of respondents stated that they were interested in environmental issues and participated in environmental programmes. Only 7(9%) stated that they had no interest on environmental issues. It was noted that those not interested in environmental issues were from various categories including; youth, those educated, and those with no formal education. They also belonged to both gender and were between 18 to 49 years. Awareness of the environmental programs in the congregations was reported by 64(83%), while 13(17%) were ignorant of any environmental programmes in the study area. It was observed that those who were unaware of the environmental programmes included; male, female, students and some professionals.

The respondents in the PCEA Ntashat Parish listed the following as being the values of a rehabilitated environment; source of rain, provision of shade, beauty and ornamental value, source of traditional herbal medicine, water conservation, source of pasture for livestock, freshening of air, reduction of dust and pollution, cleanliness of habitat, provision of food, source of business commodities and reduction of effects of deforestation. Respondents recognized the following as causes of environmental degradation; cutting down trees, excessive tilling of land for crop farming, deforestation for whatever reason for example charcoal burning, inadequate efforts for sustaining and rehabilitating the environment, excessive soil erosion, lack of rain due to climate change, dumping of litter and inappropriate methods of solid waste disposal such as plastic bags, overstocking of livestock leading to overgrazing, lack of enough water, inadequate funding and facilitation of environmental programs, industrial pollution, lack of education and awareness of the need to rehabilitate the environment due to ignorance by some members in the community, population increase leading to overexploitation of natural resources, human wildlife conflict for food and water and changes of land use especially subdivision into small units for construction of real estate replacing natural vegetation.

Despite the claims by respondents that they were knowledgeable, there was evidence of activities that suggested that some individuals did not adhere to environment conservation. Figure 3.1 give a comparison of the natural vegetation in the study area and how it has been affected negatively by human activities.



Figure 3.1: Photographs showing the effect of human activities on natural environment where excessive soil erosion is displayed as well as change of land use from agricultural to commercial and/or residential in Kimuka area

3.3 Attitudes of members of PCEA Ntashat Parish on environmental rehabilitation

In the study, the opinions of the respondents as to who should be held responsible for ensuring a healthy environment varied. Out of 77, the minority (48.1%) respondents had different attitudes concerning who should be responsible for environmental rehabilitation where 36.4%, 6.5%, 3.9%, and 1.3% were of the opinion that individual, government, environmental groups and industry respectively should be responsible for making sure that there is a healthy environment. The majority of respondents 51.9 % recommended that it should be a combined responsibility involving the participation of individuals, government, environmental groups and industry.

The current study also aimed at establishing whether members of PCEA Ntashat Parish considered the current concerns over the state of environment justified or not. Majority 55(71.4%) of the respondents agreed that the concerns are justified, while the rest 22 (28.6%) did not consider the concerns as genuine. With regard to the environmental concerns by the parish members, different attitudes were registered. Majority 45(58.4%) of the respondents considered their future to be bright and hopeful, 19(24.7%), thought it was challenging, while 2(2.6%), depressing and 11(14.3%) uncertain.

The respondents were positive on the need for environmental conservation and rehabilitation. They stated that in order to promote a good ecosystem in PCEA Ntashat Parish several strategies should be implemented. Among them was planting of more trees and protecting them from any kind of destruction. This indicated that the attitude towards deforestation, burning of charcoal and other activities that decrease forest cover was negative. Development and observation of laws that govern environmental conservation and rehabilitation were supported by the respondents. Training the youth and facilitating them to undertake environmental rehabilitation ventures, creating awareness on benefits of environmental rehabilitation by all members and minimizing pollution through avoidance of littering and other poor ways of waste disposal were advocated by

respondents. All these were indicators that members of PCEA Ntashat Parish had developed positive attitudes toward environmental conservation and rehabilitation.

3.4 Environmental rehabilitation activities as part of church programme and policy

It was established in the current study that PCEA Ntashat Parish members were aware of environmental concerns and participated in rehabilitation programs as part of their activities in the church. These included creation of awareness on environmental matters through seminars to the church members by resource persons conversant with environmental rehabilitation. Sermons with themes on environmental stewardship are being delivered as part of the preaching programmes. Church groups in PCEA Ntashat have incorporated environmental activities as part of the exercises during regular programs to create opportunities for youth, women and other categories of members to be part of environmental stewardship. Church members have participated in the construction of structures to curb erosion in areas prone to soil erosion as well planting and protection of the trees within the Parish. The planted trees have formed life fences to surround homesteads and church premises hence increasing vegetation and therefore rehabilitating the environment by increasing forest cover in the area.

Sinking of borehole, harvesting rainwater and other water conservation measures have been done by church members both individually and collectively. This has been aimed at improving water availability for human consumption, for animals, watering of plants and other domestic water utilities. The church has collaborated with other stakeholders like government and NGOs in the community in preservation of water catchment areas. Figure 3.2 displays a bore hole and plants in the church compound in PCEA Kimuka congregation. The trees have been planted and watered using borehole water as part of church environmental rehabilitation activity.



Figure 3.2: *Photograph showing a borehole owned by Kimuka congregation and exotic trees planted by church members. In the background is the natural vegetation comprising indigenous plants that characterize the ecosystem of Ngong Hills*

3.5 Environmental rehabilitation activities practiced by church members at individual level

In addition to what is describes in section 3.2 above on the participation of members of PCEA Ntashat Parish in their capacity as church members, they also practiced environmentally friendly activities at their homes. Within the individual homesteads, there were evidences of planting and watering trees (Figure 3.3). Respondents reported that they often pray for rains during the periods of drought, preserve water by construction of individual dams and harvesting of rain water using water tanks (Figure 3.4). The other environmental rehabilitation exercises at individual level includes reduction of charcoal burning, avoidance of overgrazing and conservation of natural vegetation through use of renewable energy such as solar power (Figure 3.5).

Results on investigation on practices of members of PCEA Ntashat indicated that; so far, the parish has taken several mitigation measures to enhance environmental

rehabilitation that includes; water conservation, efficient use of energy, introduction of renewable energy, enhancement of environmental law, creation of recreation area protected from degradation and creating awareness of environmental rehabilitation. Some parish members have bought water tanks, placing them in their homesteads. The preserved water is used for domestic purposes during the dry season. There was evidence of use of solar energy as a source of fuel for lighting in homesteads and institutions offered by Akon Lighting Africa For example, Oloishoibor Primary school and Oloishoibor healthy centre are beneficiaries of the energy provided by wind mills that has been established in the study area.



Figure 3.3: A photograph of trees in a homestead in the study area



Figure 3.4: Photograph displaying water conservation using plastic tanks in a homestead at Oloosho-ibor area in Ntashat PCEA



Figure 3.5: Photograph showing evidence of solar energy generation in schools, healthy centers and churches as a source of renewable energy hence reducing reliance of firewood or charcoal leading to conservation of trees

3.6 Participation of members of PCEA Ntashat Parish in community based environmental rehabilitation programs

The results of the current study showed that members of PCEA Ntashat Parish supported community based environmental rehabilitation and conservation programs. Most of the activities were sometimes similar to those carried out by the church. A good example was the wind mills contracted in the area for generation of power. The fact that there were no reported cases of them being destroyed showed that the members of the community had accepted them.

According to the study in PCEA Ntashat Parish, 69(89.6%) of the respondents highlighted different environmental activities practiced in the area, while 8(10.4%) were not aware of any environmental activities done in the parish.

Rating the environment activities carried out in PCEA Ntashat Parish 53(68.8%) of the respondents thought they were good, while 10 (13%) thought the activities were very good. Other respondents 5(6.5%) thought the activities were poor, while 7 (9.1%) regarded the activities to be very poor. There were other respondents 1 (1.3%) who took the activities to be on average and 1(1.3%) was not aware of the activities held on environmental rehabilitation in the parish.

According to the respondents in the parish 33(42.9) are satisfied with the current environment activities, while 44(57.1%) are not satisfied. As was explained earlier, a conclusion of the focused group discussion during data collection was that more needed to be done to rehabilitate the environment in the area. The group felt that more can be done to improve the environment rehabilitation.

3.7 Challenges encountered in implementation of environmental conservation and rehabilitation practices

The results of the study showed that sixty (60) respondents (78%) were aware of the challenges faced in the Parish concerning conservation and rehabilitation of the environment, while 17(22%) were ignorant of the need environmental concern and they displayed a don't care attitude regarding environmental concerns

Some of the challenges registered by the respondents included lack of enough water in the parish, inadequate support by other members of the community and insufficient funding by the government. In addition, population pressure posed another set of challenges. These included overgrazing (Figure 3.7), charcoal burning as a source of livelihood and human-wildlife conflict due to competition for natural resources. During the visit to the study area for data collection, giraffes and other wild animals were spotted (Figure 3.6).



Figure 3.6: A photograph showing giraffes in a natural environment with evidence of scarcity of vegetation



Figure 3.7: Photograph displaying a flock of sheep being shepherded home after grazing in natural pastures

The challenges also included lack of teamwork, insufficient environmental education among some residents, ignorance, irresponsibility, climatic change, poor environmental governance, and poor methods of waste disposal leading to littering especially plastic bags.

3.8 Mitigation of the changes

The respondents had different ideas and suggestions of mitigating the above mentioned challenges to enhance environmental rehabilitation. The measures suggested included encouraging group work (teamwork), appealing for more funding from the government, Non Governmental organizations and other well-wishers for provision of water through drilling boreholes and increased capacity for water conservation and storage. Respondents also recommended that increased education of residents on environmental issues, erection of fences to protect vegetation, awareness campaign, planting specified vegetation, create profitable projects that do not destroy the environment such as use of renewable energy like the bio gas and solar to replace firewood and charcoal, restricting the use of non-biodegradable material like the plastic bags.

3.9 Conclusions

It was concluded that members of PCEA Ntashat Parish are knowledgeable on the need of environmental conservation and rehabilitation. Majority of them, being of Maasai origin, are aware of the importance of sustainability of natural vegetation as sources of medicine, beauty, rain, fresh air and other needs for their lives today and for future generations. They have positive attitudes on environmental conservation and rehabilitation and are willing to participate in activities that will maintain a healthy ecosystem for themselves, their domestic animals and the wildlife.

It was concluded that members of PCEA Ntashat are currently heavily involved in environmental activities that include, but not limited to; tree planting, water conservation, prevention of soil erosion, praying for rains and maintenance of unpolluted environment. This indicated that, members of PCEA Ntashat Parish have embraced the PCEA Church environmental policy. In this policy, it is advocated that members of the church should be educated on environmental matters and participate in environmental conservation and rehabilitation.

CHAPTER FOUR

TYPES OF VEGETATION AND THEIR USES IN PCEA NTASHAT PARISH

4.1 Introduction

God created human beings and gave them full responsibility as stewards and caretakers of the earth and all that is contained in it, including the natural vegetation (Bradley, 1990: 91). The term vegetation refers to all the plants (plant life) of a place, taken as a whole and it may be part of the natural environment or introduced into the area by human activities (Barkman, 1979: 123-160). Man is supposed to live in harmony with natural vegetation enjoying its products without depletion because the nature has a great capacity for regeneration and sustaining the plant diversity. Today, in many parts of the world the natural environment is continuously being challenged by human activities that may be religious, cultural and economical in nature (McDonagh, 1986: 8).

As a result of human activities, vegetation in many parts of the world has been affected positively or negatively. The positive effects include places where there were no plants having been converted into forest through planting of trees and providing them with water through irrigation. On the other hand there are negative effects like over utilization of plants leading to either deforestation and desertification or disappearance of some plant species. Some of the plants that are disappearing are of importance since they may be medicinal, ornamental, sources of traditional vegetables, building materials among other uses that benefit mankind, animals and environmental status in a given ecosystem.

In a book titled “*One Earth Many Religions*” the author calls for a globally responsibility, correlation dialogue of religions, to understand and to speak with each other on the basis of a common commitment to human and ecological well-being. In addition, according to the same author, “A global responsibility dialogue is one that is aware that any interfaith encounter is incomplete, perhaps even

dangerous, if it does not include a concern for and attempt to resolve the human and ecological suffering prevalent through the world” (Knitter, 1994: 15).

In many parts of the world, it is now necessary to enhance the role of Christians in environmental rehabilitation especially in areas where vegetation is threatened. In Kenya, PCEA is one of the denominations documented as having developed policies on environmental stewardship (www.arcworld.org/downloads/Kenya-PCEA-plan.pdf). However studies on how these policies and the levels of success in areas where the denomination has spread are not well published. This study conducted at PCEA Ntashat Parish, in Ngong Hills Presbytery determined the status of vegetation and uses of plants by members of the Parish. Ngong Hills is in Kajiado West, which is a Sub County of Kajiado County in Kenya. Ecologically, the study area is part of the Arid and Semi-Arid Lands (ASAL) of Kenya where cultural, religious, medicinal, ornamental and other traditional use of plants is known for many years. However, the current plant diversity, uses and availability is not published since most of the information is orally transmitted from one generation to another. Before the colonization of Kenya by the British, Maasai version of African Traditional Religion was practiced (Sanka, 1971: 60-61).

Today Christianity is probably the main religion although there has been inculturation of some traditional aspects of ATR. For example, use of traditional herbal medicine is being practiced alongside modern medicine. During a visit to the study area, the researcher witnessed several aspects of environmental negligence, involvement of church in environmental issues and extensive traditional uses of plant for various purposes. The visit generated interest and need to document the status and use of plants in the area. Therefore, the study aimed at generating data on using members of PCEA Ntashat Parish as informants on various aspects of vegetation in the area including utility of plants, plant biodiversity, conservation of environment and its rehabilitation.

4.2 Indigenous plant species

The study established that vegetation in the study area has numerous indigenous plants that have existed in the area. Nearly all the respondents listed several plants and were able to give the local names and describe the use(s). The indigenous plants commonly mentioned were collected and submitted for botanical identification and their details are contained in Table 4.1. Among the important uses of the plants were medicinal, source of fuel, ornamental and ceremonial. It was established that there is a risk of disappearance of some of the indigenous plants due to overexploitation as a result of destructive human activities and change of land use.

4.3 Exotic plant species

In addition to the indigenous plants described in section 4.2 above, the results of the current study showed that there has been introduced over time plants like greveria, pine and eucalyptus which are now common in the area. They have been introduced due to their rapid growth compared to the indigenous plants. Some of the indigenous plants like olive tree (*Olea africana*) or ozoirien (in Maasai) take very many years to mature. Table 4.1 displays both exotic and indigenous plant species that were identified during the study.



Figure 4.1: A photograph showing the researcher being assisted by an informant to identify and collect samples of selected vegetation in PCEA Ntashat Parish in Ngong Hills, Kenya

The results of this study showed that in Ntashat Parish, the community has extensive knowledge of the plants in the surrounding. When asked to list important plants in the area, the participants of a focused group discussion mentioned over 50 different plants using the local language (Maasai). During a walk in the area, the researcher together with some respondents of the questionnaire and a few participants of the discussion collected a total of 45 plants

mentioned in the discussion. The rest of the plants mentioned were not collected because they were not readily available in the sites visited by the group.

All the 45 plants collected were submitted for botanical identification and voucher specimen were deposited at University of Nairobi Herbarium. Details of the identity, habitat, uses and availability of the plants are displayed in table 4.1. The results of the botanical identification showed that the 45 species of plants collected belonged to 32 families. According to the respondents, these plants had various traditional uses. The following were listed as the uses of the listed plants: medicinal, ceremonial, cosmetic and ornamental, cleaning of teeth, use in soup, edible natural fruits (as food), source of building material, source of fuel in form of firewood used as energy for cooking and warming, shade and stimulation of physiological parameters like growth promotion and libido (Table 4.1).

Medicinal use of plant was reported to be the most important use of plants in the area for treatment of human and animal diseases, using traditional African medicine system. The knowledge of traditional medicine in the area was reported to have been passed orally from one generation to another since time immemorial. Example of diseases reported to be treated includes: blood sugar (diabetes mellitus), asthma, toothache, stomach infections, growth retardation, gonorrhoea, throat problems, pregnancy disorders, eye infections, children's diseases, colds, swollen legs and painful joints. Various parts of plants such as leaves, roots, bark, flowers, fruits and seeds have medicinal value depending on the type of plants

Table 4.1: Identification uses and availability of selected plants found in PCEA Ntashat Parish in Ngong Hills, Kenya

Plant family	Species /voucher number	Local	Origin	Uses (s)	Part(s) used	Availability
Vitaceae	<i>Rhoicissus revoilii</i> Planch	Orkilenyai	Indigenous	Medicine for ear ache	Roots	Scarce
	<i>Cyphostemma serpens</i> (A.Rich.) Descoigns					Plenty
Euphorbiaceae	<i>Croton dichgamous</i> Pax	Enaibor-benek		Medicine for common cold	Leaves, Bark	Plenty
Capperdaceae	<i>Boscia angustifolia</i> A. Rich	Oloireroi		Medicine for poor eye site	Stems	Scarce
Santalaceae	<i>Osyris lanceolata</i> Hochst & steudel	Ololesiai		Perfume, medicine for stomachache (Children)	Roots, leaves	Scarce
Rutaceae	<i>Vepris simplicifolia</i> (Engli.) Verd.	Orgilai		Cleaning the stomach	Leaves	Scarce
	<i>Citrus lemon</i> Burm.f.		Exotic			Plenty
Mimosaceae	<i>Acacia nilotica</i> (L.) Willd.ex Delile	Orkiloriti	Indigenous	Stomach upset, common cold,tea		Plenty
	<i>Acacia hockii</i> De Willd	Orkiloriti	Indigenous			Plenty
	<i>Acacia tortilis</i> forssk	Oltepesi	Indigenous	Added to Soup	Bark, stems	Plenty
	<i>Acacia melifera</i> (Vahl) Benth.	Oiti	Indigenous	Stomach ache	Stems	Scarce
	<i>Lecaena latisiligus</i>					Scarce
Papilionaceae	<i>Ormocarpum trachycarpum</i> (Taub.) Harms	Enkikeempans		Blood sugar	Stems, roots	Plenty
	<i>Ingigofera</i> sp					Scarce
Verbenaceae	<i>Lippia japonica</i> (Burm.f.) Spreng	Osinoni	indigenous	Treats asthma(inhalation)	Roots, stem	Plenty
Boraginaceae	<i>Cordia monoica</i> Roxb	Oseki		Ceremonial plant	Twigs	Scarce
	<i>Markhamia lutea</i> (Benth.) K. Schum					Scarce

Table 4.1 Continued

Plant family	Species /voucher number	Local	Origin	Uses (s)	Part(s) used	Availability
Asparagaceae	<i>Asparagus racemosus</i> Wild	Empere-epapa		Treats tooth ache	Leaves	Plenty
Oleaceae	<i>Olea europaea ssp africana</i> (Mill.) P. Green	Ozoirien	Indigenous	Brushing teeth, deworming	Barks, Roots	Plenty
	<i>Ligustrum incidum</i> Ait					Scarce
Anacardiaceae	<i>Rhus natalensis</i> Krauss	Ormisigiyoi		Fruits are edible	Fruits	Plenty
	<i>Mangifera indica</i> L.		Exotic			Plenty
	<i>Schinus trerbinthifolia</i> Raddi					Plenty
	<i>Rhus tenuinervis</i> Engli.					Scarce
Opiliceae	<i>Opili amentacea</i> Roxb	Echani-enkasha		Stimulation of growth in calves and children	Leaves	Plenty
Meliaceae	<i>Melia azedarach</i> L					Scarce
	<i>Turraea abyssinica</i> A. Rich					Scarce
Labiatae	<i>Salvia leucantha</i> Cav.			Protect pregnancy	Roots	Plenty
Combretaceae	<i>Terminalia mentaly</i> H. Perries	Olmaroroi				Scarce
Compositae	<i>Psidia punctulata</i> (DC.) Vatke	Ol-ekoru	Indigenous	Treats tick bite sores	Leaves	Scarce
	<i>Tarchonanthus camphorates</i>					Scarce
	<i>Notonia pectracea</i> R. E Fries					Scarce
Ebenaceae	<i>Enclea divinorum</i> Hiern	Olsagararam			Twigs, leaves	Plenty
Nyctaginaceae	<i>Bouganvillea spectabilis</i> Willd					Plenty
Bignomiaceae	<i>Jacaranda mimosifolium</i> D. Don	Oldaboi	Exotic			Plenty

Table 4.1: Continued

Plant family	Species /voucher number	Local	Origin	Uses (s)	Part(s) used	Availability
Rosaceae	<i>Prunus africana</i> (Hook.f.) Kalkman	Olkunjuku	Indigenous	Bee plant, shade, timber		
Apocynaceae	<i>Nerium oleander</i> L.	Olkiloriti	Exotic		Roots, bark	Plenty
Tiliaceae	<i>Grewia bicolor</i> Juss	Oloingoni		Fruits, building materials	Stem, frits	Scarce
Solanaceae	<i>Nicotiana glauca</i> R. Grah.	Olairamirami				Scarce
Calesapineae	<i>Senna spectabilis</i> L.					Scarce
Sapendeceae	<i>Filicium decipiens</i> (Wight & Arn) Thwgites					Scarce
Amarantheceae	<i>Achyrothes aspera</i> L.					Scarce
Canellaceae	<i>Warbugia ugandensis</i> Sprague ssp <i>ugandensis</i>	Olmsogoni	Indigenous	Shade, green manure, soup	Roots, leaves	Plenty
Cactaceae	<i>Opuntia exaltata</i>	Oloropillo-munyi		Treats intestinal worms	Leaves	Scarce
	<i>Quiabentia chacoensis</i> L.					Scarce
Acantheceae	<i>Barleria spinisepede</i>	Ol-oligeldi				Scarce
Lamiaceae	<i>Leuca pratensis</i> Vatke			Heals wounds, treats cold	Leaves, Barks	Scarce
Moraceae	<i>Morus alba</i> L.	Olgiloriti		Fruits, charcoal, building	Stems, Twigs	Scarce

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Chapter five presents the summary, conclusions and recommendations on influence of Presbyterian Church of East Africa on the environmental status in Kimuka area of Ngong Hills, Kenya. The current study has shown that despite education, western cultural influences and conversion from ATR to Christianity, the Maasai people of PCEA Ntashat Parish in Ngong Hills have clung to some aspects of their traditional way of life. Among the members of PCEA Ntashat Parish, the majority of who were of Maasai origin, their clothing was traditional and their value for traditional herbal medicines was profound. This is in agreement with what is documented in literature that the Maasai people are characterized by their immense intelligence and respect for their ancestors as well as nature (Sankan, 1971: 60-61). Every aspect in their life complements their beliefs, values, and respect for nature. With regard to, traditional faith and religion, they had monotheistic beliefs (Johnson, 2004: 3).

In the study area, the PCEA is widespread and accepted by the majority of the Maasai community. Compared to other African communities as Christianity is concerned, the Maasai community is not exceptional, as Mugambi in his book "*African Christian Theology*" states that African converts absorbed the denominationalism that was brought by the missionary enterprise, although they were not heirs to the cultural and religious background of the denominations to which they were converted (Mugambi, 1989: 42).

The current study also established that Christianity has introduced foreign human activities that affect the status of the environment. When missionaries came into the study area, they brought with them some food stuffs, clothing and Bibles to Oloisho-ibor one of the current growing centers in Kimuka. They embarked on

teaching the word of God under a tree, which still survive today. When the church started in Ngong Hills area, just like other mission areas, three important pillars were introduced namely; spirituality, education and health. Institutions like churches, mission, schools and hospitals were the entry points for missionaries (Shaw, 2006: 220-227).

Similarly in PCEA Ntashat Parish according to the key informants in the current study, in the 1970's, Denny Crendal, a missionary came in the area and started his mission work together with the late Patrick Simon Sakuda, who accommodated him in his homestead at Oloisho-ibor. Denny Crendal came with the idea that, for him to reach the community with the word of God, he must train some Bible classes to some local who would help him reach the community which was unreached and uneducated with the word of God. PCEA Ntashat Parish came to be after a long history through the old Olooseos Parish, which was later divided into three parishes namely; Oloolotikoishi, Olooseos, and Ntashat. Among the impacts of Christianity on the Maasai lifestyle is environmental threats since over the years, the introduced religion has continued to shape Maasai traditions into more modern customs (personal Interview, 2016 December).

The current study found that the practices being undertaken by members of PCEA Ntashat Parish in order to rehabilitate the environment are similar to those that are commonly used in other parts of the world. They include water conservation, resourceful utilization of energy and introduction of renewable energy. The lifestyle changes have led to deforestation, destruction of water catchment areas, soil erosion and reduction of rainfall due to the human activities that impact the environment. A study in Nigeria showed that the church is lacking behind in matters of environmental awareness which is not supposed to be, because the Bible well-regards and supports the beauty of environment (Obosola, 2013: 155-162).

Similarly, in the current study it was noted that some members of the PCEA church were ignorant and not bothered with the deteriorating status of the environment and the need for environmental rehabilitation. Literature has reported

that it is sinful to destroy the environment. It indicates that it is sinful for mankind to make other living organisms to become extinct. Disappearance of the species of animals or plant leads to decrease biological diversity of God's creation. This degrades the integrity of the earth by stripping it of its natural forests or its wetlands (Clifford, 1995: 143). According to the Bible all human regardless of whether they are Christians or not are supposed to be caretakers of the environment (Genesis 1:31; 2:15).

In the current study, respondents recognized the causes of environmental degradation such as cutting down trees, excessive tilling of land for crop farming, deforestation for whatever reason for example charcoal burning, inadequate efforts for sustaining and rehabilitating the environment, excessive soil erosion, lack of rain due to climate change, dumping of litter and inappropriate methods of solid waste disposal such as plastic bags, overstocking of livestock leading to overgrazing, water deficiency, inadequate funding and facilitation of environmental programs. Population pressure was also termed to be a cause of environmental degradation by the respondents in PCEA Ntashat Parish, similarly to studies in Niger Delta that reported destruction of the environment through population growth, Soil erosion and other human activities (Bisong, 2010: 151).

In the study, the opinions of the respondents as to who should be held responsible for ensuring a healthy environment varied. The respondents had positive attitudes towards environmental rehabilitation which is similar to what is reported in the literature about Africans and the ecology. An African proverb says that, one must not pee in front of his or her house. And another says that one must not shit in the hut where he or she lives. These ecological proverbs, applied to the global dimension, call the human kind not to destroy, poison and pollute nature and environment, their Great House and the House of God. Nature or rather creation is regarded as an indispensable ally in the success of the human destiny, which is the victory of life over death (Kizito, 2011: 333-352).

God created human beings and gave them full responsibility as stewards and caretakers of the earth, and all that is contained in it, including the natural

vegetation. William Geoffrey Smith cited in James E. White's book, "*Contemporary Moral Problems*", stated that "a conserved environment is a cathedral, or a laboratory, for all living things". It is suggested that human beings should adopt a holistic concept of nature to form a moral community. This will be fruitful only when human beings shall have compassion for nature and not regarding themselves as being superior separating themselves from all other components of nature (White, 1994: 387).

An important part of nature is vegetation which may be in the form of forests, grassland and other forms of plants that grow on the earth. Therefore the term "vegetation" refers to all the plants (plant life) of a place, taken as a whole and it may be part of the natural environment or introduced into the area by human activities. Until recently, man has lived in harmony with natural vegetation enjoying its products without depletion because the earth has a great capacity for regeneration and sustaining the plant diversity. Today, in several regions of the earth, including Kenya and more specifically Kimuka area in Ngong Hills, the natural environment is continuously being challenged by human activities that may be religious, cultural or economic in nature. As a result of human activities, vegetation in many parts of the world has been affected positively or negatively. The positive effects include places where there were no plants, but have been converted into forests through planting of trees and providing them with water through irrigation.

On the other hand there are negative effects like over utilization of plants leading to either deforestation and desertification or disappearance of some plant species. Some of the plants that are disappearing are of importance since they may be medicinal, ornamental, sources of traditional vegetables, building materials among other uses that benefit mankind, animals and environmental status in a given ecosystem. Some types of land may disappear or be replaced due to the ongoing changes in the environment. In parts of East Africa, the vegetation of Maasailand naturally comprises a diverse range of plant species and varieties. This variability in plant biodiversity usually reflects the differences in rainfall and

topography of the specific area. The wetter regions of some parts in the Rift Valley region in Kenya for example the Mau Hills, Loita Hills and the Nguruman escarpment, have indigenous forest trees that has existed for long. Some examples of the trees are; *Juniperus procera* (East African cedar, or *Oltarakwa* in the Maasai language), *Podocarpus milanjanus* (*Olcani-lenkai* in Maasai) and *Ocotea usambarensis* (East African Camphor). On the other hand drier regions have different plant species. The vegetation is not usually the same; forests may give way to woodland, grassland or bushland. Woodlands and bushlands are characterized by having Acacia, Commiphora species of trees.

The grasslands in Maasailand contain perennial grasses that include *Cenchrus ciliaris* and *Chloris roxburghiana*. The vegetation in these areas has social and ritual significance in Maasai communities. The grasses are valued as sources of fodder for livestock which are the main sources of livelihood as they provide milk, meat and satisfaction in terms of wealth. The diversity vegetation in the Maasai land corresponds to the diverse uses to which the various plants are valued for. Since the Maasai are pastoralists and their main occupation is herding, they are familiar with most of the vegetation. They are able to distinguish plants that increase milk production, cause fattening of livestock or improve their condition when animals are grazed (Gitau, 2000: 51-52).

In many parts of the world, it is now necessary to enhance the role of Christians in environmental conservation and rehabilitation especially in areas where vegetation is threatened. In Kenya, the Presbyterian Church of East Africa (PCEA) is among the denominations documented as having developed policies on environmental rehabilitation. However studies on how these policies and the levels of success in areas where the denomination has spread are not well published. This study was conducted at PCEA Ntashat Parish, in Ngong Hills Presbytery to determine the status of vegetation and uses of plants by members of the parish.

The plants traditionally encountered in the rural African communities are of remarkable importance to these communities. Many societies have indigenous knowledge on the importance of the vegetation. In the past, this knowledge has been passed from one generation to the other. However, the existence of this information is becoming threatened and is rapidly dwindling due to changes of lifestyle, religion, systems of education and technological advancement. Maasai's for example are increasingly becoming unable to practice their way of life moving from one area to another in search of water and pasture. This change from a nomadic to a more sedentary lifestyle has been associated with a dramatic loss of traditional plant knowledge especially in areas that have become urbanized. PCEA Ntashat Parish is very close to urban areas like Ngong and Kiserian towns and there is therefore need to study the rate at which the indigenous knowledge is dwindling.

The current study showed that the local population in PCEA Ntashat Parish has retained an extensive knowledge of the environment. Majority of the people in the area have received the knowledge from their parents and passed it to the youth. This agrees with what is reported for other communities that share more features with the Maasai. Plants have been an integral part of life in many indigenous communities, and African communities are no exception. Many tribes in Africa have sophisticated plant knowledge but Western influences have led to an accelerating decline of this tradition (Sankan, 1971: 60-61). Most knowledge is still transferred entirely orally in many communities. Despite the "Witchcraft Act" of 1925, outlawing traditional medicine in Kenya, the practice continued in secret, until parts of the law were revoked with independence in 1963. Western style healthcare supplied by the government has expanded in the last decades, but is still often not readily available, and many regions remain completely underserved. Consequently, most communities for example PCEA Ntashat Parish in Kimuka area of Ngong Hills still use herbal remedies as a readily and cheaply available alternative.

5.2 Conclusions

The hypotheses stated in **section 1.8** of this project report were tested through generation of questionnaires, analysis and interpretation of data. Based on the results obtained in this study, four conclusions were made corresponding to the specific objectives. It was concluded that;

Missionaries who started PCEA in the study area came in the early 1970's and before then the community worshipped mainly using ATR guided by the Maasai culture and religious beliefs. The initial reason as to why the community in Kimuka area joined PCEA was the convincing approach by the missionaries. Later, the spread of the denomination was on family line and the fact that there were no other well established Christian denominations to compete with PCEA assisted in its spread. The demographic characteristics of the members of the PCEA Church in the study area include people in all walks of life such as those with no education, educated professionals and business people. The Parish has men, women and youth, as would be expected in a moderately developed community.

The second conclusion was that members of PCEA Ntashat Parish in area are conversant with matters of environmental concern and participates in activities geared towards environmental rehabilitation. Their main causes of environmental concerns are scarcity of rain, population pressure, climate change, destructive human activities and human-wildlife conflict which is becoming more severe with time. The community regarded shade, good health, medicine, beauty, source of rain, reduction of dust and comfort as the benefits accrued from environmental resources and they are positive on the need to enhance environmental conservation and rehabilitation. They correctly understand that environmental matters should be a concern of multiple stakeholders.

The third conclusion was that several activities are going on with regard to environmental conservation and rehabilitation by members of PCEA Ntashat Parish in Kimuka. They are engaged in implementation of PCEA environmental policy through creation of awareness on the need to conserve the environment,

planting of trees, use of renewable energy, and protection of water catchment areas among other methods of improving the environment

The fourth conclusion based on the current study was that members of PCEA Ntashat Parish cherish their cultural heritage on the importance of the natural vegetation and have retained traditional knowledge on the use of plants which is to date being orally passed across generations. This practice has not been lost by conversion from ATR to Christianity. Traditional medicine based on plants obtained from the natural vegetation in the area continues to be an important source of health care for both human and livestock. The knowledge on medicinal plants is widespread among members of the PCEA Ntashat Parish regardless of age, gender and level of formal education.

5.3 Recommendations

It was recommended that members of the PCEA Ntashat Parish should be encouraged to continue integrating traditional knowledge and modern technologies for the environment conservation and rehabilitation. Another recommendation is that the government of Kenya, the NGO's and other funding agencies should assist Kimuka community to strengthen their capacity for environmental conservation and rehabilitation.

The wealth of knowledge by the Kimuka community on the traditional utilization of natural resources such as use of traditional herbal medicine should be protected from disappearance. This should be done through conservation of the indigenous plants and carrying out further studies on developing medicinal products based on the indigenous knowledge. It is recommended that such products should be also subjected to scientific validation so that they continue being acceptable by Christians living in the modern times.

Another recommendation based on the current study is that indigenous trees should be planted on designated part of the farms. This should be in addition to the exotic trees planted in church compounds and for fencing homesteads. Planting of more indigenous trees in reserved areas, especially for individuals

with large pieces of land will be more beneficial for increasing the forest cover and medicinal purposes. Planting of the right species of trees according the climate of the study are is also recommended.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE FOR CAPTURING DATA ON THE CONTRIBUTION OF PCEA NTASHAT PARISH ON ENVIRONMENTAL REHABILITATION IN NGONG, KENYA

Declaration

My name is Anneh Wanjiru Mbaria, a student of University Nairobi. I am currently pursuing a Master of Arts (MA) in Religious Studies. This questionnaire is intended to capture the contribution of Presbyterian Church of East Africa Ntashat Parish towards environmental rehabilitation in Ngong, Kajiado Kenya. Please fill in the questionnaire to assist me in my research. The information obtained will not be used for any other purpose and will be handled with confidentiality.

Signature **Date**

Part A: Demographic Characteristics

1. Name of respondent (optional)Date.....

2. Contacts (optional): Phone no.....email.....

3. Gender: Male () Female ()

4. Marital status: Married () single () divorced () Number of children ()
widowed () widower ()

5. What is your occupation?Employed (.).....Business ()

6. What is your profession?

7. What is your highest level of education?

No Formal Education. ()

Primary ()

Secondary (.)

College Diploma ()

Bachelors Degree ()

Masters Degree ()

PhD ()

8. How old are you? 18-24yrs () 25-32years () 35-40 yrs () 41-49 yrs ()
above 50

9. For how long have you been a resident of this
area?.....

10. What is your place of origin if you were not born here?
District.....County.....

Part B: Factors Associated with the Spread of PCEA

11. How did you learn about PCEA?

12. When did you join the PCEA?

13. Have you been a member of other denomination(s) Yes () No ()

14. If yes, which denomination(s) have you been a member?

15. Why did you join the PCEA?.....

16. Would you say your life has changed after joining the PCEA?.....

17. Which church group do you belong to?.....

Part C: Awareness of Environment

18. Our environment is...

- a) in good shape
- b) In some trouble but can be saved with a little effort
- c) In bad shape, but a lot of efforts might save it
- d) In such a bad shape little can be done about it. Choose the appropriate answer(s).

19. Are you interested in environment issues and do you participation in programs on environment? a) Yes (); No ()

20. Are there environmental programs in your congregation? Yes () or No ()

21. How are issues of sustaining environment important to you personally?.....

22. What do you think causes environmental degradation in PCEA Ntashat Parish?.....

23. Does the church have programs that are for environmental conservation? Yes or No. If yes, name them

24. In your opinion, who should be responsible for making sure there is a health environment?

- a) Government
- b) Industry
- c) Environmental groups
- d) Individuals
- e) All of the above

25. Is the current concern over the state of the environment justified?

Yes () or No ()

26. Given the current concern about the environment, how would you describe your future?

- a) Bright and hopeful
- b) Challenging
- c) Depressing
- d) Uncertain

27. In your opinion, what can be done to promote faster good ecosystem health in this area?

Part D: Environmental Activities of the PCEA Community

28. Does your denomination have activities that influence the environment? Yes or No. (.)

If yes, list the important activities that are done by your church members for environmental rehabilitation.

- a)
- b)
- c)
- d)

29. How do you rate environmental activities in your denomination?

- a). Good or very good
- b). Poor or very poor
- c). I am not aware or none of the above

30. Do you know of any activities that cause destruction of the environment?

Name them:

a)

b)

c)

d)

31. Are you satisfied with the environment management activities of your denomination? Yes () No ()

32. In your own opinion do your church groups have challenges in rehabilitating the environment? Yes () No (). If yes,

33. What are these challenges and how can they be overcome?

a)

b)

c)

d)

34. Tick the mitigation measures that have been taken to enhance environmental rehabilitation in the Parish?

a). Water conservation

b). Efficient use of energy

c). Introduction of renewable energy

d). Enhancement of environmental law

e). Creation of recreation area protected from degradation

f). Creating awareness of environment rehabilitation.

Part E: Status of Vegetation and use of Plants

35. In your opinion do you think that vegetation in PCEA Ntashat Parish is threatened and will disappearance in the future? Yes or No

36. Explain your answer.....

37. Collect plants used in PCEA Ntashat Parish and give their details by completing the table below:

Local Name	Use(s)	Part(s) used	Availability

APPENDIX 2: LIST OF RESPONDENTS

S/NO	NAME	GENDER	MARITAL STATUS	OCCUPATION	PROFESSION	LEVEL OF EDUCATION	AGE
1	DAMARIS LAGAS	FEMALE	MARRIED	BUSINESS	BEAD MAKING	PRIMARY	18-24
2	ANONYMOUS	FEMALE	SINGLE			DEGREE	18-24
3	SAMUEL	MALE	MARRIED	EMPLOYED	PROCUREMENT	DIPLOMA	25-32
4	LORNA SENEWA	FEMALE	SINGLE		STUDENT	SECONDARY	18-24
5	ROSE SILOLE	FEMALE	MARRIED	EMPLOYED	HUMAN RESOURCE	DIPLOMA	25-32
6	ANONYMOUS	MALE	SINGLE			DIPLOMA	18-24
7	ANONYMOUS	MALE	MARRIED	BUSINESS	MEAT SUPPLIER	SECONDARY	25-32
8	ANONYMOUS	FEMALE	MARRIED	BUSINESS	FARMER	NFEDU	41-49
9	ANONYMOUS	FEMALE	SINGLE		STUDENT	PRIMARY	18-24
10	LEAH KINAIYA	FEMALE	WIDOW	BUSINESS	BEAD MAKING	PRIMARY	41-49
11	TITUS LANKAS	MALE	SINGLE		STUDENT(ENG)	DIPLOMA	18-24
12	SILVIA KINAIYA	FEMALE	MARRIED	BUSINESS	BEAD MAKING	NFEDU	25-32
13	ANONYMOUS	MALE	SINGLE	BUSINESS	FARMER	SECONDARY	18-24
14	ANONYMOUS	MALE	SINGLE	EMPLOYED	FARMER	NFEDU	18-24
15	LEAH	FEMALE	MARRIED	BUSINESS	FARMER	PRIMARY	25-32
16	LILLIAN NAISIAE	FEMALE	SINGLE		STUDENT	SECONDARY	18-24
17	ANONYMOUS	MALE	SINGLE		STUDENT(KMTC)	DIPLOMA	25-32
18	ANONYMOUS	MALE	SINGLE		STUDENT	PRIMARY	18-24
19	LENARD SAIDIMU	MALE	SINGLE	BUSINESS	HOTEL&TOURISM	DIPLOMA	25-32
20	JACKSON NTAYIA	MALE	SINGLE	BUSINESS	VETERINARY		25-32
21	JOHN RETETI	MALE	MARRIED	EMPLOYED	EVANGELIST	DIPLOMA	35-40
22	EMMANUEL KASAINÉ	MALE	MARRIED	EMPLOYED	CIVIL SERVANT	DIPLOMA	35-40
23	JONATHAN	MALE	MARRIED	EMPLOYED	DIRECTOR	DEGREE	35-40

APPENDIX 2: LIST OF RESPONDENTS (CONTINUED)

S/NO	NAME	GENDER	MARITAL STATUS	OCCUPATION	PROFESSION	LEVEL OF EDUCATION	AGE
24	ANONYMOUS	MALE	SINGLE		STUDENT	DIPLOMA	25-32
25	ANONYMOUS	MALE	SINGLE	EMPLOYED	MEAT SUPPLIER	SECONDARY	25-32
26	ANONYMOUS	MALE	SINGLE		STUDENT	DIPLOMA	18-24
27	ANONYMOUS	MISSING	SINGLE		STUDENT	SECONDARY	18-24
28	RIANTO CLEMENT	MALE	SINGLE		STUDENT	DEGREE	25-32
29	NAISINKOI	FEMALE	MARRIED	EMPLOYED	TEACHER	DEGREE	41-49
30	EDGAR SIKOYU	MALE	SINGLE	EMPLOYED	TEACHER	DIPLOMA	25-32
31	GRACE KENA	FEMALE	MARRIED	BUSINESS	BUSINESSINESS		35-40
32	BENJAMIN PANA	MALE	SINGLE	BUSINESS	BUSINESSINESS	DEGREE	18-24
33	STEPHEN KODONYO	MALE	MARRIED	BUSINESS	ENGINEERING	SECONDARY	18-24
34	PAUL KOIKE	MALE	SINGLE		STUDENT	SECONDARY	18-24
35	ANONYMOUS	FEMALE	SINGLE	EMPLOYED	CLINICAL OFFICER	DIPLOMA	18-24
36	SENEWA KINAYIA		MARRIED	BUSINESS		NFEDU	≥ 50
37	KEVIN ODUPOI	MALE	SINGLE	BUSINESS	BUSINESSINESS	SECONDARY	18-24
38	SENNEX SHUKURU	MALE	MARRIED	EMPLOYED		DIPLOMA	35-40
39	ANONYMOUS	MALE	SINGLE	EMPLOYED	ENGINEERING	DIPLOMA	25-32
40	ESTHER	FEMALE	MARRIED	EMPLOYED	TEACHER	DEGREE	35-40
41	AMOS PANATO	MALE	SINGLE	BUSINESS		SECONDARY	18-24
42	TERRYANN MASIYIO	FEMALE	SINGLE		STUDENT	DIPLOMA	18-24
43	SYLVIA SIMALOI	FEMALE	SINGLE	EMPLOYED		DIPLOMA	18-24
44	JOSPHINE	FEMALE	MARRIED	BUSINESS	BEAD MAKING	NFEDU	35-40
45	ANONYMOUS	MALE	SINGLE	BUSINESS	LAWYER	SECONDARY	
46	ANONYMOUS	FEMALE	SINGLE		STUDENT	SECONDARY	18-24
47	STIVENE JACK'S	MALE	SINGLE	BUSINESS	BODABODA	SECONDARY	18-24

APPENDIX 2: LIST OF RESPONDENTS (CONTINUED)

S/NO	NAME	GENDER	MARITAL STATUS	OCCUPATION	PROFESSION	LEVEL OF EDUCATION	AGE
48	ANONYMOUS	MALE	MARRIED	BUSINESS	FARMER	PRIMARY	≥ 50
49	JOHN	MALE	SINGLE	BUSINESS	SHOPKEEPER	N F EDU	18-24
50	JOSEPH SOLIAN	MALE	SINGLE	EMPLOYED	TEACHER	SECONDARY	25-32
51	LANKAS JOHN	MALE	SINGLE	EMPLOYED	WATER ENG	DIPLOMA	18-24
52	KARINO MILEI	MALE	SINGLE	BUSINESS	LAND SURVEY	DIPLOMA	25-32
53	JAMES TUNDA	MALE	MARRIED	BUSINESS	BUSINESSINESS		25-32
54	ISAAC	MALE	SINGLE	BUSINESS	FOOTBALL	SECONDARY	18-24
55	JOSEPH	MALE	MARRIED	BUSINESS		PRIMARY	≥ 50
56	ANONYMOUS	FEMALE	SINGLE	EMPLOYED	CLINICAL OFFICER	DIPLOMA	18-24
57	MARGARET WANJIKU	FEMALE	MARRIED	BUSINESS	FARMER	NFEDU	18-24
58	JUDY NKALO	FEMALE	MARRIED	BUSINESS		PRIMARY	25-32
59	LEMAYIAN SAMUEL	MALE	SINGLE		STUDENT	SECONDARY	18-24
60	JULIAS	MALE	SINGLE	BUSINESS	FARMER	SECONDARY	18-24
61	JANET RIYIES	FEMALE	SINGLE		STUDENT	DIPLOMA	18-24
62	JAMES LEMAYIAN	MALE	MARRIED	BUSINESS	N/A	DEGREE	35-40
63	SAMUEL LEYIAN	MALE	MARRIED	BUSINESS	PLANT OPERATOR	DEGREE	25-32
64	EMMANUEL SARUNI	MALE	DIVORCED			DEGREE	25-32
65	CLEMENT RIAN TO	MALE	SINGLE	STUDENT	BUSINESSINESS MGT		25-32
66	JULIAS SAITANA	MALE	MARRIED	EMPLOYED	TEACHER	DEGREE	41-49

APPENDIX 2: LIST OF RESPONDENTS (CONTINUED)

S/NO	NAME	GENDER	MARITAL STATUS	OCCUPATION	PROFESSION	LEVEL OF EDUCATION	AGE
67	ELIJAH KARINO	MALE	SINGLE	STUDENT		PRIMARY	18-24
68	ABIGAEL JOSEPH	FEMALE	MARRIED	EMPLOYED	TEACHER	DEGREE	25-32
69	JOSEPH SARTAGA	MALE	MARRIED	BUSINESS	PLANT OPERATOR	DIPLOMA	25-32
70	ISAIAH NKALO	MALE	MARRIED	EMPLOYED	EVANGELIST	SECONDARY	41-49
71	JULIET SARTAGA	FEMALE	SINGLE	STUDENT	FOOD BEVERAGE	COLLEGE	25-32
72	PHOEBE SEEIN	FEMALE	SINGLE	BUSINESS		SECONDARY	35-32
73	ALICE JULIUS	FEMALE	MARRIED	BUSINESS		DEGREE	41-49
74	ABRAHAM MOITALE	MALE	DIVORCED	BUSINESS	LAWYER	COLLEGE	
75	ANONYMOUS	MALE	WIDOWER	EMPLOYED	COOK	PRIMARY	35-32
76	EDWIN	MALE					
77	MALE	MALE	SINGLE	STUDENT		SECONARY	18-24

KEY

NFEDU = NO FORMAL EDUCATION

**APPENDIX 3: PERMISSION LETTER FOR RESEARCH BY THE
UNIVERSITY**



UNIVERSITY OF NAIROBI

DEPARTMENT OF PHILOSOPHY AND RELIGIOUS STUDIES

Fax 254-2-245566
Telex 22095 Varsity Ke Nairobi Kenya
Tel. 318262 Ext.28137

P.O. Box 30197
Nairobi
Kenya

7th December, 2016

TO WHOM IT MAY CONCERN

Dear Sir/ Madam,

SUBJECT: ANNE WANJIRU MBARIA: REG: NO. C50/80904/2015

This is to confirm that the above named is a student at the University of Nairobi, Faculty of Arts pursuing a Master of Arts Degree in Religious Studies. She has successfully finished her course work and is in the process of gathering data to help her write on the Research Project Report entitled: **Contributions of a Presbyterian Church of East Africa Parish towards environmental rehabilitation in Ngong- Kenya.**

Any assistance accorded her will be highly appreciated.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'S. Akaranga'.

CHAIRMAN
DEPARTMENT OF PHILOSOPHY
& RELIGIOUS STUDIES

Prof. Stephen I. Akaranga

Chairman, Department of Philosophy and Religious Studies

APPENDIX 4: RESEARCH AUTHORIZATION LETTER BY NACOSTI



**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No.

Date:

NACOSTI/P/17/93463/15892

8th March, 2017

Anneh Wanjiru Mbaria
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “*Contribution of a Presbyterian Church of East Africa Parish towards environmental rehabilitation in Ngong, Kenya,*” I am pleased to inform you that you have been authorized to undertake research in **Kajiado County** for the period ending **7th March, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Kajiado County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO


Copy to:


The County Commissioner
Kajiado County.

The County Director of Education
Kajiado County.

APPENDIX 5: RESEARCH PERMIT BY NACOSTI


THIS IS TO CERTIFY THAT: Permit No : **NACOSTI/P/17/93463/15892**
MS. ANNEH WANJIRU MBARIA Date Of Issue : **8th March, 2017**
of UNIVERSITY OF NAIROBI, 37-605 Fee Received : **Ksh 1000**
Uthiru, has been permitted to conduct
research in Kajiado County
on the topic: CONTRIBUTION OF A
PRESBYTERIAN CHURCH OF EAST
AFRICA PARISH TOWARDS
ENVIRONMENTAL REHABILITATION IN
NGONG, KENYA
for the period ending:
7th March, 2018




Anneh Wanjiru Mbaria **Applicant's Signature**
 **Director General**
National Commission for Science, Technology & Innovation

CONDITIONS

- You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.**
- Government Officer will not be interviewed without prior appointment.**
- No questionnaire will be used unless it has been approved.**
- Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
- You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.**
- The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice**



REPUBLIC OF KENYA

NACOSTI
National Commission for Science, Technology and Innovation
RESEACH CLEARANCE PERMIT
Serial No. 13083
CONDITIONS: see back page

APPENDIX: 6 PLAGIARISM TEST REPORT

Turnitin Originality Report

THE INFLUENCE OF PRESBYTERIAN CHURCH OF EAST AFRICA ON THE ENVIRONMENTAL STATUS IN KIMUKA AREA OF NGONG HILLS, KENYA
Anneh Mbaria

by



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