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## **Implications of Biblical Value- Driven Environmental Conservation Practices on Sustainable Biodiversity in Bomet County, Kenya**

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### ***Abstract:***

*Studies on environmental conservation are a contemporary area of interest to researchers in Kenya and around the world. This study was carried out in Bomet County to examine the nature of participation by communities in environmental conservation practices and what value application of Biblical principles by the church in the County as participants added to the existing nature of the said practices. There was a need to understand biblical doctrine on God's will for mankind to conserve environmental resources for mutually beneficial co-existence in sustainable human practices, a discipline currently called Eco theology. The target population was the Church leaders, other community leaders, Pastors, students and managers of the environment in Bomet County. A descriptive survey design was used. Data analysis was done using statistical package of social sciences (SPSS version 20.0). The findings revealed that application of biblical principles on environmental conservation improved the practice. environmental conservation positively when religious groups own conservation as part of service to God and negatively by indifference, when religious groups posit impression that everything is under the control of God and that the expected eschatological world is much improved than the current one which is passing away. Based on the findings and literature review, study recommended collaborative efforts between the church and other members of the community in integrating biblical principles with existing approaches towards sustainable environmental conservation practices in innovative ways.*

**Keywords:** *Conservation practices, Biodiversity, Sustainable Development, Bible-based conservation strategies.*

### **1. Background to the Study and Biblical/Theological Foundations on Environmental Conservation**

This study addresses concerns regarding participation by the church in community initiatives on environmental conservation in Kenya, notably, in Bomet County. According to Salafsky, Redford & Robinson (2002), in their publication *Improving the Practice of Conservation: a Conceptual Framework and Research Agenda for Conservation Science*, biological and social sciences have to converge in adaptive ways in order to conserve natural resources given to humanity by God the creator for mutual co-existence between human beings and rest of creation. These scholars have identified challenges associated with human efforts to conserve biodiversity and improve human welfare through development projects. The term 'project' in this study adapts the meaning given by Margoluis & Salafsky (1998) as "any set of actions undertaken by a group of practitioners to achieve some defined end" (p. 1471). The scope of activities ranges from activities of the local communities to national and global towards or against conservation of God-given resources. At whatever level, actions affect the conservation target, which is biodiversity. According to UNEP (2010) article on 'what is biodiversity?', there are three levels of biodiversity. First, genetic diversity, which refers to all different genes in all individual species; second, species diversity, which refers to all living species; third, ecosystem diversity, which refers to different habitats, biological communities, ecological processes and individual ecosystems. This study focuses on ecosystem diversity and how it is influenced by various actors who interact with it. UNEP (2010) article identifies threats as pollution, alien species, over-utilization and global climatic change. These are the greatest causes of biodiversity loss.

#### ***1.1. Global Initiatives towards Environmental Conservation Practices and Biodiversity Retention***

The study carried out by The Critical Thinking Consortium (Blackline Master #H3, n.d.) has emphasized the importance of personal participation in environmental conservation (p. 1)

The same Consortium also put emphasis on Global initiatives in environmental protection (p. 2) given that conservation is not limited to certain individuals, given that environmental conservation is carried out by non-governmental organizations as well. The consortium also noted the components contained tiny amounts of precious metals like lead and gold that are harmful to mankind (p. 5)

The government of Kenya (GoK) in Poverty and Environment Initiative document (2006) states that Kenya recognizes the importance of the environment in achieving economic recovery and poverty reduction goals highlighted in the Economic according to Recovery Strategy (ERS) for Wealth and Employment Creation (2003 – 2007). (P. 1)

Bomet County has incorporated environmental matters on its vision which states that ‘A prosperous and competitive County in economic, social and political development offering high quality services to its people’(p. 1) and also in its mission which states ‘To transform the livelihoods of Bomet County residents through innovative and dynamic leadership, efficient and effective mechanisms, viable partnerships while ensuring equity, integrity and community participation in a clean, secure and sustainable environment’. (p. 1)

### *1.2. Biblical and Theological Foundations Regarding Retention of Ecosystem Biodiversity*

The scripture clearly indicates that preservation of the environment is a God given mandate to His people. In the book of Genesis chapter one, it is recorded that God created all necessary elements of biodiversity for the wellbeing of humanity, then He created mankind, all in six literal days. It is an indicator of God’s will that a harmonious co-existence the three levels of biodiversity was necessary for healthy and sustainable spiritual, social, economic and political development.

Regenstein (2015) discusses the Old Testament background of environmental Conservation, for instance Deuteronomy 23:12-14 forbids contaminating the environment with human waste; “Designate a place outside the camp where you can go to relieve yourself. ...have something with, and when you relieve yourself, dig a hole and cover up your excrement. For the Lord you God move about your camp to protect you and to deliver your enemies to you.’ We can rightly argue that latrine pit is mandatory in every believer’s home, for God treasure clean and tidy environment. Today our country grapple with the problem of cholera which is now a killer in the slam area, the bible record an incident in 2Kings 2:19-22 in which Elisha cleanse dirty water that ran through the city causing death and miscarriages. The bible says, ‘Then men of the city said to Elisha, “Look our Lord, this city is well situated, as you can see, but the water is bad and the land is unproductive”....ten he went to the spring and threw salt saying...I have healed this water. Never again will it cause death...’ These are biblical sceneries of God’s demand for a clean environment. The Bible warns against destruction of tress and animals, Habakkuk 2:17 states ‘The violence you have done to Lebanon...and your destruction of animals will terrify you...’ As the children of Israel entered Canaan, they were commanded to plant trees and allow them to mature in Leviticus 19:23 which says, ‘When you enter the land and plant any kind of fruit tree...consider it forbidden...’again the Israelites were forbidden from destroying trees in Deuteronomy 20:19, of which the Bible states, ‘When you lay siege to a city for a long time, fighting against it to capture it, do not destroy its trees... for its life to man’ this is part of the ten commandments which all must obey. The Lord God commanded the Children of Israel to use the land for six years and to give it Sabbath rest on the seventh year, the book of Leviticus 25:2-4, states ‘...when you enter the land... the land itself must observe the Sabbath to the Lord...For six years, sow your fields...But for the seventh year the land is to have a Sabbath of rest...’ the Lord appreciate the land when He promised to bless it for the obedience of His people; ‘If you follow my decrees and are careful to obey my commands...I will grand peace in the land...’ The Lord God is concerned with the lives of animals like birds, He commands that ‘If you come across a bird nest beside the road...sitting on the eggs or young ones...be sure to let the mother go, so that it may go well with you...’ it can therefore be rightly argued that the bible is clear of environmental preservation and all must listen to God’s word, not as man’s argument, but from God Himself.

Many countries in the world today go through challenges prompted by political instability, autocratic leadership, neglected healthcare services, low-standard of education, and insecurity among other challenges unique to each country in the continents. The studies undertaken by UNEP shows that sustainable development can only be realized through establishment and cultivation of corporation with all stake holders which include faith based organizations given a critical role each partner plays. Faith based Organization play key role in promoting responsible behavior to live sustainably for human progress. The environmental challenge is a global one and concerted efforts are needed from all quarters. Free World Academy (2005) reported that between 1990 and 1995, 500,000 kilometers Squire of forest was destroyed, and is predicted that by 2030 about 3 million Square kilometers will have been destroyed. Global warming continue to be a real threat due to melting of glaciers causing the rise of the sea level which is expected to rise by between 15 cm to 95 cm by 2100 implying that many islands across the globe will be submerged by then. Africa is not left behind and rated worse among the continents making sustainable development elusive. In Africa the situation is even worse given that clearing of forest for oil drilling, logging, and construction of new roads is fastest in the continent. Free World Academy again reports that from 20,000 feet high, one can witness a long channel of fire along African land implying destruction of forest for firewood and burning of soil to make it fertile for agricultural activities is common across African continent. This leads to desertification, shortage of water supply, and global warming.

Kenya as a country is not an exception; Mandala (2012) gave a report concerning Mau Water Catchment Area, that from the year 2009, fire has destroyed 10% of Mau conservancy. It is necessary to note that Mau is the water catchment area that makes the source of livelihood for millions of people in the East and Central Africa, on top of hosting rare species of animals. In the last dry season, many domesticated animals died in Kenya for lack of grass and water, on top of that many families travelled far distance in search of water. Rivers that support wild animals of the extensive Mara Game Reserve experienced the lowest volume of water, paving way for possible distinction of certain rare organism in the eco system. This is raising a serious concerns among conservative and need joined efforts to fight depletion of natural resources for the good of the present and future generations. These challenges can adequately be addressed through education by entrenching religious values into principle, practices and strategies of education curricula. The Kenyan government has in the past decades embarked on education system and school curriculum review with an aim formulating a strategy of addressing development challenges such as Hiv/Aids, peace education, life skill education, and climate change which is

currently posing a great challenge to African continent in general and Kenya in particular. The education for sustainable development have not been fully explored by entrenching religious faith, particularly with the view of Christian religious faith playing an active role in achieving vision 2030 and Sustainable Development Goals (SDGs). This research is focused on entrenching religious values which is imperative if the education system is to sustainable development goals critically coveted. The National Education Sector Support Program (NESSP, 2012-2017) pays attention to education for sustainable development as an instrument of addressing immediate and long term challenges of development. The ministry of education recognizes that promotion of skills, attitudes, perspectives, and values that support the achievement of education for sustainable development as crucial at this time in history and need support from all quarters. Engaging youthful generation to be participants in education for sustainable development will transform them into action oriented and value-based learners given that they incorporate needed values that religion provide.

### *1.3. Statement of the Problem*

There are gaps in literature and practice concerning Eco theology, which focuses on the role of religious groups in conservation of the environment. Hessel (1998) content that Christian theologians and ethicists must now take a leading role as the world gets hotter and stormy not to mention degradation of eco-diversity. The Western world have advance in addressing human predicaments such as lack of food and handling diseases, which boosted the conservation of environment. The same writer noted that when people feel secure about their basic needs attention turns to conservation of energy and resources. Apparently, that is not the case in Africa and more so in Kenya. Hessel, as noted above content that as economic advancement grew in the West also consciousness of protecting the environment grew and was boosted by legislation by the respective governments of the West. The situation is contrary in the developing Countries, Kenya inclusive. The situation was aggravated by the rise in life expectancy from 30 years in the 1900 to the current 63years in the 21st century, implying that meeting the basic needs is still essential rather than ecological matters. It is saddening to note that the West has been pressing developing countries to ecological conservation notwithstanding the basic needs of its citizen , hence conservation efforts is negated in these countries. Development of any society depends on quality education her citizen receives. The concerns of the Gospel should be concern for the environment since creation is the starting point of for the gospel. The religious groups believe in God who require accountability for that which belongs to general populace. Mandala (2012) noted that up until 2012, there was alarming total Nine hundred and seventy one million shillings which has been extended to us by donor countries, but little is realized on the ground. Hence there is a need to engage people on the ground and religious groups in this endeavor for the sake of accountability and sustainable efforts towards conservation of our environment. The witnessing must begin with creation and caring for the creation strengthens the gospel witness. Christian witnessing must make protection of the environment to be part and parcel of stewardship practices. This calls for radical sacrifice and passion to conserving the environment. Unbelievers appreciate believers who endeavor to conserve environment. Jesus gave disciples the great commission to reach out to the world with good news of reconciling the world to God including the creation. The gospel implies telling the truth to the world about God's plans for mankind. Do not use we, usetc in an academic work. Reduce this to a page. Briefly indicate how bible-based practices would be like. Indicate that based on publications in Kenya, reality on the ground is different (gap). Show the study intends to fill this gap in attitudes, values and convictions, hence improving current practice. endeavor to care for the environment because it belongs to God (Psalms 24:1ff), again because it reveals the attributes of God (Psalm 19, Romans 1), in addition God commanded man to (Genesis 2:15), not to forget that Christ began a process of cosmic redemption in which all are called to participate (Colossians 1, Romans 8, Revelation 21) and more so because we want God's kingdom to reign in the world. Nevertheless, environmental conservation is confronted with naturalistic world view wedded to pantheistic or pantheistic spirituality on one hand and a legacy of silence apathy, and unconcerned among believers in Christ. In addition we have opposing political and or opinions that contradict the conservationist views.

### *1.4. Research Objectives*

The following will be research objectives:

1. To examine the extent to which Christians participating in NEMA initiatives towards environmental conservation practices in Bomet County
2. To establish the status of biblical value-driven conservation practices are in place among Christians in Bomet County
3. To find out challenges are being faced by communities in Bomet County in their efforts to sustain biodiversity through Bible-based conservation practices
4. To identify strategies were suggested by participants in Bomet County towards retention of biodiversity needed for sustainable development

### *1.5. Research Questions*

The following research questions guided the study.

1. To what extent are Christians participating in NEMA initiatives towards environmental conservation practices in Bomet County?
2. What biblical value-driven conservation practices are in place among Christians in Bomet County?
3. What challenges are being faced by communities in Bomet County in their efforts to sustain biodiversity through Bible-based conservation practices?
4. Which strategies were suggested by participants in Bomet County towards retention of biodiversity needed for sustainable development?

### 1.6. Purpose of the Study

The purpose of the study was to establish the difference application of Christian principles would make sustainable environmental conservation practices in Bomet County.

### 1.7. Significance of the Study

This study was significant to communities in Bomet County, Neema officials as a government agency, church in Kenya in realizing their God-given mandate to conserve the environmental resources for current and future generations as guided by relevant stewardship accounts in the Bible.

### 1.8. Justification of the Study

This study is justified because it exposes ecological problems faced by the people of Bomet County and Western region in general due to depletion of Mau Forest and inadequate resources towards conservation efforts which is worsen by political exploitation of already precarious situation, and unconcern by the Church that form larger part of the population and who could be instrumental in conservation efforts. The study will seek to explore best ways of implementing conservation policies and legislation with an aim of conserving Mau water catchment area.

### 1.9. Assumptions of the Study

The following assumptions were present in this study:

1. The assumption that participant's response will reflect the accurate and the true information on the research instrument,
2. That it would easy to reach out to the target population given the land terrain, road condition, and weather condition of Mau and the environs, and
3. That there would be cooperation from all the stage holders.

## 2. Delimitations of the Study

The demographic boundaries of the study was the clergy, members of selected Churches who have been in the Church for over three years, the bible scholars, students, and Government conservation officers.

### 2.1. Limitations of the Study

The study was limited by the unwillingness of the participants to open up and share the needed information on the research instrument, and the delimitation was made through an explanation as to the purpose of the study and assuring them that this study is carried out solely for academic purposes and confidentiality will be articulated. This possible limitation was addressed by clear explanation of the purpose of the study to the participants before the as confidentiality and informed consent letter.

### 2.2. Theoretical Framework

Substantive theories of religion focus on what it is and functional theories that focus on what religion does. Mircea Eliade theory that seeks to focus on meaning religion assign to phenomena, and longing for perfection, combined with functional theory of Emile Durkheim that emphasize the social function of religion, and Joseph Sax 'Trust Theory' that emphasize that public is the trustees of natural resources were adopted theories by the authors. The study borrowed from Lenski (1961) doctrinal dimension of religion; this dimension emphasize communal involvement, or participating with others on religious activities. Therefore 'conservation' from the point of view of religious activity, will involve commitment of the adherents as of service to the deity, which is actually biblical as the stewards of God's creation. On the other hand Stark and Glock (1968) orthodoxy dimension of religion, expressed the importance of religious knowledge, religious experience, and ethics; which the authors perceived is key to conservation efforts.

### 2.3. Conceptual Framework

Conceptual model for improving conservation practice was adapted and modified from (2002) as summarized in table 1.

Actors	Actions: Approaches, strategies and tools.	Challenges	Conservation target
Individuals and organizations need values, knowledge and skills	Protection and management, law and policy, education and awareness, changing incentives	Indirect threats, direct threats and opportunities	Biodiversity

Table 1: Conceptual framework independent and depend variables summarized

### 2.4. Discussion of Variables and Further Review

The faith-based learning for sustainable development was seen to be only attainable through incorporating religious concerns, integrating religious values and ethics, allocating resources, planning and implementing policies, practices, and strategies that promote

education for sustainable development to the upcoming generation. The emphasis was on the role of advocacy and dialogue by religious groups in order to achieve conservation goals.

### 2.5. Operational Definition of Terms

Biodiversity is the variety of life within the eco system

Deforestation is a continuous destruction of the habitat and entire eco system to exploit resources or for 'developmental purposes and therefore losing of biodiversity. Reforestation is

Planting trees and extending the forest coverage of degraded land.

Education: is a process of imparting intellectual, moral, and social skills and values to learners for particular purpose. Education for sustainable development: is the acquisition and development of knowledge, skills, attitudes, and values that enhance participation in providing solutions to environment that meets the needs of the present without making the future generations fail to meet their own needs.

Biblical faith: Biblical principles that guide ethics and practice.

Water catchment area: An area that collects rain water during wet season and releases into streams during and after wet season.

Climate change: Climatic conditions that have changed; the change which has been occasioned by interruption of carbon cycle due to deforestation, global warming, and ozone depletion. Pollution: Contamination of air and water due to interruption of carbon dioxide cycle and drainage of sewerage into river stream and which destroy biodiversity within its natural environment.

### 2.6. Organization of the Remainder of the Study

Chapter one has dealt with contextual background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, justification of the study, significance of the study, scope of the study, limitations and delimitations of the study, assumptions of the study, and definition of the key words; while chapter two deals with critical review of theories, critical review of empirical studies and gaps in theories. Chapter three deals with research methodology, research design, target population, sampling procedures and techniques, sample population, construction of research instrument, piloting of research instruments, testing validity and reliability, data collection and analysis, ethical consideration, and anticipated outcome. On one hand, chapter four deals with presentation of findings, discussion of findings, and the interpretation of findings, while chapter five gives the summary of the study, conclusions, recommendations for implementation as well as recommendation for further research.

## 3. Review of Related Literature

### 3.1. Introduction

(Summarize this chapter to 2 pages) Do not teach anything, just brief statements on whose theory, how relevant it is to the study, gap in theory, e.g. based on biblical teaching, which other theory also addresses the gap. Relate any aspect to an RQ or variable, i.e. connect everything to your topic, RQs and variables in the conceptual framework. This chapter will deal with critical review of theories, critical review of empirical studies and gaps in theories.

### 3.2. Critical Review of Theories and Gaps in Theories

Joseph Sax (1970) proposed Trust Theory of environmental protection. In his argument, the stage holders whom he branded as 'trustees' share the same values in conservation objectives. The trustees in this case was the Public, and so this is the 'Public trust theory' which is categorical in its proposition that public are the trustees of natural resources and legal measures need to be put in place to make protection of those resources possible and to have public be beneficiaries of the same. This is in light with the Bible states that, 'The earth is the Lord's, and all its fullness, the world and those who dwell therein' It will be noted that greed guide destruction of environment by logging, and for other purposes; but for the benefit of few individuals. The authors' contest is that Forests should be preserved for the good of all as God intended it to be.

Lenski (1961) doctrinal dimension of religion intimates the involvement of individual adherent on religious activity, such as prayer, worship, and almsgiving, as a way of measuring the degree of commitment. It happens therefore that if conservation is a religious activity it calls for commitment on individual believer. The eschatological expectation gives a new approach to Christian Theology, that this world is not our home; we are anticipating a new home prepared by God. While this is true, it should not negate Christian stewardship of the present world. On the argument that focuses on meaning that religion assign to Phenomena, Eliade (1907-1986) in his proposal which was very much informed by phenomenology of religion saw the religion as special and independent, and cannot be reduced to social, economic, or psychological aspects. He argued that sacred has to do with supernatural dealing with individual person rather than the entire society; hence religion should influence individual adherents to act and respond to nature in responsible manner as unto the deity. This study seek to explore ways in which religious person reverence nature, not as suggested by pantheistic religions in worship of nature; but taking responsibility to caring for the nature in reverence to the God of nature or Creator.

On the other hand, Durkheim (1858-1917) had a different view from Eliade on the concept of religion. To him, the Sacred is defining the characteristic of religion, not faith in the supernatural. Hence religion is a reflection of concern for the society, given that moralism cannot be separated from religion. The religion brings cohesion among religious people, hence group attend worship and other religious rituals collectively, which provide a new vigor called 'effervescence' which make individual lose own identity, and get united with the group or 'god' hence religion has a social aspect. Just as providing solution to other human dilemmas like medical, food, and shelter, religion can play a leading role in conservation efforts. Stark and Glock (1968) orthodox dimension of religion,

emphasize devotionism that reinforces ritual involvement based on religious knowledge, experience, communal involvement, and ethicalism. In this study, the researchers seek to explore orthodoxy dimension of religion as imparting reverence and ethicized mindset on matter of ecological conservation as the bible proposes it to be.

Eliade (1907-1986) as noted above was a Romanian religious historian and a great interpreter of religious experience. According to him home religion can insure the life of animals, plants, crops, and culture. He argues that festivities of the New Year imply the new beginning run through which is celebrated periodically by means of rituals and myths which signify the sustenance and the renewal of the Earth in recreation. He contends that cosmos is a living organism and is really living and sacred. The cosmos reveals transcendent and is modality of being and sacreality. The Earth is the mother with symbolic nourisher, and sustainer of life and hence proposes solidarity with the soil. Durkheim (1858-1917) entered into the debate on religious theories by championing the 'Sociology of Religion' having been born to a deeply religious Jewish family with his parent and grand parent being Rabbis of their time. He has been branded father of sociology of religion. He intimated that within an individual, there is a sense of moral obligation to adhere to society's demands. He found out that religion function in a way that serves to sort out a problem that threatens social order. Religion has ability to inspire community to forge forward to ethical end that supersedes individual's purposes. According to him religion is communal phenomena rather than individual. He defines religion as 'a unified system of beliefs and practices relative to sacred things, but which unites one moral community called the Church. He was concerns with communal activity and bond which religious activities give. Religious phenomena according to him occurs when the daily utility activities and the sacred sphere engages adherent. The sacred has to do with that which society have bestowed meaning on them as part of worship, hence religion binds people together, given that collective consciousness in the highest form of psychic life.

Berge (2003) came up with the 'Theory of Commons' with its basic premise that the main concern for mankind is protection and preservation of precarious resources of common interest for entire mankind. He intimates that a value deserving the attention of environmental protection is different from shaping the evolution of traditional commons. The proponent argued that control and access of resources though controlled is essential for the survival for the local community. The theory deals with differences and similarities of interest driving concerns for preservation. The diverging values on opposing views are centered on traditional commons and how new values can interact with old values and importance to achieve sustainability with protected areas. The key issues are twofold; resources of traditional commons and environmental goods and services.

On one hand 'Environmental protection theory' proposes that science is able to detect smaller chemical content that is hazardous to organisms. On the basis of which legislation need to be put in place to curb any dangers that might come as a result. This theory proposes that environmental laws and regulations are essential and that there should be coordination between environmental programs and manner in which science is incorporated into policy decision to improve protection. The 'immutable and enduring state of Nature Theory' raises the question 'Should the entire humanity own the natural resources?' and what principles should guide property rights? The above enquiry addresses distribution between these rights which are held in common and those owned by state of nature held by individual ownership. It suggests strict coordination between environmental programs and manner in which science is incorporated into policy decision making aimed at improving protection measures.

### *3.3. Critical Review of Empirical Studies and Research Gaps*

According to Osborne (1991) the Church has been struggling with what is called 'perspicuity of scripture' as to whether the scripture is explicit or plain and or implicit that is has a 'hidden' meaning. The same author emphasizes meaning in genre; so that as we ponder about the words of Jesus in the Gospel of Matthew 6:34, we move further to matthean context of the sermon on the mount Chapters 5 to 7. Adeyemo et al (2006) content that Jesus' instruction about 'not to worry' does not negate 'thrift, thoughtfulness and careful provision for future' it rather forbids the sort of worry that consumes a person and deprive him joy of life. Jesus gave an illustration of the birds of the air that work hard to provide for their little ones, but is not consumed by worries. Believers in Christ must wear an attitude of responsibility, but not indifference or negation of God given responsibility to take care of creation. Doriani (1996) noted that as we engage the scripture we need to realize that there would always be 'knots and puzzles' in the aspects of application depending on the school of thought individual ascribe to; could be liberal theology, or conservative theology. The key issue that all should take into account is openness and readiness to learn from the great teacher, the Holy Spirit, and from the Holy Scriptures. Now that God have given us this planet to be stewards, we cannot close our eyes on the challenges of deforestation and degradation.

## **4. Research Design and Methodology**

### *4.1. Introduction*

The chapter dealt with research methodology, research design, target population, sampling procedures and techniques, sample population, construction of research instrument, piloting of research instruments, testing validity and reliability, data collection and analysis, ethical consideration, and anticipated outcome.

### *4.2. Location of the Study*

The location of the study was Bomet County, Particular the lower Mau which is part of Mau that form Narok, Bomet, and Nakuru Counties and generally referred to as South Rift Region.

#### 4.3. Research Design

The study utilized triangulation design (Creswell, Plano, Clerk et al, 2003) the main purpose of this design was to obtain different but complimenting data on the same topic (Morse 1991) with intent of bringing together strengths and non-overlapping weakness of qualitative methods and those of quantitative method (Patton 1990). This design was used to compare and contrast quantitative statistical results with qualitative findings or to validate quantitative with qualitative.

#### 4.4. Target Population

Population refers to potential participants. In qualitative research sampling of population is subjective to the reader in that he or she make own inference (Stake, 2000, Lincorn and Guba, 2000). The study targeted Christians who had been in the Church for over three years and were perceived to be mature in faith, Leaders, Pastors, and conservationists.

#### 4.5. Description of Research Instruments

An instrument is anything used to collect data. Researchers were the main tool for instrumentation; in addition to questionnaires and interview schedule which was utilized to collect demographic, knowledge, behavioral, and attitudinal qualitative and quantitative data content.

#### 4.6. Sample and Sampling Procedures

Sampling is the ability to estimate sampling error. In a broad sense we have probability and no probability sampling (Henry 1990). Sampling is important because it cover desire to generalize from the sample to population of interest (Henry 1990) yet a qualitative can be transferable to quantitative and vice versa (Lincoln and Guba, 2000, Stake 2000). Population validity has to do with concerns of how representative of sample is and to what extend is the accessibility possible (Jane BS and Kimberly A. S, 2011). The study targeted the ten percent of the total population of 200 participants. The study utilized purposive study to select specific participants who provided the needed information of the total population of interest.

#### 4.7. Validity and Reliability

To ensure that the proposed research procedure produced the anticipated result, the researcher did the piloting. Piloting was used to assess the strength of research questions, hence question in the questionnaire was evaluated to ensure it solicit the needed information. The approving committee assessed validity of research instrument.

##### 4.7.1. Validity

According to (Patton, 2000) validity is equality attributed to proposition or measures of the degree to which they conform to establish knowledge or truth. An attitude scale is considered valid, for example, to the degree to which its results conform to other measures of possession of the attitude. Validity of the instrument was determined, where the response of the respondents was checked against the research objectives. This also gave a reason as to why content was used. For a research instrument to be considered valid, the content selected and included in the questionnaire must be relevant to the variable being investigated.

##### 4.7.2. Reliability

The same tests (questions) were used in the two all counties to maintain consistency and enhance reliability. In order to test the reliability of the instruments to be used in the study, the test-retest method was used. Piloting was done in Kericho County which was not part of Bomet and Narok Counties. The results obtained from the pilot study assisted the researchers in revising the questionnaire to make sure that it covers the objectives of the study (Fraenkel & Wallen, 2000)

#### 4.8. Data Analysis Procedures

Triangulation design implied collection of qualitative and quantitative data concurrently then mixed them in the analysis stage, by either quantifying qualitative data or qualifying quantitative data. Questionnaires, interview schedules, and observation sheet was employed to collect qualitative and quantitative data. The statistical package for social scientist (SPSS) aided the interpretation of the findings.

#### 4.9. Ethical Considerations

Ethical consideration protects human dignity. To ensure confidentiality, the researcher ensured anonymity. The participants signed consent forms after clear explanation of what needed to be done. Both researcher and participant ensured rule and regulations are adhered to. The data was be codified to ensure confidentiality of the information collected.

##### 4.9.1. Ethical Considerations Related to Research

Ethics refers to the reflection upon moral actions. This branch of philosophy involves systematizing, defending, and recommending concepts of right and wrong conduct. The term comes from the Greek word ethos, which means "character". Ethics studies the moral behavior in humans, and how one should act. The ethical standard set by Mount Kenya University was adhered to.

#### 4.9.2. Ethical Considerations Concerning Research Participants

The study did not induce respondents by way of bribes or other means of intimidation to get information from the respondents. The researchers clearly explained the purpose of the study to participants and that information received was to be used for academic purposes and that confidentiality was to be strictly observed.

#### 4.9.3. Ethical Considerations Concerning the Research process

The study will also follow the right protocol to gain access in the areas where the data was to be collected. The study acknowledged all sources of information used. Finally a final report was to be given to the church and ministry of environment offices so that in future other researchers will assess the information on this research project.

### 5. Data Analysis, Interpretation, Summary, Conclusions and Recommendations

The findings were analyzed and interpreted using the Statistical Package of Social Sciences (SPSS, version 20.0) and descriptive statements and according to specific research questions. Demographic information is summarized in table 2. The response rate was a 100%. The summary table indicates educational level, gender and church position of the participants.

Level of Education	Gender, M/F	Position in the Church	Emphasis of Need to Care For Environment (From Findings)
Secondary=7	M= 5 , F=2	M=6, L=1	God's gift, educate people on environmental conservation (17.5%)
Certificate=2	M= 1 , F=1	N=1, BS=1	God's gift, rule it (5%)
Diploma =12	M= 5 , F=7	M=5, C=1, P=2, L=2, S=1, ICT=1	God's gift for livelihood, care for it (30%)
Degree =15	M= 6 , F=9	S=3,M=4, L=3, N=1, T=2, P=1, RDE=1	God-given mandate to care for it (37.5%)
Masters =4	M= 2 , F=2	CP=1, CE=1, P=2	Stewardship from God, care for it (10%)

Table 2: Participants characteristics and opinions on environmental conservation practices

Key: church position (leader=L, member=M, Business= BS, nurse=N, counselor=C, Pastor=P, chaplain=CP, Christian education=CE, Data analyst=ICT, Teacher=T, Community health=1, Regional director of education=RDE.

#### 5.1. Discussion of Findings

Based on summarized data in table 4, the following facts were salient: Sense of stewardship. All Christian participants indicated they were aware that God is the creator of biodiversity. Biodiversity was necessary for their livelihood. It was God-given mandate to care for the biodiversity. Degree of representation of wider community. Education level of the participants ranged from secondary to masters and with a variety of leaders, such as teachers, pastors, nurses, community workers, regional director of education, counselors, chaplain and a businessman. Gender composition. Nineteen (19, 47.5% ) participants were male and twenty one were female (21, 52.5% ). Conclusion. With this rich representation of the wider community and high degree of their awareness of value of environment as God-given gift which He has mandated Christians to conserve, there was a high potential for participation in environmental conservation practices using biblical values, a change expected to improve quality of participation in environmental conservation practices in wider community, Bomet County.

Lickert summary:

s/n	Variables under investigation	SA	A	swa	D	SD
1	Christians use resources in environmental conservation (RQ2 )	30	75	42	6	2
2	Christians are involved in policy making on management of environment (RQ 1)	25	52	45	12	1
3	Christians are actively involved in implementation of NEMA initiatives towards environmental conservation (RQ1)	25	28	51	20	1
4	Corruption in Kenya is frustrating environmental conservation efforts (RQ3 )	120	32	6	6	3
5	Politicians are generally influencing environmental conservation practices negatively(RQ 3)	70	48	27	4	2
6	Theological education can boost Christians towards participation in environmental conservation initiatives (RQ 4 )	15	32	21	14	3

Table 2: For SPSS output 1 (participants distribution)

### 5.2. Discussion of Summary Table on Participants' Responses

A strong positive correlation of  $r=0.950$  appeared between participation of Christians in policy making regarding environmental conservation practices and their actual participation in the implementation process. The conclusion is that if government policy makers involve the public in policy formulation, participatory development efforts would be realized.

A negative correlation of  $r=-.055$  was found between Christians motivation to be involved and government corruption in the way public services are offered raised concern in that it discouraged involvement in environmental conservation practices by Christians.

Descriptive Statistics (SPSS output 1)						
	N	Minimum	Maximum	Mean	Std. Deviation	Rank of divergence
Cegerec , RQ2	5	2.00	60.00	28.0000	24.41311	4
Cegipoma RQ1	5	1.00	52.00	27.0000	21.52905	5
Cegapan RQ1	5	1.00	51.00	21.4000	20.76776	6 lowest
Codecoe RQ3	5	3.00	120.00	33.4000	49.81767	1 highest
Poicone RQ3	5	2.00	70.00	30.2000	29.12387	3
Thepenec RQ4	5	3.00	125.00	39.0000	49.21890	2
Valid N (listwise)	5					

Table 3: Findings on interrogation of research questions

### 5.3. Discussion of Findings

The SPSS output two (2) has data whose standard deviations as a measure of divergence from the mean has been ranked. The participants scored the highest on agreement that political support towards environmental conservation was very weak. Corruption was therefore the greatest external threat to retention of biodiversity in Bomet County. Asked whether Christians are actively involved in implementation of NEMA initiatives towards environmental conservation, Christian participants had the highest agreement that the churches in Bomet were actively involved in environmental conservation practices. However, the sustainability of environmental conservation practices (hence retention of ecosystem biodiversity) reflected a variety of opinions as to whether ongoing theological education would boost Christians towards participation in environmental conservation initiatives. **Conclusion.** It was an indicator that participants were not quite keen of *sustainability of ecosystem biodiversity*. **Recommendation.** Based on the findings, the church leaders needed to include theological education curriculum as part of theological training institutions and Christian education programmes in churches.

Table 3 Output 2 SPSS for findings on interrogation of research questions

s/n	Variables under investigation	SA	A	swa	D	SD
1	Men are more concerned about environmental conservation than women (RQ4) Mecowo	5	16	15	30	15
2	There is an effective environmental conservation legislation in Kenya environment (RQ 3) Elenco	5	16	15	30	15
3	Christians are being taught biblical principles regarding environmental conservation in their church programmes (RQ1) Cetech	50	44	32	8	3
4	The Bible teaches that the world is coming to an end and so there is no need to conserve environment (RQ2) Binoco	25	40	48	16	1
5	Industrial development and preservation of natural resources need to be kept in proper balance (RQ 4) Indebopo	160	4	3	10	1
6	Environmental conservation education needs to be part of curriculum in theological schools and in church (RQ 4) Citracu	50	76	15	8	2
7	Misplacement of human needs is a threat to environmental conservation (RQ2) Hoveco	50	60	15	4	3

Table 4 : For SPSS output 2 (Participants distribution)

Descriptive Statistics (SPSS output 2)						
	N	Minimum	Maximum	Mean	Std. Deviation	Rank of divergence
Mecowo RQ4	5	5.00	30.00	16.2000	8.92749	7 lowest
Elenco RQ3	5	3.00	44.00	26.2000	19.18854	5
Cetech RQ1	5	1.00	48.00	26.0000	18.74833	6
Binoco RQ2	5	1.00	160.00	36.0000	69.39380	1 highest
Indebopo RQ4	5	2.00	76.00	30.2000	31.65754	3
Citracu RQ4	5	3.00	50.00	22.4000	21.45460	4
Hoveco RQ2	5	1.00	75.00	31.8000	33.38712	2
Valid N	5					

#### 5.4. Discussion of Findings

Asked whether the Bible teaches that the world is coming to an end and so there is no need to conserve environment, the highest divergence of opinions among the participants was noted. It might have meant that a number of churches had those teachings in Bomet County. The standard deviation was lowest on whether men are more concerned about environmental conservation than women. Conclusion. The data distribution indicated that gender inclusiveness in participation was the status. Recommendation. Continuing theological education needed to be offered to both men and women for a *sustainable ecodiversity*.

#### 5.5. Other Recommendations Were

1. The concerted efforts to the creating awareness of environmental conservation to all Kenyan across cultural and religious divide.
2. The writing of the curriculum that stresses environmental conservation from primary to University level.
3. Religious groups to introduce curriculum for teaching environmental lessons in Theological institutions.
4. All the stage holders from the village level to national level are involved in the management of the environment and resources for the same purpose.

#### 5.6. Areas for Further Research

These are areas that need further research as identified in the findings and literature review

1. The role of Theological institutions in the education for sustainable development.
2. An exploration into Religious change of mindset to education for sustainable development.
3. An assessment into religious group's contribution to the Reforestation efforts in Kenya.

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