

**INTERNATIONAL ENVIRONMENTAL LEGISLATIONS AND THEIR  
IMPACT ON CONSERVATION IN KAKAMEGA COUNTY, KENYA;**

**1992-2015**

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## DECLARATION

This thesis is my original work and has not been presented for a degree in any other University or any other award.

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## **DEDICATION**

This work is dedicated to my father for his support, patience and encouragement in the course of the study. It is also dedicated to my mother, sisters and brothers, for their prayers and encouragement throughout the study.

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## TABLE OF CONTENTS

DEDICATION .....	III
ACKNOWLEDGEMENT.....	IV
TABLE OF CONTENTS.....	V
LIST OF TABLES.....	VIII
LIST OF PICTURES.....	IX
LIST OF ABBREVIATIONS.....	X
DEFINITION OF TERMS .....	XIII
ABSTRACT .....	XIV
<b>CHAPTER ONE: INTRODUCTION</b> .....	1
1.1 BACKGROUND OF THE STUDY .....	1
1.2 STATEMENT OF THE PROBLEM.....	5
1.3 OBJECTIVES OF THE STUDY.....	6
1.4 RESEARCH QUESTIONS .....	6
1.5 JUSTIFICATION AND SIGNIFICANCE OF THE STUDY .....	6
1.6 SCOPE AND LIMITATION OF THE STUDY .....	7
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	9
2.1 INTRODUCTION.....	9
2.2 THEORETICAL FRAMEWORK.....	10
2.3 ENVIRONMENTAL CONSERVATION MECHANISMS AND THEIR IMPACT ON CONSERVATION .....	14
2.4 CHALLENGES THAT HAMPER EFFECTIVE IMPLEMENTATION OF ENVIRONMENTAL REGULATIONS. ....	19
2.5 ACCESS TO INFORMATION AND PUBLIC PARTICIPATION IN ENVIRONMENTAL CONSERVATION .....	22
2.6 SUMMARY .....	25
<b>CHAPTER THREE: RESEARCH METHODOLOGY</b> .....	26
3.1 INTRODUCTION.....	26
3.2 RESEARCH DESIGN.....	26
3.3 RESEARCH LOCALE .....	26
3.4 STUDY POPULATION.....	28
3.5 SAMPLING TECHNIQUES AND SAMPLE SIZE.....	29
3.6 RESEARCH INSTRUMENTS .....	29
3.7 VALIDITY .....	29

3.8 DATA COLLECTION PROCEDURES .....	30
3.9 DATA ANALYSIS PROCEDURES .....	30
3.10 DATA MANAGEMENT AND ETHICAL CONSIDERATIONS .....	31
<b>CHAPTER FOUR</b> .....	<b>32</b>
ENVIRONMENTAL CONSERVATION MECHANISMS IN KAKAMEGA COUNTY .....	32
4.1 INTRODUCTION .....	32
4.2 DISCUSSION OF THE FINDINGS ON ENVIRONMENTAL CONSERVATION MECHANISMS IN KAKAMEGA COUNTY. ....	34
4.3 CONCLUSION.....	48
<b>CHAPTER FIVE</b> .....	<b>51</b>
THE CHALLENGES THAT HAMPER EFFECTIVE IMPLEMENTATION OF ENVIRONMENTAL REGULATIONS IN KAKAMEGA COUNTY .....	51
5.1 INTRODUCTION. ....	51
5.2 INTERNATIONAL ISSUES ON ENVIRONMENT REGULATIONS .....	55
5.3 INTERNATIONAL CONVENTIONS AND THEIR APPLICATION IN KENYA.....	57
5.4 A DISCUSSION OF THE FINDINGS ON THE CHALLENGES THAT HAMPER EFFECTIVE IMPLEMENTATION OF ENVIRONMENTAL REGULATIONS IN KAKAMEGA COUNTY.....	65
5.5 CONCLUSION.....	77
<b>CHAPTER SIX</b> .....	<b>79</b>
ACCESS TO INFORMATION AND PUBLIC PARTICIPATION IN ENVIRONMENTAL CONSERVATION IN KAKAMEGA COUNTY .....	79
6.1 INTRODUCTION .....	79
6.2 ACCESS TO INFORMATION AND PUBLIC PARTICIPATION IN ENVIRONMENTAL CONSERVATION IN KENYA .....	82
6.3 A DISCUSSION ON THE STUDY’S FINDINGS ON ACCESS TO INFORMATION AND PUBLIC PARTICIPATION IN ENVIRONMENTAL CONSERVATION IN KAKAMEGA COUNTY. .....	88
6.4 CONCLUSION.....	98
<b>CHAPTER SEVEN</b> .....	<b>100</b>
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .....	100
7.1 INTRODUCTION .....	100
7.2 SUMMARY .....	100
7.3 CONCLUSIONS AND RECOMMENDATIONS.....	105

<b>BIBLIOGRAPHY</b> .....	113
OFFICIAL GOVERNMENT RECORDS .....	113
THESES.....	113
BOOKS .....	114
JOURNAL ARTICLES .....	118
INTERNET SOURCES .....	121
APPENDIX I .....	125
APPENDIX II .....	129
APPENDIX III .....	132

## LIST OF TABLES

Table 4.1: Presence of Environmental Education Programs in Kakamega .....	32
Table 4.2: Source of information on Environmental Education programs .....	33
Table 4.3: Able to identify Environmental based organizations .....	33
Table 4.4: Participation in Environmental functions/celebrations .....	34
Table 4.5: Some of the functions attended .....	34
Table 5.1: Awareness of NEMA as the lead Environmental Agency .....	52
Table 5.2: Source of information about NEMA .....	52
Table 5.3: Awareness of other Environmental Organization .....	52
Table 5.4: Action taken on Environmental Pollution .....	53
Table 5.5: Type of Action taken by respondents .....	53
Table 5.6: Any action taken by an agency on Environmental Pollution .....	54
Table 5.7: Type of action taken by a government Agency on pollution .....	54
Table 5.8: Reasons why government officials don't take action .....	55
Table 6.1: Need information to Participate in Environmental conservation .....	80
Table 6.2: Where to get the Environmental Information .....	80
Table 6.3: Challenges in accessing Environmental Information .....	81
Table 6.4: Type of Environmental Information Challenges .....	84

## LIST OF PICTURES

Plate 1.1: WED Celebrations venue.....	40
Plate 1.2: Isukuti Entertainers.....	41
Plate 1.3: Speeches on WED.....	42
Plate 1.4: Tree Planting at RCE.....	43
Plate 1.5: Clean up exercise .....	45
Plate 1.6: School greening exercise.....	46
Plate 1.7: Open Cast Mining at Malinya .....	67
Plate 1.8: Kakamega Airstrip AWS.....	77
Plate 1.9: Elwangale community initiative.....	91
Plate 1.10: RCE initiative in schools.....	92

## **LIST OF ABBREVIATIONS**

**ASAL** - Arid and Semi-Arid Land

**AWS**- Automatic weather stations

**CBD**- Convention of Biological Diversity

**CBO**-Community Based Organization

**CFA**-Community Forest Association

**CMS**-Convention on conservation of Migratory Species of wild animals

**CSO**-Civil Society Organization

**DESD**-Decade of Education on Sustainable Development

**EANECE**-East Africa Network of Environmental Compliance and  
Enforcement

**EIA**-Environmental Impact Assessment

**EMCA** - Environment Management and Coordination Act

**ESD**-Education for Sustainable Development

**FEPA Act**-Federal Environment Protection Agency Act

**GHG**-Green House Gases

**GOK**-Government of Kenya

**KACOFA** - Kakamega Conservation Forest Association

**KEEP**-Kakamega Environmental Education Programme

**KFS**-Kenya Forest service

**KFWG** -Kenya Forest Working Group

**KMD**-Kenya Meteorological Department

**LVCEEP**-Lake Victoria Catchment Environmental Education Program

**MEA**-Multilateral Environmental Agreement

**MMUST**-Masinde Muliro University of Science and Technology

**NCCR**-National Climate Change Strategy

**NEMA** - National Environment Management Authority

**NGLG**-Next Generation Leadership Group

**NGO**-Non Governmental Organization

**OECD**- Organization for Economic Co-operation and Development

**O.I** - Oral Literature

**RCE**-Regional Centre of Expertise

**SOFDI**-Sustainable Organic Farming and Development Initiatives

**UKELA**- UK Environmental Law Association

**UNCED**-United Nations Conference on Environment and Development

**UNDP**-United Nations Development Programme

**UN/ECA**-United Nations Economic Commission of Africa

**UNESCO**-United Nations Educational, Scientific and Cultural Organization

**UNFCCC**-United Nations Framework convention on climate change

**WED** - World Environment Day

**WRUAs**-Water Resource Users Associations

## DEFINITION OF TERMS

“**Domestic Waste**” is waste generated from residences.

“**Ecosystem**” is a dynamic complex of plant, animal, micro-organism communities and their non-living environment interacting as a functional unit.

“**Effluent**” is gaseous waste, water or liquid or other fluid of domestic, agricultural, trade or industrial origin discharged into the aquatic environment.

“**Environment**” is the physical factors of the surroundings of human biological factors of animals and plants and the social factor of aesthetics and includes both the natural and the built environment.

“**Environmental education**” is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture.

“**Environmental impact assessment**” is a systematic examination conducted to determine whether or not a programme, activity or project will have any adverse impacts on the environment.

“**Environmental management**” is the protection, conservation and sustainable use of the various elements or components of the environment.

“**Environmental planning**” is both long-term and short-term planning that takes into account environmental exigencies.

“**Waste**” is liquid, solid, gaseous, or radioactive, which is discharged, emitted, or deposited in the environment in such volume composition or manner likely to cause an alteration of the environment.

## ABSTRACT

Environmental conservation is currently an issue in international relations as well as a global concern since the negative impact of activities in one country is felt in other countries. The global need for cooperation in environmental conservation has seen the enactment of many environmental agreements and treaties. Kenya being part of the global world has highlighted the need for effective environmental legislations to conserve its environment. This study investigated environmental conservation in Kakamega County with an aim of establishing the contribution of the Rio Summit of 1992 and the implementation of subsequent international environmental conventions to Kakamega County's environmental conservation. The study sought to examine: the impact of environmental conservation mechanisms in Kakamega County; the challenges that hamper effective implementation of environmental regulations in Kakamega County and how access to information influences public participation in environmental conservation in Kakamega County. The theoretical framework guiding the study was based on liberalism. To liberalists international relations is about state-state relations as well as transnational relations. Liberalists view issues of natural resources and environment as important as security issues and that states and non state actors are both important in world politics. That members of the public should have the right to participate in the making of environmental laws that define their substantive environmental rights through a fair and transparent political process. The study used descriptive survey design. It employed both primary and secondary methods of data collection. Oral interviews and county reports provide important sources of primary data. Data from secondary sources were gathered mainly from written works and internet materials. The study has established that the Rio Summit of 1992 and the subsequent international environmental conventions have shaped environmental conservation mechanisms in Kakamega County. That, for instance, environmental awareness programs currently cut across all sectors of society in Kakamega County. This has enabled most residents of Kakamega County to actively participate in environmental conservation initiatives. The study has also established the challenges that hamper effective implementation of environmental regulations in Kakamega County. It has also demonstrated how access to information may guarantee public participation in decision-making which is essential for local level development in general and in the management of natural resources, in particular. Finally, the study concludes by giving a number of policy recommendations that can help to streamline environmental conservation.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Environmental conservation is currently a subject of concern in international relations since the negative impact of activities in one country is felt in other countries. Pollutants generated in one country can move to other countries by wind or water. In addition, the protection of resources such as the high seas, the ozone layer and combating greenhouse gases which contribute to climate change, requires international cooperation. Moreover, the conservation of biodiversity, combating desertification, controlling the generation, handling, transportation and disposal of hazardous wastes, have become subjects of international conventions requiring collaborations among all the countries of the world. To address environmental conservation issues from the local levels to global levels, a number of multilateral environmental agreements have been developed; states have ratified and have become signatories to the agreements requiring them to domesticate them (Ngesa and Mutio 2013).

Most studies undertaken on environmental conservation demonstrate the fact that governments are at the forefront of ensuring that their countries attain environmental sustainability. Most countries are the focal point of some of the Multilateral Environment Agreements and are actively engaged in International environmental diplomacy and domestication of environmental conventions and protocols through development of policies, strategies and the establishment of legal and institutional framework designed to conserve the environment. For instance, Ogola (2007) observes that in early 1960s, investors and people realized

that the projects they were undertaking in western countries were affecting the environment, resources, raw materials and people. As a result of this, pressure groups were formed with the aim of getting a tool that could be used to conserve the environment in any development. The USA decided to respond to these issues and established a National Environmental Policy Act in 1970 to consider its goal in terms of environmental conservation. At present, all developed countries have environmental regulations whereas most of the developing countries are still adopting environmental regulations (Lee, 1995).

Obinna (2011) observes that in Nigeria Environmental regulations have been put in place to mitigate or prevent the threatening environmental problems which emanate from human activities in the quest for economic growth and development. These regulations which were formulated to address perceived crisis and environmental problems involved many stakeholders with varying interest and power. In addition, Glazewski, (2009) observes that the Constitution of South Africa enshrines environmental rights in section 24, providing explicitly that everyone has the right in terms of the Constitution to an environment that is not harmful to his health. South Africa has also ratified several international conventions relating to environmental conservation. However, the country still faces the effects of environmental pollution which increases the costs of ensuring clean and disease-free water (Harmer, 2005).

Governments in East Africa have also established legal and institutional frameworks designed to conserve the environment. For example, Uganda had by the beginning of 1990 come up with sixty acts governing the conservation of the

environment. In addition, the interface between environmental sustainability and democratic governance has gained considerable attention over the recent years (Glazewski, 2009). This is mainly demonstrated by the renewed interest among policy researchers and practitioners trying to explore and demonstrate the nexus between governance and environmental conservation. Further, many of the environmental conservation issues in Uganda are associated with poor management of water resources, loss of biodiversity, deforestation and soil degradation although it has also established institutions to address environmental conservation issues (Kasimbazi and Kibandama, 2011).

The Stockholm Conference on Environment in 1972 organized by the United Nations focused on the protection of the environment. Based on the outcome of this Conference, the United Nations Environmental Program (UNEP) was established in 1972 and it has been hosted in Kenya since then. However, prior to 1999 Kenya had no legislative Act on environment passed by its parliament. The current environmental regulatory regime in Kenya originated from Parliament's passage of the Environment Management and Co-ordination Act (EMCA) of 1999. Kenya is also a signatory to a number of multilateral environment agreements and as such it has established institutional framework to implement Environmental regulations. The Environment Management and Coordination Act, 1999 (EMCA, 1999) established National Environment Management Authority (NEMA) as the sole Kenya government agency in all matters relating to the environment. EMCA, 1999 accentuates the right of every person in Kenya to live

in a clean and healthy Environment and obliges each and every one to safe guard and enhance the environment (EMCA, 1999).

Barczewski (2013) observes that Kenya's legal and institutional framework is fairly robust and addresses many of the most important challenges facing environmental conservation in a modern state. Despite this, most parts of the country still experience a number of environmental challenges ranging from rivers, lakes and ocean pollutions as well as garbage accumulation in most urban areas; pollution from factories and destruction of forests among others.

Ndung'u et al (2009) observes that lack of commitment to environmental conservation and inadequate measures to enforce the existing regulations have seen most of the country's resources namely wetlands, forests, land and major water sources such as rivers and lakes degraded beyond measure. Examples of negative environmental effects are pollution of Nairobi River, Dandora dump site, Lake Nakuru, Lake Victoria and Kakamega forest among others.

Kakamega County is endowed with vast natural resources namely forests such as Malava forest, Bunyala and Kakamega forests, Iguhu wetland, rivers Lusumu, Isiukhu, Sasala and R. Nzoia as well as fertile parcels of land and gold among others. These resources provide both ecological goods and services to the national as well as the local economies. The county has through time and again depended on these goods and services for raising the capital for economic growth. The rivers for example R. Yala and R. Lusumu provide important sources of water for domestic, agriculture, wildlife and also contribute to the hydrological cycle; maintain the atmospheric temperature and neutrality that is important to the life of

many organisms. In addition, the rivers provide a habitat to a myriad of species. The growth of the county economy will in future be even linked to the integrity of the environment (NEMA, 2012). Despite these important characteristics of Kakamega County environmental conservation aimed at achieving sustainable development with a focus on harmony between economic development and environment in line with the outcome of the Rio Summit of 1992, very little has been done on environmental conservation in Kakamega County from 1992 to 2015 with regard to the implementation of the outcomes of the Rio Summit of 1992.

## **1.2 Statement of the problem**

The study investigated environmental conservation in Kakamega County from 1992 to 2015 with an aim of establishing the impact of the Rio Summit of 1992 alongside the implementation of subsequent environmental regulations on Kakamega County's environmental conservation. The study investigated the contribution of various factors to environmental management in Kakamega County. It explains the challenges that hamper effective implementation of environmental regulations and how access to information influences public participation in environmental conservation in Kakamega County. Given that the Rio Summit was held in 1992, a lot of progress has been made since then with regard to environmental conservation in Kenya including the enactment of Environmental Management and Coordination Act of 1999, creating regulations designed to conserve all of the varying ecosystems and covering important sectors. The study sought to examine the contributions of the Rio Summit of 1992

alongside the implementation of subsequent international environmental regulations in Kakamega County.

### **1.3 Objectives of the study**

The study was guided by the following objectives. It:

- i) Examines the impact of environmental conservation mechanisms in Kakamega County.
- ii) Investigates the challenges that hamper effective implementation of environmental regulations in Kakamega County.
- iii) Establish how access to information influences public participation in environmental conservation in Kakamega County.

### **1.4 Research Questions**

The study sought to answer the following questions:

- i. How are the various environmental conservation mechanisms impacting on Kakamega County?
- ii. What are the challenges that hamper effective implementation of environmental regulations in Kakamega County?
- iii. How does access to information influences public participation in environmental conservation in Kakamega County?

### **1.5 Justification and Significance of the Study**

The study was motivated by the fact that Kenyans and residents of Kakamega County in particular have awakened to the need for environmental conservation. This is evident in the ongoing debates on various environmental issues (Ngeso and Mutio, 2013). There is now a realization that economic development and

environmental issues are inseparable and reconciling laws and policies governing the broader sectors are vital if environmental degradation is to be arrested. The period 1992 to 2015 was selected because the study sought to investigate environmental conservation in Kakamega County from 1992 to 2015 with an aim of establishing the impact of the Rio Summit of 1992 alongside the implementation of subsequent environmental regulations on Kakamega County's environmental conservation. Hence, 1992 marked the start point as it was the year the Rio Summit was held. The year 2015 on the other hand served as a convenient date to end investigations and analysis as it saw significant trends such as, it marked the deadline for the implementation of Millennium Development Goals (MDG Report, 2015). 2015 was also a landmark year for the United Nations; agenda 2030 for Sustainable Development and the Paris Agreement on Climate Change were adopted.

The study has highlighted emerging issues giving recommendations with regard to policy interventions in order to inform sustainable environmental conservation mechanisms in Kakamega County. Thus, the study is significant as it contributes to knowledge and information that can be used to inform policy on dealing with environmental conservation. It also provides useful information in this field to researchers seeking to fill knowledge gaps in contemporary literature.

### **1.6 Scope and Limitation of the Study**

The study was confined to the geographical limits of Kakamega County. It undertook an inquiry into the forces impacting on the implementation of international environmental legislations and their impact on Conservation in

Kakamega County from 1992 to 2015. The study sought to examine the contributions of the Rio Summit of 1992 alongside the implementation of subsequent international environmental regulations in Kakamega County. The time frame of the study was determined by the various factors discussed under the justification section.

The large geographical coverage of Kakamega County posed a limitation during the data collection process and as such the researcher involved research assistants to curb this shortcoming.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

Environmental conservation is currently a pressing issue all over the world. EMCA (1999) for instance provides that every person, institution and perhaps every organization has an obligation and responsibility to conserve the environment. This calls for environmental consciousness that underscores the importance of the thought of creating a better world to live in for the benefit of the present and the future generations. (Ndung'u et al, 2009)

The protection and preservation of the environment encompasses pollution control as well as sustainable development and conservation of natural resources and ecosystem. For instance, environmental degradation at the local level includes the destruction of a nation's forest resources, land degradation and depletion of wetlands while at the global level it may include the destruction of the ozone layer (Ndufor et al, 2011).

It is quite evident through several studies that the concept sustainable development (SD) can be traced from the United Nations Conference on Environment and Development of 1992 held in Rio de Janeiro. Sustainable development can further be even traced back in history and thought about how the creation of sustainable development Agenda 2030 came about (Zolcerova, 2016).

The Stockholm Conference on Environment in 1972 focused on the protection of the environment. The Rio Summit of 1992 on the other hand was about environment and development with a focus on economic, social and

environmental development. Hence, 1992 is the year when the term sustainable development started being used.

The Rio Summit of 2002 adopted the Rio Declaration on Environment with a focus on building partnerships for sustainable development while the United Nations Rio + 20 summit held in Rio de Janeiro from 20<sup>th</sup> -22<sup>nd</sup> June 2012 presented specific steps leading to the definition of Sustainable Development Goals. Consequently, the United Nations Summit in September 2015 adopted Agenda 2030. This was a major contribution of the Rio Summit of 1992 that defined the concept of sustainable development.

The literature cited below therefore, gives an overview and critical analysis of the contributions of the Rio Summit of 1992 on environmental conservation mechanisms with a view of identifying the challenges that hamper effective implementation of environmental regulations and how access to information influences public participation in environmental conservation both at the international, regional, national and local levels. The chapter begins with an analysis of the theoretical framework guiding the study. Thereafter an analysis of the literature reviewed is given with a summary of identified research gaps.

## **2.2 Theoretical Framework**

The state of environment is currently a major political agenda as well as a concern in international relations. Most people around the world have begun to realize that environmental damage as a result of human activities is drastic and at times irreversible. Consequently, solutions to environment problems such as the damage to the ozone layer and air pollution are considered political, with the result that

philosophers and political theorists have tried to find the moral grounds for environmental-friendly policies, (De-shalit, 1995).

Liberalists in their conceptualization on international relations observe that international relations is about state-state relations as well as transnational relations. They view issues of terrorism, human rights, drug trafficking, finance, technology, pollution, natural resources and environment as important as security issues and that states and non state actors are both important in world politics. To liberalists, the non-state actors are important entities in international relations and that International Organizations (IOs) can be independent actors in their own right. They observe that those who make decisions in organizations and bureaucrats have great influence in setting the agenda and that IOs are more than simply arenas within which sovereign states compete. To liberalists, the agenda of international politics is extensive, diversified and that social as well as economic issues are usually at the forefront of foreign policy debates.

Focusing on environmental rights, Bell (2004) observes that liberalists view the rights to particular environmental goods namely right to clean water and air as important and that our substantive environmental rights is more often achieved on the basis of basic human needs. As per liberal democracy, Bell observe that if we are entitled to breathe air that meets particular air quality standards, we should also have the right to complain if the air in our area is not of quality standards and be able to take necessary legal actions to ensure improvement measures are in place. The requirement that peoples substantive environmental rights are justified implies that members of the public must be entitled to information on

environmental quality that is not difficult to obtain and can be understood easily. Bell concludes that people should have the right to participate in the making of environmental regulation processes through a fair and transparent political process, Bell (2004).

Robert Falkner (2013) in his work the *Crisis of Environmental Multilateralism: A Liberal Response* in *The Green Book: New Directions for Liberals in Government* notes that liberals see the environmental issue as appropriate to the international agenda. He contends that environmental pollution is a cross border issue that occurs across national borders and that to achieve environmental conservation within and outside our national borders a strong international dimension is needed. Liberalists like many environmentalists advocate for the creation of international environmental institutions, the strengthening of international environmental law, the negotiation of multilateral environmental agreements and the greening of other international policy areas namely international trade and finance (Falkner, 2013).

Further, Falkner observes that in *Green Philosophy: How to Think Seriously about the Planet* (2012), the conservative thinker Roger Scruton downplays the cosmopolitan environmental responsibility espoused by the modern environmental movement in favour of a national sense of belonging and stewardship which he sees as the true source of conservative environmentalism. Global solutions to environmental problems are most likely to arise from decentralised, bottom-up efforts of local and national communities (Falkner, 2013).

Over the past four decades the relationship between environmental management vis-à-vis developments has become a major concern across the world given the effect of environmental degradation including global warming, deforestation, desertification and pollution. These have continued to undermine the quality of life on the planet. Specific growing concerns in environmental conservation in Kakamega County and Kenya in general include management of solid waste, biodiversity, water quality and ozone depleting substances as well as air quality and chemical management and land use practices among others. Kenya has a number of policy documents in place that aim at streamlining environmental conservation and management in Kenya namely the constitution of Kenya, the Kenya vision 2030 and the National development plans. Other important policy documents are the Draft National Environment Policy and Environment Action Plans as well as the National Climate Response Strategy and the State of Environment Reports.

The first ever Kenya state of environment report was published in the year 2003. This is in line with the country fulfilling its obligation as a signatory to Agenda 21. Consequently, in line with the devolved system of governance in Kenya, the first Kakamega County state of environment report was published in the year 2014, that is, the Kakamega County State of the Environment Report, 2012. The theme of the report is supporting green economy for delivery of vision 2030.

The National development blueprint, the vision 2030 whose goal is to attain a clean, secure and sustainably managed environment by 2030 provides an opportunity for sustainable environmental conservation and natural resource

management. The Constitution of the Republic of Kenya (2010) has further elevated the right to a clean and healthy environment into the bill of rights and assigned specific environmental conservation roles and responsibilities to the counties.

Environment action planning, a breakthrough of the 1992 Rio Summit, takes into account issues identified at all levels through state of environment report. It identifies strategies, mitigation measures and activities geared towards improvement of the affected environment. It also identifies responsible agencies or individuals to take necessary and recommended actions.

Liberalists recognize climate change as the most threatening environmental problem of the present century. Liberalists are of the view that if appropriate environmental conservation mechanisms are adopted, sustainable development will be realized and this will go a long way in reducing the impacts of climate change and its consequences to various targeted vulnerable groups and to promote green economy. If government interventions to environmental challenges are necessary, liberals believe that the interventions should be through governments at local levels since they are closer to members of the public and they understand more concerns and needs of individual citizens living within a specific community. Governments at the local levels are able to appropriately respond in a timely manner to local or community issues (Heufers and Melnik, 2013).

### **2.3 Environmental Conservation Mechanisms and their Impact on Conservation**

Some reports indicate that the successful implementation of sustainable development can only be achieved through functional and efficient institutions.

There is need for strengthened institutions that will provide proper coordination in identifying common solutions to global environmental challenges. At the international level, there is need to strengthen UNEP since it is the leading international environmental authority that sets global environmental agenda. The Rio+20 Summit recommended to the General Assembly to pass a resolution supporting the strengthening and upgrading of UNEP in its 67<sup>th</sup> session. At the national level, the government of Kenya has established institutional framework for the proper management of the environment (NEMA, 2013).

Talero (2004) in his study on environmental education and public awareness observes that Agenda 21 an outcome of the Rio summit of 1992 signals the need for partnership between the main stakeholders concerned in both the local and national governments. That all sectors of the economy should be concerned in different ways with direct environmental educational activities; since inadequate knowledge on environmental issues can be an obstacle in achieving sustainable future for human kind at international, regional, national and local levels. Talero's work demonstrates the importance of environmental education activities as an environmental conservation mechanism both at the global and local scales.

A study by Yuniato (2012) in Indonesia observes that citizen awareness on environmental protection is very alarming to the extent of causing environmental crisis. In his opinion he is certain that because of lack of environmental information and awareness programs, citizens are not taking part in decisions touching on environmental protection. He concludes that there is need to build environmental awareness through a systematic approach to education and the

strengthening and development of local knowledge about environmental protection. Similarly, Yuniato's work underscores the importance of environmental education program as an environmental conservation mechanism.

A study on social - economic problems experienced in compliance and enforcement in Tanzania observed that for successful implementation of environmental laws, there must be the necessary pre-conditions such as favourable economic, political and legal environment which allows the rules to be enforced and obeyed. It is observed that there has to be motivation for all people to participate in environmental protection (Mwanzei, 2013).

Jennifer (2008) in her work on public participation in the enforcement of China's Anti-Pollution Laws observes that the Chinese legal system is relatively young and most of its citizens are unconscious about environmental laws in place. Jennifer, further, observes that the then Chinese status of environmental deterioration made the Chinese government in place to incorporate environmental aspects in all its goals. Jennifer is of the view that the Chinese government incorporated environmental aspects in its goals in order to secure environmental commitment of its public administration at all levels namely businesses, corporates, organizational and individual levels (Jennifer 2008). This work by Jennifer aids this study in looking at how legal systems and incorporation of environmental considerations in development plans can be an effective environmental conservation mechanism.

Kakonge (2006) in his work on environmental planning in Sub-Saharan Africa reviewed environmental practices across a number of countries in Africa. His

work revealed a wide variation in the Environmental Impact Assessment (EIA) process. He observes that EIA practice contrasts significantly from country to country, for example in Botswana EIA is done even in the absence of EIA legislations and in Angola all major projects relating to roads and oil exploration have gone through the EIA process even though the EIA information is not accessible. He concludes that EIA practice in many sub Saharan countries is still weak, a lot need to be effected at national levels to address the development of EIA and the overall management of the environment. If well developed, EIA process can lead to the realization of a healthier environment and sustainable economic growth for the good of the current and coming generations (Kakonge, 2006). Kakonge's work guides this study in looking at the EIA process as an environmental conservation mechanism. That if well developed and appropriately managed the EIA process can lead to a healthier environment through proper environmental management practices.

While looking at the case of a sustainability-oriented environmental science curriculum, Hansmann (2009) observes that environmental awareness is the ultimate driving force that stimulates knowledge on environmental matters. The acknowledgement that an environmental problem exists entails being more cognizant of the facts about the state of the environment and a commitment to solve environmental problems. Hansmann's work demonstrates the need for access to environmental information as a conservation mechanism. That environmental awareness provides useful information for the conservation of environment and a committing to finding solutions to environmental challenges.

A report on environmental compliance and enforcement in China, OECD (2006) emphasized on empowering members of the public so that they actively participate in environmental decision-making. The organization emphasizes that this process should continue to be one of the key objectives of the state and local environmental authorities. By enhancing environmental awareness, encouraging environmental associations and providing training, the public can become an active implementing agent and extend overwhelming support to environmental enforcement endeavors. This information is important as it informs the important environmental conservation mechanisms that can be adopted in Kakamega County and Kenya in general.

Shobeiri (2005) observes that solutions to environmental crisis needs awareness of environmental issues and their clear understanding which should be factored in the current education systems at all education levels. By factoring environmental concerns in school curricular at all education levels namely primary, secondary and colleges present favorable opportunities to students for them to understand the environment. This will in turn enable students to be more knowledgeable on matters touching on environment hence changing their behaviors and attitudes towards environmental matters. Shobeiri's work demonstrates the importance of environmental education programs at all levels of school education namely primary, secondary and post-secondary levels.

Another scholar, Coyle (2005) is of the view that those who advocate for environmental policy changes usually see the creation of awareness to members of the public as the main objective. While some educators on environmental

subject may fail to classify this type of environmental information as actual education, a high awareness on environmental issues by members of the public can contribute to their support on new regulations, laws as well as in corporate administrative policies geared towards conserving the environment. This work demonstrates the importance of advocates for changes such as the civil society groups, organizations and individual activists on effecting environmental policy changes for the proper management of the environment.

#### **2.4 Challenges that hamper Effective Implementation of Environmental Regulations.**

Contributing on the challenges that hamper effective implementation of environmental regulations, Amechi (2009) observes that petty corruption affects the enforcement of environmental policies and regulations. Such corruption occurs mostly at the level of environmental inspections and policing of illegal acts such as poaching, illegal logging, resource trafficking, discharges and emissions. She further notes that several studies have shown that environmental regulations are ineffective and unlikely to be enforced if the bureaucrats and political office holders are corrupt. For instance, she observes that the effect of corruption in the implementation of environmental regulations is evidenced by the controversy surrounding the building of the Next Generation Leadership Group (NGLG) project in Nigeria; she notes that the mandatory Environmental Impact Assessment procedures before a project of such magnitude can be carried was not done while none of the regulatory environmental agencies intervened and this being purely because of corruption. Amechi's work aids this study in looking at

how corruption can influence the effective implementation of environmental legislations in Kenya and Kakamega County in particular.

(Kakonge, 2013) is of the view that some Environmental Impact Assessment (EIA) reports are of poor quality, very long and may be hard to comprehend despite the readers' education levels or expertise. He observes as an example that the Environmental Impact Assessment report in Kenya done for Tana Delta Integrated sugar project is about 412 pages written in very technical and scientific language with a lot of chemical equations that many locals, leaders and relevant officials cannot easily understand it (Kakonge, 2013). Kakonge's work is important in this study as it highlights the need for effective Environmental Impact Assessment process and EIA reports that can lead to effective implementation of Environmental Impact Assessment regulations. That a high quality EIA report can easily be understood by many local officials and leaders. However, the length of a report does not necessarily make it to be of low quality since there are many EIA reports which are very long but of high quality and can be easily understood.

Chinwe (2010) contends that lack of government efforts to educate its citizens on the various environmental laws in place as well as lack of political commitment compounded by corruption hampers effective implementation of environmental laws. For instance, she observes that in most countries of Africa including Kenya and Nigeria, some individuals and institutions particularly those in corporate groups more often go scot free with serious violations of environmental legislations because of corruption. Chinwe continues that lack of awareness on

environmental issues is also a problem in the management of environment pollution. Chinwe's work aids this study in looking at how illiteracy and ignorance as well as corruption are great hindrances to the implementation and enforcement of environmental regulations and the available law remedies.

Obinna (2011) observes that policy does not clearly migrate from stage of agenda-setting, decision-making to implementation stages. It is always contested on international, national and local levels. Therefore, there are many obstacles facing policymaking and its implementation that might affect the success of the policy in most developing countries including Kenya. These factors hindering the success of policymaking and implementation range from social, economic and political factors. Many institutions in developing countries are ethnic oriented; this leads to nepotism and corruption, hence presenting difficulties to implement the policy and the choice of policy instrument. Obinna's work guides this study in identifying the factors that could be hindering the success of policymaking and implementation in Kenya and Kakamega County in particular namely tribalism, nepotism, corruption and weak institutions among others.

Jin and Yan (2011) observe that the problem with Chinese environmental legislation is that it is full of abstracts with ambiguous provisions that cannot be enforced without an officer's own interpretation. For example, a blanket statement such as, 'a project out of character with the surrounding'. Jin and Yan are of the view that some environmental provisions are unreasonable or contrary to the legislative purpose. They cite an environmental impact assessment law that provides for approval after construction of a project has begun. This then means

that the original intention of having the environmental impact assessment process to predict the impacts of the project has been misconstrued. Jin and Yan continue that most penalties imposed on environmental crimes are too lenient for environmental violations; hence, guilty enterprises would rather be fined than correct their violations. Although Jin and Yan's work focuses on China, it informs on how unreasonable environmental provisions and lenient penalties imposed on environmental crimes affects effective implementation of environmental legislations and the nature of environmental legislations in Kenya generally.

Kaaria and Muchiri (2009) in their work on enforcement challenges identified lack of institutional capacity among the enforcement agencies to link up and cooperate to enhance enforcement as the main enforcement challenge. They observe that this is compounded by lack of resources and weak environmental policies. Jardine (2009) is of the view that strengthening regulatory institutions will help enforcement agencies create the necessary framework and mechanisms for monitoring and enforcement of environmental regulations. This conceptualization is important as it addresses key issues towards promoting good environmental governance and conservation.

### **2.5 Access to Information and Public Participation in Environmental Conservation**

Focusing on how access to information influences public participation in environmental conservation, Susan et al (1996) observe that availability of information and its access by members of the public contribute to effective citizens' involvement in decision making processes at all levels. They note that citizens need to access specific information concerning environmental violations,

such as the conditions of licenses to ascertain breach of some of the conditions as well as the other relevant sources of information that document the status of administrative proceedings, government decisions including environmental quality, emissions and releases. Yet, in many countries access to this type of information is controlled to the extent of having to endure a tedious bureaucratic procedure before one can be given permission or denied. They observe that in Kenya for example, an aggrieved party has to pay a prescribed fee in order to peruse a register. This eventually compromises efforts towards environmental justice. This work by Susan et al (1996) aids this study in looking at how information access and its availability impacts on citizens' involvement in environmental conservation in Kakamega County and Kenya in general.

Mwanzei (2013) in his work factors influencing citizens' participation in taking environmental enforcement actions in Kenya observes that there is a stereotype from members of the public that getting information from a government agency is not easy. He continues that information is surrounded by secrecy and suspicion and the fear that the information might be used against the person seeking it. He observes that many Sub-Saharan countries have enacted laws of restricting issuance of information to members of the citizen. This has led to a situation where in the whole of Sub-Saharan Africa, it is only South Africa, Angola and Zimbabwe who remain to be the only African countries that have passed and implemented an Access to Information law. Mwanzei's work demonstrates how stereotype from members of the public with regard to access to information may affect environmental conservation in Kakamega County and Kenya in general.

Amechi (2009) observes that lack of access to information contributes to environmental degradation in Sub-Saharan Africa. He is of the view that lack of access to information limits the ability of the poor to protect the environment by affecting their ability to be effective players in environmental policy. Hence, the poor are unable to participate in decision making processes and to mobilize support to demand sustainable solutions to environmental problems affecting them. Amechi's work guides this study in looking at how lack of access to information can influence decision making processes in environmental issues and the ability of members of the public to mobilize support to demand sustainable solutions to environmental challenges in Kakamega County and Kenya in general.

Stiglitz (1998) observes that the government alone should not attempt the monumental task of doing everything to ensure compliance with the law. Various independent environmental NGOs can act as "watchdogs", often in close collaboration with the press and be instrumental in uncovering illegal activities and in forcing corrective actions. Systems can be established for "whistle blowers" to report illegal activities and for governments to provide attractive rewards for reporting forest crime. Stieglitz is of the view that increasing government openness to sectors of the civil society and the private sector can be an effective tool in reducing the influence of vested interests and improving law enforcement. Stieglitz's (1998) work is important in this study as it demonstrates how NGOs and civil societies can play a role alongside the government to curb forest related crimes in Kakamega County in Kenya.

Arnoldo (2001) observe that many NGOs and environmental groups provide useful monitoring services that contribute to detecting forest crime. For example, the activities of Global Witness in Cambodia helped to detect and make forest crimes public in that country. Friend of the Earth and Greenpeace also routinely monitor developments in the forestry sector in various countries and unearth valuable information on forest illegal activities. Many of these international entities have national counterparts. Arnoldo's (2001) work is important to the current study as it generally highlights the importance of NGOs and environmental groups' involvement in environmental conservation. That the involvement of NGOs and environmental groups can impact positively in environmental conservation in Kenya and Kakamega County in particular.

## **2.6 Summary**

From the above literature it becomes evident that lack of participation from regulated community in all stages of planning and lack of information among others interfere with public's participation in environmental conservation. Thus, the above literature has provided an in-depth knowledge about the nature of environmental conservation issues, by focusing on the respective contexts. However, very little attempt has been made towards establishing the impact of environmental conservation mechanisms in Kakamega County based on the Rio Summit of 1992. Hence the need for collection of data from the field and analyzing them so as to determine how the findings can be incorporated and integrated into effective environmental conservation programs in Kakamega County.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This section outlines the research design, the study population, the sampling procedure and the method that was used to collect data among others.

### **3.2 Research Design**

Descriptive research design was used in the study. Descriptive design was used because the study aimed at collecting information from respondents on Kakamega County's environmental conservation attributes through interviews and direct observation. Questionnaires were administered during the study.

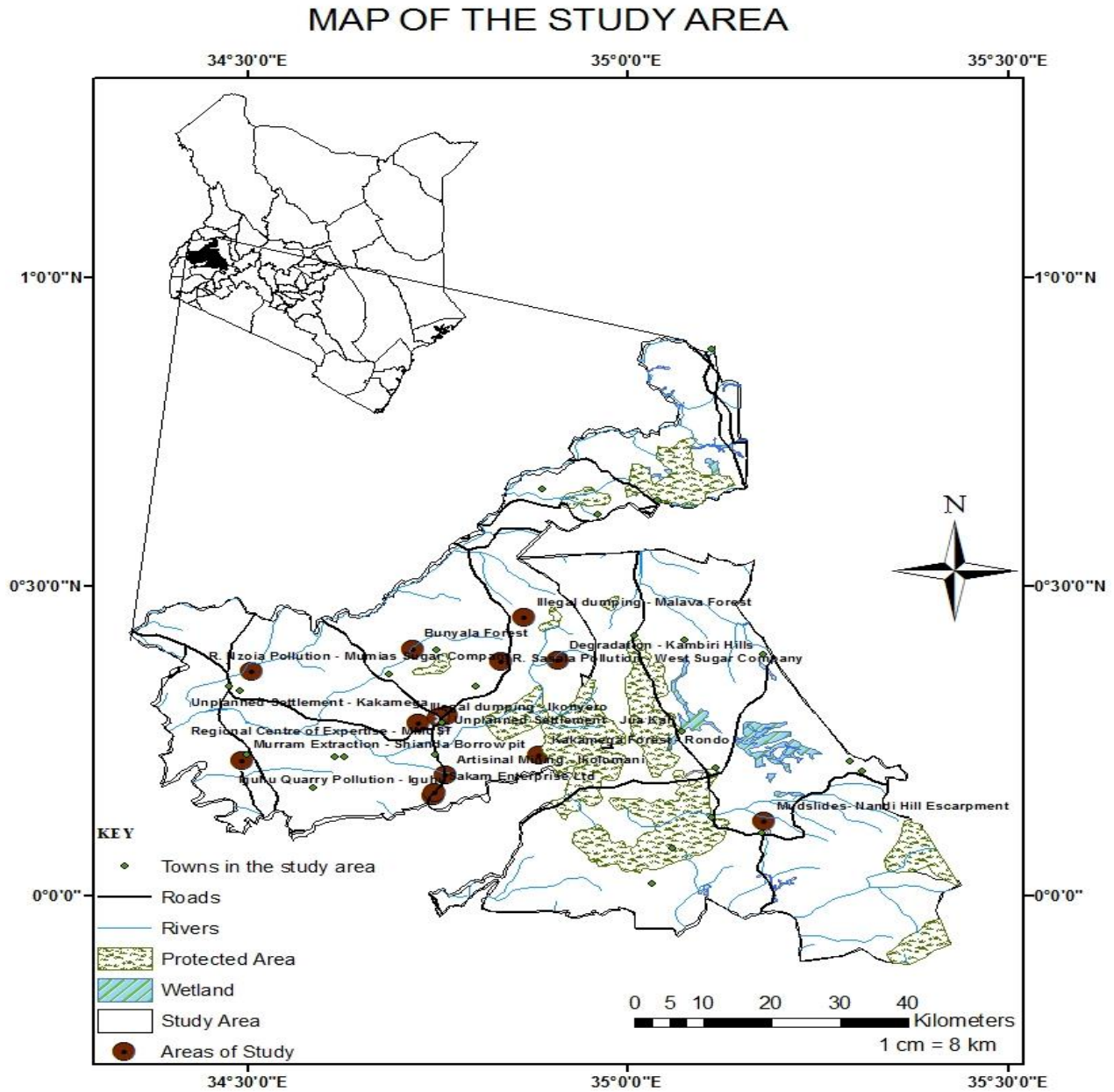
### **3.3 Research Locale**

The study was carried out in Kakamega County in Kenya. Kakamega County is one of the four counties making up the defunct Western Province in Kenya. It is bordered by Busia, Siaya and Bungoma counties to the West, Nandi and Uasin Gishu counties to the East, Trans-Nzoia County to the North and Vihiga County to the south. The County lies between longitudes 34, 20' and 35 E and latitudes 0 15' and 1N of the equator. The total area of Kakamega County is 3,020 sq. Km (Kenya, 1997). Over the years the greater Kakamega which has given rise to Vihiga as an independent county, has experienced major developments as well as major subdivisions thereby creating a number of administrative units. Kakamega County has been subdivided further into other smaller administrative units. The resultant districts are; Kakamega Central, Kakamega South, Kakamega North, Kakamega East, Lugari, Likuyani, Matete, Mumias, Matungu, Butere and Khwisero. The purpose of creating these administrative units was to take services closer to the people (Ngetich, 2013).

According to the National Population Census and Housing Report of 2009, Kakamega County is the second most populous county after Nairobi County. It is home to 1,660,651 people with male and female population accounting for 800,989 and 859,662 people respectively. The population growth rate of Kakamega County is 2.5% and fertility rate is 5.6% which is higher than the national average of 4.6%. This underscores the need to put in place a set of projects and programmes for meeting the needs of the increasing population (KNBS, 2009).

The Kenya National Population Census Report puts Mumias, Kakamega, Butere, Lumakanda and Matunda with the population of 36,398; 91,768; 12,780; 10,580 and 10,031 people respectively as the major urban centres within Kakamega County (Kenya, 2010).

**Figure 1.1: Map of Kakamega County Showing details of Study Areas.**



### **3.4 Study Population.**

The sample for the study was drawn from the following districts: Kakamega Central, Kakamega South, Kakamega North, Kakamega East, Lugari, Likuyani, Matete, Mumias, Matungu, Butere and Khwisero.

### **3.5 Sampling Techniques and Sample Size.**

The study employed purposive sampling technique whereby areas, individuals and groups perceived to have environmental conservation information were the beginning point for investigation. Subsequently from these areas, groups and individuals the researcher snow balled to other potential sources of information.

To get a representative sample, the study used the table developed by Krejcie and Morgan (1970). The table (Appendix iii) is applicable to any population of a defined (finite) size. Krejcie and Morgan (1970) observe that as the population increases the sample size increases at a diminishing rate and remains, eventually constant at slightly more than 380 cases. From (Fig 1.1), the areas of study had a population of 7000. Therefore using the table developed by Krejcie and Morgan (1970), the researcher expected to get responses from about 364 respondents.

### **3.6 Research Instruments**

Questionnaires, interview schedules and direct observation were used in the study for data collection. The questionnaires were used to gather information from the respondents in Kakamega County. Interview schedules were also used especially to government officials and key informants. Direct observation was also adopted.

### **3.7 Validity**

In this study, cross checking, inspection and analysis of the obtained information was carefully done to ensure validity of the arguments and presentation of the findings. The respondents were also requested to be as honest as possible in order to get the real picture on the ground.

### **3.8 Data Collection Procedures**

The researcher administered the questionnaires through face-to-face interviews to the respondents in Kakamega County. Face-to-face interviews enabled the researcher to probe, to explain and to follow up important points that were raised by the respondents. Interview schedules were employed by first approaching all the interviewees and key informants and making arrangement for an interview. Once the person had agreed to a suitable interview time, the researcher provided the participants with records of his contact details so that the participants could contact him. The researcher started each interview with an introductory note so as to enable the participants feel free to discuss issues that the respondents felt important. Direct observations were also used whereby the researcher made random and frequent visits to various areas in the County to directly observe other than simply asking people. The information obtained formed the background to the analysis of findings.

### **3.9 Data Analysis Procedures**

Data collected were thoroughly examined and checked for errors of omission and commission. The required data were then classified according to the study's objectives. Classification of data was designed to see the extent of difference of perception in one area or group from the other. The required information was organized in tabular forms in order to be more useful. Tabulation facilitated comparisons and relations between data.

Descriptive analysis was carried out for each objective. Descriptive statistics especially, frequencies and cross tabulation were used to help establish patterns, trends and relationships, and to make it easier for the researcher to understand and

interpret implications of the study. The data is presented in tables and the results explained in narrative.

The analysis of data also incorporated secondary data obtained from the existing documents collected from various government institutions for example libraries, the relevant line ministries in Kakamega County, International organizations such as the United Nations Environment Program and Nongovernmental organizations among others.

### **3.10 Data Management and Ethical Considerations**

This study was based on voluntary consent of the respondents to participate in the study. Further, participants in the study were guaranteed confidentiality and privacy during and after the study. Also intrusive, offensive and embarrassing elements were not included in the study. Indeed, research ethics observed in this study were in accordance with those stated by Polit and Hungler (1999) namely the principles of beneficence, of respect for human dignity and of justice.

After analysis and corroboration of both primary and secondary data, the writing of the thesis begun guided by research questions. The next chapters summarize the research findings as carried out giving discussions on each of the objectives based on the results.

## CHAPTER FOUR

### ENVIRONMENTAL CONSERVATION MECHANISMS IN KAKAMEGA COUNTY

#### 4.1 Introduction

This chapter gives presentation, analysis and interpretation of the data collected on environmental conservation mechanisms in Kakamega County, the study's objective one. The chapter covers all the study's research questions regarding objective one. The analysis of the data obtained is presented through tables and thereafter a discussion of the findings on environmental conservation mechanisms in Kakamega County is given.

The findings in table 4.1 indicate that (64%, n=231) of the respondents observed that there are organizations and/or institutions undertaking environmental education programs in their community while (36%, n=129) of the respondents have no such programs in their community.

**Table 4.1: Presence of institution/organizations undertaking Environmental Education Programs in Kakamega County**

<b>Organizations/institutions undertaking environmental education programs</b>	<b>Frequency</b>	<b>percentage</b>
Yes	231	64
No	129	36
<b>Total</b>	<b>360</b>	<b>100</b>

23% (n=53) of the respondents as indicated in table 4.2 participate in environmental education programs and this is how they came to know about environmental organizations and their programs within their communities. Other respondents the study indicates that they came to know about environmental organizations and their programs as follows: 18% of the respondents read/heard

about them through media, 17% read/heard about them through school/college programs, and 11% of the respondents learned from their friends. The findings also indicate that 16% of the respondents were members of environmental organizations while 15% had been informed of environmental education programs by government officials.

**Table 4.2: Source of information about the presence of organizations that provide environmental education programs**

<b>Source of information on environmental education programs</b>	<b>Frequency</b>	<b>Percentage</b>
Read/heard about them through media	41	18%
Read/heard about them through school/college programs	39	17%
Participated in their programs	53	23%
Learned from a friend	25	11%
A member of the organizations	38	16%
Informed by government officials	35	15%
<b>Total</b>	<b>231</b>	<b>100</b>

The study findings also indicates that most of the respondents (87%, n=201) were able to identify by name some of the environmental organizations in their community while 13% (n=30) were unable.

**Table 4.3: Those who were able to identify Environmental based organizations**

<b>Able to identify the organizations</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	201	87%
No	30	13%
<b>Total</b>	<b>231</b>	<b>100</b>

73% of the respondents have ever attended a function and/or celebrations organized by the government touching on environmental issues within and outside their area while 27% have never attended as shown in table 4.4 below.

**Table 4.4: Participation in Environmental Functions/Celebrations**

<b>Ever attended environment function</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	252	73%
No	93	27%
<b>Total</b>	<b>345</b>	<b>100</b>

The findings as indicated in table 4.5 shows that 30% of the respondents have ever attended World Environment Day(WED) celebrations, 25% have ever attended tree planting exercise while 23% have ever attended clean up exercise organized by government officials. 22% of the respondents have ever attended other functions related to the environment apart from WED, tree planting exercise and clean up exercise.

**Table 4.5: Some of the functions attended**

<b>Functions attended</b>	<b>Frequency</b>	<b>Percentage</b>
World Environment Day	102	30%
Tree planting exercise	86	25%
Clean up Exercise	81	23%
Other	76	22%
<b>Total</b>	<b>345</b>	<b>100</b>

#### **4.2 Discussion of the findings on Environmental Conservation Mechanisms in Kakamega County.**

The Earth Summit of 1992 underscored the benefits of education and training as well as awareness by members of the public in achieving sustainable development goals. The summit underscored the important role of environmental education as a mechanism of enhancing the attainment of sustainable development. Ten years

later, the Earth Summit of 2002 reiterated the important role of education for sustainable development and it became apparent that education was important to achieving socio economic and sustainable development environmental goals (Draft National ESD Policy, 2013)

In March 2006 Ministers of Education from Africa committed themselves to implement the United Nations Decade on Education for Sustainable Development (DESD) in the context of the Second Decade on Education in Africa. Since the DESD launch, nations and regions across the world have engaged in developing ESD strategies and frameworks or reviewing existing ones. In this regard, several activities have been undertaken in Kenya which have resulted in the development of the national Education for Sustainable Development (ESD) implementation strategy adopted in 2008 in Kenya (Burer, 2014)

The ESD implementation strategy for Kenya guide on the implementation of ESD programmes by all stakeholders who are expected to incorporate ESD concerns in their plans and activities. In line with ESD implementation strategy for Kenya, this study observes that there are organizations and/or institutions undertaking environmental education programs in communities in Kakamega County. These programs have enabled community members to acquire knowledge, skills and understanding of environmental concerns as well as to take part in decision making processes on environmental matters (Sichangi,O.I 2015)

An insight on the education and literacy level in Kakamega County reveals that Kakamega County has high literacy rate in Western Kenya region with 83.6% of its population who can read while 83.3% are able to write. On the other hand

83.1% have the ability to read and write. The County has fairly literate community at 83.1% offering opportunity for uptake of environmental education interventions and implementation of environmental sustainability. Indeed educational institutions as well as NGOs around Kakamega forest have several environmental education and awareness programmes related to the forest which have enabled community members living around the forest to participate in the conservation of the forest resource through sustainable exploitation of the forest resources (Oyiemba O.I 2015)

It can be observed that the Kenya ESD strategy aims at improving the interventions by diverse stakeholders in education by emphasizing on enhancing public awareness, improving the quality of education, re-orienting education towards sustainable development and encouraging capacity building programmes and initiatives at all levels (ESD Implementation Strategy, 2008). In line with the aims of Kenya ESD strategy, a summary of data from Kakamega County Education office shows that 85% of the schools in the county have at least one club that deals with environmental education and activities. Some schools however have up to three clubs. These include Geography Clubs at 60%, Science Clubs at 25%, Agriculture Clubs at 35%, Environmental Clubs at 30%, and Wildlife Clubs of Kenya at 42% (Oyiemba, O.I 2015). For example, at Musingu high school in Kakamega South Sub County, the school's environmental club has impacted positively on its members. Its students are leading in participating in environmental conservation initiatives such as in greening of schools and cleanup activities (Omondi, O.I, 2015).

The government and the civil society organizations as well as the private sectors working on environmental programs are also striving to raise public awareness on sustainability and environmental issues using various media in Kenya. Awareness creation has also been through national and international days. NEMA has been collaborating with lead agencies and other stakeholders in creating awareness through commemoration of annual World Environment Events namely the World Environment Day (NEMA, 2011). The study finding shows that the residents of Kakamega County usually attend functions or celebrations organized by government on issues touching on environmental conservation with the majority having attended and participated in the celebration of the annual World Environment Day event. This annual event usually provides an opportunity for educating the community members on the need to conserve the environment while recognizing the progress made towards preservation of the same by diverse stakeholders (Wawire, O.I, 2015).

The annual World Environment Day Celebration is considered as the United Nations' one way of creating environmental awareness globally and to help stimulate political attention and personal commitment as well as public action to environmental conservation. Environmental conservation can no longer be ignored for the sake of development. Climate change affects people and nature in many ways and usually exacerbates environmental threats that have already put pressure on the environment. Evidence of climate change in Kenya is demonstrated by the reducing glacial cover on Mt. Kenya, rising sea levels experienced in the coastal region, expansion of inland lakes, prolonged droughts

and flooding (NEMA Supplement WED 2014). The destruction of forest resources has greatly contributed to climate change in Kakamega County (Mwaura O.I, 2015)

The Government of Kenya has over the years recognized and prioritized World Environment Day as a key event in its environmental calendar based on a selected theme. For instance, the theme for the 2015 World Environment Day as released by UNEP was, “Seven Billion Dreams. One Planet. Consume with care”. The theme was based on the current global population which is increasing and is estimated to be seven billion people. These seven billion people rely on diminishing environmental resources for their livelihoods. The theme was emphasizing the need to embrace sustainable exploitation of resources in order to conserve the global environment hence the need to “consume with care”. At the national level, the theme related to Kenyans’ local circumstances. Kenya’s population is steadily increasing; it is now estimated at 42million people, accounting to about 0.6 per cent of the global population. In Kakamega County the theme reflected on the need to conserve the environment. The large and increasing population of Kakamega County is a threat to already diminishing wetlands namely Igukhu and Isiukhu wetlands due to wetland encroachment and the destruction of the forest resources as well as land degradation (Yeswa, O.I 2015)

The study findings show that residents of Kakamega County usually attend functions organized by government officials on issues touching on environment. The World Environment Day event usually attracts majority of the residents

followed by tree planting day. Some of the residents of Kakamega County also attend and participate in clean up the World Day event (Cheto, O.I 2015).

Kakamega County, for instance, has been conducting World Environment Day events since the beginning of the devolved system of governments in Kenya. The World Environment Day events for Kakamega County in the year 2015 were held at Shikoti Mixed Secondary School in Lurambi Sub County (Picture 1.1). The event served as an environmental conservation mechanism that informed and educated members of the public on ways to conserve the environment. The event underscored the importance of environmental regulations that provide guidelines on environmental conservation in various ways. It attracted more than 5000 participants and this was a major achievement. The need to inform community members and students to promote a clean environment was achieved. (Owino, O.I 2015)



*Plate 1.1: World Environment Day 2015 Kakamega Celebrations venue to promote Environmental Awareness as a conservation mechanism.  
Source: County Government of Kakamega*

The World Environment Day event held on Friday 5<sup>th</sup> June 2015 brought together members of the community, students from different schools namely St. Xavier Secondary School, St. Xavier Mixed Primary School, Mary Gorreti Shikoti Girls, Lurambi Primary School and St. Jude Shikoti Girls Primary school among others.

Government officials present were drawn from the County's Department of environment, NEMA, forestry and water departments among others. NGOs were represented by Nature Kenya organization. The event underscored the importance of environmental conservation and management for the benefit of the present and future generations. That all the participants present and every person has a duty to conserve the environment (wekesa, O.I 2015).

The event was marked with entertainments, tree planting exercises and speeches. The entertainments and speeches had messages on the importance of environmental conservation. The *Isukuti* entertainers (Picture 1.2) emphasized on the need to protect the forest resources in the county by minimizing the use of charcoal and firewood and embracing the use of energy serving *jikos*, (Nandako, O.I 2015)



**Picture 1.2:** *The Isukuti entertainers emphasizing the need to protect forest resources during World Environment Day celebrations as a conservation mechanism*

**Source:** *County government of Kakamega*

The speeches reiterated the need for every citizen in Kakamega County to take initiative in environmental conservation. Every speaker underscored the importance of best environmental practices such as use of alternative sources of energy namely solar instead of relying on electricity; responsible use of water and forest resources, responsible development by avoiding encroachment of water sources and appropriate solid waste handling procedures namely waste segregation at source and avoiding open air incineration of solid wastes. The celebrations generally served to create environmental awareness to students and the community at large (Omale, O.I 2015)



**Picture 1.3:** A government official giving speech to underscore the importance of best environmental conservation practices

**Source:** NEMA, World Environment Day celebrations 2015

The celebrations at MMUST served to underscore the fact that MMUST is one of the Regional Centers of Expertise (RCE) in Kenya representing the larger Western region. The RCE identifies sustainable development issues in Kakamega County and try solving them through the promotion of information sharing, networking and partnerships among all stakeholders in Kakamega County (Shayo,

O.I 2015). Western RCE hosted by MMUST focuses on knowledge and understanding of local environmental problems and promotes collaborative efforts in solving common problems through local environmental projects (Shayo, O.I 2015)

In addition, MMUST as an institution of higher education is central to environmental conservation. It provides research, analysis and conceptual guidance that create relevant education systems hence improving access to quality education, developing public understanding and awareness, re-orienting existing education and training representatives of all sectors of private and civil society. For example, MMUST is addressing the environmental as well as the socio-cultural challenges through pilot projects on greening schools and use of sisal waste to produce biogas and mushroom growing substrate. Over five thousand tree seedlings were provided and planted prior to and during World Environment Day celebrations (Wekesa, O.I 2015).



**Plate 1.4** Tree planting exercise at MMUST: WED celebrations 2015. **Source:** NEMA

Looking on celebrations of important environment calendar days, the study findings also established that some residents of Kakamega County participate in clean-up the world day event. This event forms part of Kakamega County's environmental conservation mechanism. The participants are usually involved in clean up exercises in selected towns within Kakamega County. The aim of the activity is usual to inform members of the public on the benefits of appropriate management of solid waste as provided in the management of waste regulations of 2006. That solid waste should be segregated at source and everyone is responsible for the waste they generate. The waste should be disposed as provided in the waste regulations. The Clean-up exercise (Plate 1.5) for the year 2015 was done in Malava town. It involved cleaning of the town and its environs and talking to the locals to create awareness on the need to embrace a culture of proper solid waste management (Odero, O.I, 2015).



**Plate 1.5:** Kakamega County Clean up Exercise to reiterate the need to embrace a culture of proper solid waste management.

**Source:** NEMA Clean Up Exercise 2015

World tree planting Day is also an event that is usually marked in Kakamega County. The tree planting exercise (Plate 1.6) for the year 2015 in Kakamega County targeted schools. The reason being the population of students in schools guarantees survival rate for the trees planted. Students can plant a good number of trees and water them easily because of their population in schools hence guaranteeing high survival rates. Therefore, the event served to underscore to students the importance of trees in environmental conservation and the obligations set in the constitution of Kenya 2010 of achieving the forest cover of 10% and to engage them in the exercise in their respective schools namely Shikoti Girls School, Matende Secondary School and St. Anne primary school among others (Cheto, O.I, 2015).



**Plate 1.6:** School tree planting exercise to underscore the need to increase tree cover in Kakamega County

**Source:** NEMA Tree planting Exercise 2015

The tree planting exercise was aimed at increasing the tree cover in Kakamega County which has experienced challenges due to deforestation and charcoal production. Charcoal production is seen as one of the most consumers of trees and forests in Kakamega County. The production reduces the vegetation cover that acts as a carbon sink and therefore promotes climate change. Use of charcoal degrades the environment although it produces high energy. It also emits a lot of carbon dioxide into the air. The harvesting of the trees also reduces the vegetation cover in the water sheds reducing the catchment quality and the ecological functions of these areas (Masachi, O.I, 2015).

The study findings established that most residents of Kakamega County are able to identify some of the organizations involved in environmental conservations in

their communities. The CBOs contribute significantly to environmental conservation in Kakamega County. For instance, they are greatly involved in marketing of commercial exploitation of the mineral deposits in the county using environmental friendly methods. The CBOs are also involved in coming up with environment management plans such as spring protection plans, land use plans and forest management plans. They are involved in natural regeneration practices, reforestation and utilization of efficient technologies in achieving environmental sustainability (Kithuku, O.I 2015). The CBOs identified include Kakamega Environmental Education Programme (KEEP), Kakamega Conservation Forest Association (KACOFA), Bush (*Bukhungu and Shiingu*), *Ikuchi (Ikuywa and Chirobani)*, *Shamu (Shanderema and Mukomari)* and *Musha (Musembe and Shamiloli)*. Other CBOs are *Muliro* Farmers Conservation Group, *Isecheno* Women Conservation Group, Kakamega Rainforest Tour Guide Association -*Isecheno*, *Isukha* Heritage, *Jasho* Youth Group, Kakamega Forest Guiding Association– *Buyangu*, *Jitegemee* Conservation Group, *Musutsu* Conservation Group and *Malava* Tour Guiding Group including the Volunteers Community Initiative among others (Nambwa, O.I, 2015).

Community Forest Associations (CFAs) in Kakamega County are involved in Beekeeping, Education and Research, for example, energy saving technologies and cultural practices as well as biodiversity conservation among others. The CFAs identified are *Muileshi* Community Forest Association, *Malava* Community Forest Association and *Bunyala* Community Forest Association. There have been deliberate efforts by the Kenya Forest Service in Kakamega County to engage the

forest edge communities in the management of forest resources through CFAs resulting to increased afforestation rate within the settled areas in Kakamega County (Wafubwa, O.I 2015)

The afforestation areas within the settled areas in Kakamega County has also increased over the years with the increasing funding from donors namely the Green Zones support project and the Natural Resource Management through Kenya Forest Service and the GEF/UNDP through Nature Kenya an NGO in Kakamega County. The projects have engaged the CFAs in the afforestation in Kakamega County to plant in gazetted areas and on-farm wood establishment in line with the projected community needs and in line with the Kenya Constitution 2010 requirement that at least 10% of all agricultural land should be under tree cover (Luseno, O.I 2015)

#### **4.3 Conclusion**

It was the objective of this chapter to examine the impact of environmental conservation mechanisms in Kenya by looking at the various environmental conservation strategies specifically in Kakamega County. The researcher has demonstrated that the Rio conference of 1992 outcomes shaped environmental conservation strategies in most countries including Kenya with its focus on harmony between economic development and environment. Agenda 21 for instance, underscored the need for all the society's sectors to participate in a life-long process aimed at achieving sustainable development; this has well been domesticated in Kakamega County. The study has established that environmental awareness programs cut across all sectors of society in Kakamega County. This

has enabled most residents of Kakamega County to actively participate in environmental conservation initiatives.

It has been demonstrated that Kakamega County has a high literacy level at 83.1% with an active enrollment at both primary and secondary level. There are a number of institutions and NGOs already undertaking environmental awareness and education in Kakamega County. In addition, the annual World Environment Day (WED) celebration provides an opportunity for educating the community members on the benefits of the environment while recognizing the progress made towards preservation of the same by diverse stakeholders. The study has established that most residents in Kakamega County usually attend this important environment calendar function.

It has also been demonstrated that substantial progress has been made regarding Education for Sustainable Development (ESD) in Kakamega County. A number of capacity building as well as training initiatives have been realized through NGOs, CBOs and Community Forest Associations in Kakamega County. However, there is need to broaden the scope to include ESD materials development, planning, management and monitoring although MMUST is spearheading several innovations and research on ESD. Examples of the innovations include development of e-content, pilot projects on greening schools and use of sisal waste to produce biogas and mushroom growing substrate particularly at MMUST.

It has also been demonstrated that MMUST is one of the Regional Centers of Expertise (RCE) in Kenya representing the larger Western region. It identifies

sustainable development issues in a particular region and tries to solve them through promotion of information sharing, networking and partnerships among all stakeholders in Kakamega County. That MMUST focuses on knowledge and understanding of local environmental problems and promotes collaborative efforts in solving common problems through local environmental projects. The next chapter examines the challenges that hamper effective implementation of environmental regulations in Kakamega County.

## **CHAPTER FIVE**

### **THE CHALLENGES THAT HAMPER EFFECTIVE IMPLEMENTATION OF ENVIRONMENTAL REGULATIONS IN KAKAMEGA COUNTY**

#### **5.1 Introduction.**

In Chapter Four the researcher examined the impacts of environmental conservation mechanisms in Kakamega County. The researcher demonstrated that the outcomes of the Rio conference of 1992 have continued to shape environmental conservation strategies in Kenya and in Kakamega County in particular with its focus on harmony between economic development and environment. For instance, in 1992 world leaders confirmed the benefit of public awareness in attaining sustainable development goals in Agenda 2. The study has demonstrated that Kakamega County is embracing public awareness as an environmental conservation mechanism. This is facilitated through CBOs, NGOs and environmental calendar events organized by the government. This chapter examines the challenges that hamper effective implementation of environmental regulations in Kakamega County. The chapter gives presentation, analysis and interpretation of the data collected on the study's objective two on the challenges that hamper effective implementation of environmental regulations in Kakamega County. The chapter also examines international issues on environmental regulations as well as relating those issues in Kenya and on the study's findings in Kakamega County.

The findings in table 5.1 indicate that 58% (n=208) of the respondents are aware of NEMA as the main institution mandated to conserve the environment while 42% (n=152) are not aware.

**Table 5.1: Awareness of NEMA as the Lead Environmental Agency**

<b>Awareness of NEMA</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	208	58%
No	152	42%
<b>Total</b>	<b>360</b>	<b>100</b>

The study findings also indicate that 23% of the respondents have heard about NEMA through media, 19% through friends, 15% have visited NEMA offices, 18% have attended NEMA functions while 17% have ever raised complains to NEMA as shown in table 5.2 below.

**Table 5.2: Source of Information about NEMA**

<b>Source of Information about NEMA</b>	<b>Frequency</b>	<b>Percentage</b>
Heard about NEMA through media	77	23%
Heard about NEMA from a friend	65	19%
Visited NEMA offices	52	15%
Attended their functions	60	18%
Complained to the organization	57	17%
Other	30	8%
<b>Total</b>	<b>341</b>	<b>100</b>

It can also be observed that 62% of the respondents are aware of other organizations that handle issues of environmental pollution apart from NEMA while 38% are not aware as shown in table 5.3 below.

**Table 5.3: Awareness of other Environmental Organizations**

<b>Awareness of other organizations</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	224	62%
No	136	38%
<b>Total</b>	<b>360</b>	<b>100</b>

The findings on table 5.4 indicate that 38% of the respondents have ever taken actions with regard to environmental pollution in their area while 62% have never done anything regarding environmental pollution in their area.

**Table 5.4: Action taken on Environmental Pollution by the Respondents**

Action taken on Environmental Pollution	Frequency	Percentage
Yes	128	38%
No	206	62%
<b>Total</b>	<b>334</b>	<b>100</b>

Majority of the respondents (54%, n-69) have ever reported environmental pollution related issues to the concerned department while 25% reported the same to the police. 2% of the respondents took the initiative to clean up the mess as indicated in table 5.5

**Table 5.5: Type of Action taken by the Respondents**

Type of action taken	Frequency	Percentage
Reported to the concerned agency	69	54%
Reported to the police	32	25%
Cleaned up the mess	3	2%
Other	24	19%
<b>Total</b>	<b>128</b>	<b>100</b>

The study findings in table 5.6 also indicate that 58% of the respondents observe that there have been actions taken on environmental pollution by government agencies in their area while 42% of the respondents were of the view that no action has ever been taken with regard to environmental pollution in their area.

**Table 5.6: Any Action taken by an Agency on Environmental Pollution**

<b>Any action taken on environmental pollution</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	192	58%
No	138	42%
<b>Total</b>	<b>330</b>	<b>100</b>

On types of action taken by government agencies with regard to environmental pollution as indicated in table 5.7, 12% of the respondents observed that the concerned parties were arrested, 44% observed they were ordered to clean up the mess while 38% of the respondents observed that the concerned government agencies stopped the environmental pollution activities.

**Table 5.7: Type of Action taken by a government Agency on Pollution**

<b>Type of action taken</b>	<b>Frequency</b>	<b>Percentage</b>
Arrested the concerned parties	22	12%
Ordered them to clean up the mess	85	44%
Stopped the activity	73	38%
Other	12	6%
<b>Total</b>	<b>192</b>	<b>100</b>

The study findings also indicate that 46% of the respondents are of the view that corruption is the reason that makes government officials fail to act on some of the environmental pollutions in their area. 27% of the respondents noted lack of capacity in terms of the number of staff as the reason while 13% of the respondents observed that lack of transportation means is the reason why no action is taken on some of the environmental pollutions in their area as indicated in table 5.8

**Table 5.8: Reasons why Government officials don't take Action (s)**

<b>Reasons for not taking action (s)</b>	<b>Frequency</b>	<b>Percentage</b>
Corruption	155	46
Lack of capacity/few staff	95	27
Lack of transportation means	43	13
Other	47	14
<b>Total</b>	<b>340</b>	<b>100</b>

## **5.2 International Issues on Environment Regulations**

Environmental agreements provide international avenues for dealing with negative environmental impacts. Currently, there are over 7000 international agreements on environment at different levels namely regional, bilateral and at multilateral level. Increased environmental treaties means increased implementation challenges. Of importance is that many national administrations particularly in developing countries lack the necessary capacity to implement environmental policies, laws and other measures adopted to meet obligations under environmental agreements. There is, therefore, need to strengthen regulatory institutions to help them create the necessary legal framework and mechanisms for monitoring and enforcement of environmental standards and regulations in place (Jardine, 2009).

The Rio Declaration on Environment and Development of 1992 as well as Agenda 21 reiterated the importance of developing capacity in legal and institutional areas to facilitate sustainable development effectively. In the past two decades, developing economies have made progress in coming up with sustainable legal institutional frameworks for improving the management of their environment. A number of institutional and legislative development activities

have resulted in the establishment of environment ministries and executing arms as well as the enactment of current generation regulations in most countries. Consequently, nearly all developed countries have ministries and agencies empowered to implement environmental regulations while majority of the developing economies are still striving to establish and strengthen legal and institutional frameworks to implement environmental regulations (Lee, 1995).

Environmental standards and anti-pollution control legislations are the commonly used legislative mechanisms in pollution control even though a number of new techniques are available in the current state practices. These legislations are wide in scope and they address concerns related to water, air quality standards, disposal of solid waste, pollution in marine and management of toxic materials among others. In addition, these regulations define pollutants; ensure suitability and effectiveness of compliance and enforcement methods as well as establishing quality criteria and setting permissible limits (Rose, 2011).

Legislations on environmental resource conservation take into account a number of environmental management issues including conservation of water resources and management, laws relating to forestry, management of marine resources and land use as well as conservation of natural habitats and heritage conservation. Most countries with forest resources have made the management of forest and its resources a considerable priority. Most governments have established laws specific to environmental issues as well as introducing innovations to help in enforcing the laws more effectively. However, existing defects in legislations undermine their effective implementation, for example, many environmental

impact assessment reports fail to provide explicit and comprehensive solutions to negative environmental effects. This makes the administration of conflicting demands on environmental resources difficult to manage (Lawrence, 2003).

Environmental conservation efforts have always been disappointing despite increasingly government-imposed procedures and legislations on environmental conservation in most countries. Consequently, most governments are currently examining how they can attain their specific policy targets through better regulations in a more cost effective way. This is evident through the approach being adopted by the OECD in regulatory reforms which has turned from *deregulation* to *regulatory quality management* with the aim of improving the efficiency, flexibility, simplicity and effectiveness of individual regulations and non-regulatory instruments. Regulatory reform is now entering a third phase *the management of regulation* to improve the total impact of regulatory systems in achieving their social and economic goals (OECD, 2000).

### **5.3 International Conventions and their application in Kenya.**

Kenya has ratified a number of Multi-lateral Environmental Agreements (MEAs) that it ought to apply in the protection of the environment by ensuring that aspects of environmental considerations are incorporated into development policies, programs and projects to promote sustainable development without hurting the environment. Some of the major agreements include the Ramsar Convention (1990), Convention on Biological Diversity (1992), United Nations Framework on Convention of Climate Change (1992), Convention to Combat Desertification (1997), Convention on the Conservation of Migratory Species of Wild animals

(CMS) (1999) and the Kyoto protocol on climate change (2005) among others (NEMA strategic plan 2013-2018).

In 1990, Kenya became a signatory to Ramsar convention. The Kenya Wildlife Service (KWS) is the focal authority in administration of Ramsar Convention in Kenya. This Convention on wetlands embodies the commitments of its member countries. That member country ought to maintain the ecological characteristics of their wetlands through provision of a legal framework for national level action as well as for international partnership in the management and conservation of wetland ecosystems and related resources. The designated Ramsar sites which are five in number include Lake Naivasha designated on 10th April 1995 with an acreage of 30,000 ha; Lake Nakuru designated on 5th June 1990 with an acreage of 18, 800 ha; Lake Bogoria designated on 27th August 2001 with an acreage of 10,700 ha; Lake Baringo designated on 10th January 2002 with an acreage of 31, 469 ha and Lake Elementaita designated on 5th September 2005 with an acreage of 10, 880 ha. Other proposed sites for designation as Ramsar sites are Tana Delta, Yala swamp, Sio-Siteko and Saiwa swamp (Kenya wetlands forum, 2015).

Kenya signed the Convention on Biological Diversity in 1992. The convention provides that subject to national legislation, Parties respect, preserve, maintain and appropriately promote the practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and diversity. Kenya has enacted the Environmental Management and Coordination (conservation of biological diversity) regulations of 2006 which is anchored on Convention on Biological Diversity. This regulation together with the Kenya Wild Life Act is

central to the conservation of rich biodiversity in Kenya that encompass a range of living things and ecosystems (Nyangena, 2011)

Kenya is also a signatory to the United Nations Framework on Convention of Climate Change (UNFCCC) which was adopted at the United Nations Headquarters, New York on 9th May 1992. Its significant weakness is that it did not set binding Green House Gases (GHG) emission reduction targets, but instead ‘encouraged’ Parties to the Convention to take measures to reduce their GHG emissions according to their common but differentiated responsibilities and respective capabilities. In its commitment to this framework, Kenya has developed the National Climate Change Response Strategy (NCCRS) which is anchored on the UNFCCC and will complement two other similar treaties namely the United Nations Convention to Combat Desertification and the Convention on Biological Diversity. The primary focus of the NCCRS is to ensure that adaptation and mitigation measures are integrated in all government planning and development objectives (National Climate Change Response Strategy, 2010)

Desertification is considered a global concern and as such it cannot be handled by a single nation. The international community therefore saw the need to negotiate a convention that would help in combating desertification. Kenya ratified the United Nations Convention to Combat Desertification (CCD) in 1997 with an aim of being part of the international community in combating desertification. The main commitment made by the Parties to the convention was to establish National Action Programmes in their respective countries to serve as guiding frameworks in the adoption and implementation of the convention at national levels. In

fulfillment of this commitment, Kenya established its National Action Programme (NAP) through a consultative and participatory process involving all the stakeholders resulting to the production of this document in line with the principles of the CCD (National Environment secretariat, 2002)

Kenya has been implementing the Convention on the Conservation of Migratory Species of Wild animals (CMS) since it entered into force in May 1999. The CMS brings together the range states through which migratory animals pass providing the legal framework for internationally coordinated conservation measures, including protection of habitat and regulating trade (International fund for welfare, 2014).

As per the 2014 National report of parties on the implementation of the Convention on the conservation of migratory species of wild animals, the agency that is the focal point in its implementation is the KWS and has been primary responsible in the preparation of the implementation reports alongside other agencies namely the National Museums of Kenya, Kenya Marine and Fisheries Research Institute and the National Environment Management Authority (CMS National Report of parties 2014).

The Kyoto protocol on climate change is an international agreement that is linked to the United Nations Framework Convention on Climate Change. The protocol sets binding targets for 37 industrialized countries as well as the European Community for reducing greenhouse gas (GHG) emissions. These amounted to an average of five per cent against 1990 levels over the five-year period 2008-2012. The main difference between the Protocol and the Convention is that the

Convention encouraged industrialised countries to stabilize GHG emissions while the Protocol commits them to do so. Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.” The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. Kenya became a party in 2005 and as a developing country its emission were not curtailed since the level of its pollution was deemed to be low. As such Kenya’s participation in the field usually consist of compliance to the mechanisms that are party to the protocol. (Otieno, 2010)

Following the enactment of the 2010 constitution containing specific measures on the management of the environment, Kenya is seen to have made tremendous progress in terms of environmental conservation in the region. The provisions on the rights and principles governing the management of the environment in the 2010 constitution shows Kenya’s commitment to environmental conservation. The basic tool in the management of environment is usually the effective legal and institutional mechanisms in place. The environment requires proper conservation measures in place perhaps through putting effective legal and institutional framework in place to effectively guide the management of the environment and its resources. The environment supports life hence it needs adequate protection (Mwenda and Kibutu, 2012).

All the laws in Kenya on environment are found in the constitution, laws made by parliament, by laws passed by the County governments and other entities as well as international treaties and agreements, among others. Chapter one of the Kenyan Constitution on sovereignty of the people and supremacy of the Kenyan constitution 2010 for instance, provides for application of rules of International Law in Kenya. Chapter one gives the provision that, “Any law, including customary law that is inconsistent with this Constitution is void to the extent of the inconsistency, and any act or omission in contravention of this Constitution is invalid. The general rules of international law shall form part of the law of Kenya. Any treaty or convention ratified by Kenya shall form part of the law of Kenya under this Constitution.” (Kenya Constitution 2010 article 2, item 4, 5, 6).

In its commitment to environmental conservation as well as to meet the obligation of various ratified international environmental laws, the Government of Kenya has established institutional framework to implement Environmental Laws. The Environmental Management and Coordination Act, 1999 (EMCA, 1999) is the main legislative framework on environment in Kenya while the constitution is the supreme law of Kenya. EMCA, 1999 established National Environment Management Authority (NEMA) to exercise general supervision and coordination over all matters relating to the environment and to be the principle government instrument in the implementation of all policies relating to the environment. It is the agency charged with coordinating all environmental activities being undertaken by various government departments and bodies. The Authority is also

mandated to advise the government on various international conventions to which Kenya is a party, (Environmental Management and Coordination Act, 1999)

To date, Kenya has made commendable progress in the implementation of international conventions alongside its environmental regulations. For instance, Agenda 21, a global Environmental Action Plan and an outcome of the 1992 Earth Summit agreed on the guiding principles and a global plan of action for sustainable development. To this effect, the government of Kenya adopted this concept by establishing its first National Environment Action Plan in the year 1994 and has subsequently embraced the idea to date. The Environment Action Plan is usually participatory involving various stakeholders and it provides solutions to environmental concerns from different sectors in an integrated manner and their significance in development planning. However, limited budgetary provision to finance timely development and implementation of the action plan has been the main challenge (NEMA, 2011)

The Kenya Vision 2030 emphasizes the need to conserve the environment both as a basis on which development is anchored and as a test of the sustainability of its programmes and projects. The long-term development blueprint acknowledges that successes in achieving Kenya's economic growth and poverty reduction objectives are contingent on making sound decisions on how the environment is managed. Vision 2030 is very ambitious and aims to ensure increased access to clean water and sanitation, control of water pollution and solid waste among other environmental issues but the continued exploitation of Kenya's natural resources

is inevitable, especially following the launch of Vision 2030, which envisions an annual economic growth rate of 10 percent (GoK, 2007).

Climate change is not recognized in the Vision 2030 as a problem that could hamper the country's ambitious development goals the Vision articulates. However, NCCRS acts to rectify this omission by proposing climate change 'proof' solutions necessary for the attainment of Vision 2030 goals. To this end, the Strategy proposes 'climate smart' development. In addition, to mainstream climate change into sectoral and development priorities, there is need to re-examine Vision 2030 with a view to amending it to reflect the climate change problem. Other economic blueprint papers should also be aligned with the Strategy (National Climate Change Response Strategy, 2010)

The Kenya National Environment Policy 2013 provides a wide range of mechanisms and actions to respond to key environmental challenges and concerns. It aims at providing a framework for an integrated approach to planning and management of natural resources in the country in a sustainable manner. It identifies the various ecosystems which are vulnerable and suggests a number of policy intervention mechanisms to mainstream the management of environment through sound environmental conservation practices in all the society's sectors in the entire country as well as recommending strong governance measures and institutional mechanisms to support the attainment of the desired environmental goals and targets (National Environment Policy, 2013).

Kenya's environmental management at various levels is characterized by a range of sectoral strategies, instruments and tools. Therefore, to ensure that the existing

national and international commitments are implemented, effective implementation of the Environmental Management and Coordination Act among other sector specific Acts will be important. This will ensure that the importance of Kenya's environment is recognized and incorporated into the national and county level action plans (NEMA, 2011). Hence, in the next section, the study specifically looks at implementation of the Environmental Management and Coordination Act (EMCA) alongside sector specific Acts in Kakamega County with an aim of establishing the challenges that hamper effective implementation of environmental regulations in Kakamega County.

#### **5.4 A discussion of the findings on the challenges that hamper effective implementation of environmental regulations in Kakamega County**

Kakamega County experiences a number of environmental challenges that include land degradation, forest catchment destruction and uncontrolled sand harvesting. Other notable challenges are illegal logging, climate change, solid waste management, wetlands and rivers encroachment, quarrying and mining as well as unplanned settlements and industrial pollutions among others. Parliament of Kenya in 1999 passed the Environmental Management and Coordination Act with an overall objective of providing an appropriate legal framework for addressing environmental challenges as well as for meeting the requirements of sustainable natural resource use, (EMCA, 1999).

In addressing environmental challenges, the Environmental Management and Coordination Act is usually applied alongside the existing legislations governing different environment sectors. The sector specific legislations applied alongside EMCA are Wildlife Conservation and Management Act of 2013, Public Health

Act, Forest Act of 2005, Fisheries Act, Water Act of 2002, Agricultural Act and Physical Planning Act among others. The subsidiary regulations enacted so far to operationalize EMCA include Environmental Impact Assessment and Audit Regulations of 2003, Waste Management Regulations of 2006, Water Quality Regulations of 2006, Conservation of Biological Diversity Regulations of 2006, Ozone layer Control Regulations of 2006, Noise Pollution Control Regulations of 2009 and Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores, and Sea Shore Management) Regulations of 2009 as well as the Air Quality Control Regulations of 2014 (NEMA, 2014)

Despite recent efforts to harmonize sectoral approaches, environmental policy management remains largely incoherent. The diverse and complex environmental challenges that prevail call for a comprehensive national environmental policy. As the country strives to accelerate the pace of development in line with the Vision 2030 goals, environmental concerns have become more evident. This is further compounded by the difficulties of placing an economic value on natural resources. For instance, poor gold mining technology in Ikolomani has been highlighted as a key issue in environmental degradation in Kakamega County, (Wesonga O.I 2015)

Small artisanal mining activities in Kakamega County are located at Lirhembe, Emalinya, sigalagala, shivakala, Emalindi, Rosterman and kimingini among others. Gold occurring in veins is extracted by grinding the ore followed by amalgamation with mercury. Alluvial gold on the other hand is extracted by gravitational concentration followed by amalgamation (Makomera O.I 2015).

Mining in itself is an expensive and risky undertaking which requires capital, professionalism and environmental concerns (Makomera O.I 2015).

However, the current mining Act Cap 306, which governs mineral exploration and exploitation, is impracticable. It has no clear policies relating to land reclamation; this together with poor eviction, compensation, resettlement and general land policies concerning land poses a challenge in its implementation. There is lack of harmony in the laws for communicating between different stakeholders since the Act is silent on the role of communities in the management of resources. In addition the Act lacks provisions to cater for different scales of operations and clear timelines in licensing. The lack of clear legal framework has also resulted in many accidents especially to small scale operators (Marachi, O.I 2015).



**Plate 1.7:** a) An open cast gold mine in Malinya, Ikolomani. b) Prospector panning for gold in river Isiukhu  
**Source:** Researcher

The study findings established that majority of Kakamega County residents have ever reported environmental pollution related issues to the concerned department. For instance, residents of Rosterman estate in Kakamega have severally raised complain to NEMA regarding the decision by the former local authorities to dump garbage in the area. They wish to wake up one day and find the dumpsite relocated for it is making the place inhabitable. The county government had identified an alternative dumping site on the Kakamega-Mumias Road before the owner changed his mind over the idea. Although the Waste Management Regulations 2006 is designed to promote good waste management practices in Kakamega County and Kenya at large, waste management remains a challenge. Most urban areas in Kakamega County are coming up without master plans while others like Mumias town lack designated dumping sites. In Malava, illegal dumping is done in the forest due to lack of designated dumping site (Lukoye O.I 2015)

There have been notable reductions of water quantity and quality in Kakamega County due to encroachment of rivers. The rivers face severe threats due to uncontrolled sand harvesting particularly River Lusumu. This is attributed to inadequate enforcement of sand harvesting guidelines (Were O.I 2015). The National Sand Harvesting Guidelines, 2007 for instance, provides for a Technical Sand Harvesting Committee whereby each District Environment Committee (DEC) will appoint from among its members, a Technical Sand Harvesting Committee to advise and make recommendations to the DEC on sand harvesting activities in the District and that membership to the Technical Sand Harvesting

Committee (TSHC) will include at least 2 gazetted members of the DEC. In relation to Kakamega County there is no operational DEC at the moment to address the challenge of sand harvesting by supporting the implementation of sand harvesting guidelines (Ombima, O.I 2015).

The Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations of 2009 provides for the control of Noise and Excessive vibrations to permissible levels. As a result of devolution, these regulations were devolved to counties from NEMA. Consequently, County governments are currently handling the function of Noise pollution control although the regulation is still with NEMA hence posing a challenge in terms of enforcement. In Kakamega, enforcement of these regulations in some cases such as in funerals may be difficult based on customs (Achieng, O.I 2015).

The Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores, and Sea Shore Management) Regulations of 2009 provides for proper management of riparian lands. In Kakamega County wetlands for example Iyala wetlands near Lubao market and Iguhu wetland along the Kakamega Kisumu road are diminishing since the sizes of these wetlands and others that are to be protected in the County are unknown posing a great challenge in their management and conservation. Further, there is no action plan on the management of wetlands in Kakamega County (Mutoka O.I 2015).

The Agricultural sector in Kakamega County has been characterized by several negative impacts such as low farm productivity, increased soil infertility and reducing forest cover. This has been as a result of increased use of agrochemicals,

increased deforestation, reducing farm land sizes due to land sub division and urbanization, brick making kilns, encroachment of forests for farming, rapid population growth as well as practicing agricultural activities on sensitive ecological areas (Lijodi, O.I 2015). Agriculture Act, Chapter 318 has significant provisions on nature conservation. The Act provides for the conservation of the soil and its fertility. Rule 6 of the Act provides that any person who cultivates or destroys the soil, or cuts down any vegetation or departs any livestock on any land lying within 2 metres of a watercourse, or in the case of a watercourse more than 2 metres wide, within a distance equal to the width of that water course to a maximum of 30 metres shall be guilty of an offence. These provisions are comparable to the provisions which enable NEMA to take action for the conservation and management of catchment areas and hilltops and slopes. Consequently, principles of integrated management of the environment would require that these issues are dealt with together under one overall policy objective rather than separately. As it is these statutes are administered by different administering bodies and in a sector specific context. This leads to both duplication and lack of action, where action is needed (Omwenga, O.I 2015).

The Agriculture Act (Cap 318) further provides for compensation rates but there are no structures in Kakamega County to guide on compensation rate policies in terms of implementation. The land use plans are developed in most cases without involving the people who will later be the implementers. In addition, the set up on policy guidelines on land development at the County level is not prepared. On soil conservation, it is challenging to take action against people misusing land as a

resource since the chiefs Act that provided for soil conservation is no longer applicable. The Agricultural boards that were there are no longer operational, they have been replaced by directorates hence enforcing some provisions is difficult. There is need for a bill from the County to guarantee on enforcement in order to promote sustainable agriculture while taking care of the environment (Mayabi, O.I 2015).

Increased population in Kakamega County has led to increased pressure on forest resources. Unsustainable utilization of forest products as well as illegal charcoal burning and illegal cutting of trees has led to degradation of forests in Kakamega County. The Forest Act 2005 provides for the establishment, development and sustainable management and rational utilization of forest resources for the socio-economic development of the country. Kenya is committed to the inter-sectoral development and sustainable use of forestry resources as well as under international conventions and other agreements to promote the sustainable management, conservation and utilization of forests and biological diversity (NEMA, 2011). A claim by the Kakamega county government that all the forests were devolved is posing a challenge in the implementation of Forest. This claim has led to continuous friction between the county government and the Kenya Forest Service in terms of role jurisdiction. Politics also hampers effective implementation of the Act in Kakamega County because of the claim by politicians that some communities are favored during harvesting of forest products (Kuya, O.I 2015)

In adequate staffing and funding too poses a challenge in the implementation of Forest Act. There is also a conflict between wildlife Act and forest Act whereby the wildlife Act does not provide for removal of resources while the forest Act provides for the removal of forest products with a permit or license. In addition, the demand for Environmental Impact Assessment on most activities has become a baggage because money has to be used. Further, the impacts of poverty in Kakamega County has increased dependency on fuel and as such the department is trying to increase forest cover through extension services and through community forest associations (CFAs). There are also efforts to protect indigenous forests through declaring sites as nature reserves (Luseno, O.I 2015)

Contamination of water sources and food is a contributory factor to the high prevalence of diarrhoea cases in Kakamega County. Poor waste management in Kakamega County has had an impact on the aesthetic value of the environment. The waste is a breeding ground for disease causing pests. Possibility of leakages to water source may also contaminate underground water (Lumwaji O.I 2015). Public health Act Cap 242 provides for population, health and environment. Inadequate man power to implement the Act coupled with lack of adequate training among public health officers in the area of investigations poses a challenge in the implementation of the Act in Kakamega County. In addition, provisions in the Act relating to fines and penalties are very lenient in some cases. (Khamala, O.I 2015)

Unplanned settlements particularly in Kakamega town are impacting negatively on environment in Kakamega County. Areas zoned for *Jua kali* activities have

become settlement areas with a lot of infrastructural developments coming up. Most of these developments are illegal. There are no spaces for waste disposal sites in towns like Mumias and Malava. Kakamega town has a temporary waste disposal site at Rosterman estate even though the residents are against it due to its poor state (Marigi O.I 2015). Physical planning Act 1996, Chapter 286 provides for preparation of local physical development plans whose general purpose is to guide and coordinate development of infrastructural facilities and services of an area. Physical planning lays the framework for the regulation of infrastructure developments. The Act also gives guidelines on land use proposals and provides for erection of buildings, zonation for public utility as well as commercial purposes and transportation among other environmental sensitive activities. However, the Act has no provisions to address key issues highlighted in Kakamega County for instance there is no space for planning in the county and the Act does not have provisions to address this. The physical planning department also faces a challenge when it comes to planning beyond towns because of some kind of community resistance. However, people are being sensitized on the same. The Act is also a devolved function hence like other devolved sectors it faces a challenge of devolution (Obiero, O.I 2015).

The main fisheries activity in Kakamega County is aquaculture with earthen ponds as the major production systems. The fish species cultured are Tilapia and Cat fish. A mini processing plant is under construction at Lutonyi Fish farm in Kakamega County to support the marketing of the increased fish production. The Fisheries Act (Cap 378) provides for fisheries management and development

while ensuring the conservation of the environment. Currently some functions such as extension services, fish licensing, monitoring as well as control and zonation and enforcement are devolved functions of the county governments while policy issues are being handled by the national government posing a challenge in terms of policy implementation at the county levels. Implementation of programs for example large scale fish farming enterprises may require an Environmental Impact Assessment which requires some expenses.

The fisheries section has also not been identified for long and this is the reason why it has experienced movement from one ministry to the other. At the moment the section is in the Ministry of Livestock and fisheries. There is need to harmonize the development of fish farming in the County. Bills and laws should be formulated to align national policies to the County. In addition, functions at the National government and County level should be harmonized. The section hopes that parliament passes the Fisheries management and development bill 2012 to come up with the Kenya Fisheries Service to help address most of the challenges facing the department (Muraguli, O.I 2015).

The most prominent rivers in Kakamega County are Nzoia, Yala, Lusumu, Isiukhu and Luandeti. The right to use water is conferred by the government to the user by means of water permits issued by WRMA. In Kakamega County, Lake Victoria North Water Services Board manages water resource. The board ensures water supply in most parts of Kakamega County. The pressure on water resources management can be attributed to population growth and industrialization in Kakamega County. Consequently, increased demand for

competing uses and informal settlements lacking wastewater disposal facilities compromise water quality in the County (Mwema O.I 2015). The Water Act 2002 establishes the Water Resources Management Authority to manage water resources in the country. The Act provides that no person shall discharge any trade influent from any trade premises into the sewers of a water service provider without the consent of the provider. However, weak enforcement and conflicting legal framework contribute to water resources destruction in Kakamega County (Nguru O.I 2015).

Kenya wildlife Act 2013 mandates the Kenya Wildlife Service to conserve and manage wildlife. It provides for each County to have a committee. Currently, there is established wildlife management committee in Kakamega County, but there are no guidelines on the operations of the committee. Poverty and population explosion around wildlife areas poses a challenge in the management of wildlife in Kakamega County. The Act provides for compensation as a result of damage of crops, livestock or property and human death or injury but there are no guidelines for compensation. In addition, monkeys are found in most wildlife areas in Kakamega County and are very destructive but the Act does not provide for compensation as a result of damages caused by monkeys (Odwori, O.I 2015). The judiciary on the other hand is lenient on offenders. Wildlife cases are in most cases considered as petty crimes. The fact that parks are not fenced also poses a challenge too in controlling the movement of the animals (Walera, O.I 2015).

Institutional competition and power relations are also a major part of the everyday work life of government officials dealing with environmental conservation issues.

Although officials in line agencies and local government generally recognize the legitimacy of NEMA and their basic mandate as an environmental agency, it remains a deeply contested issue where the *boundaries* of “environment” actually are. For instance, NEMA in Kakamega County is considered a potential intruder into the territories of other agencies due to the overlapping nature of the EMCA and other more sector-specific laws. The water law in Kenya grants the right to issue water licenses to the Water Resources Management Authority, but this is in conflict with the rights provided to NEMA in the EMCA to issue similar licenses. There is also competition and conflict among various line agencies as a result of the *general* interconnectedness of environmental issues (Funder and Marani, 2013).

The changing needs and demands of the society for climate and weather services, compounded by intricacies of climate change and climate variability, necessitated the Kenya Meteorological Department (KMD) to devolve her services. As of today, KMD’s infrastructure in Kakamega County is composed of a meteorological station at Kakamega. This station makes communication of climate and weather information more effective to farmers. In collaboration with host institutions, automatic weather stations (AWSs) in the County are at KARI Kakamega, MMUST, Lugari and Mumias and at Kakamega Airstrip (Plate 1.8). This has ensured the establishment of a properly networked database on climate change impacts, response strategies and research activities helping in the domestication of UNFCCC in Kakamega (Omodia, O.I 2015).



**Plate 1.8:** *Kakamega Airstrip Automatic Weather Station,*  
**Source:** *KMD, Kakamega*

## **5.5 Conclusion**

It was the objective of this chapter to examine the challenges that hamper effective implementation of environmental regulations in Kakamega County. The study has demonstrated the challenges and they include issues such as conflict in the implementation of different provisions in the various legislations. The associated impacts of devolution whereby some functions are being handled by the National government while others are being handled by the County governments under the same regulation and lack of clear policies and structures to implement the Acts at the County level as well as under staffing among others.

The study concludes that these challenges hamper effective implementation of environmental regulations in Kakamega County and Kenya at large. The challenges have impacts on environmental conservation as they cannot adequately address the underlying environmental issues. However, Kakamega County is

embracing environmental conservation practices based on both International conventions and domestic regulations. In the next chapter we examine how access to information influences public participation in environmental conservation.

## **CHAPTER SIX**

### **ACCESS TO INFORMATION AND PUBLIC PARTICIPATION IN ENVIRONMENTAL CONSERVATION IN KAKAMEGA COUNTY**

#### **6.1 Introduction**

In Chapter Five, this study discussed the various challenges that hamper effective implementation of environmental regulations in Kakamega County. We noted that the challenges are diverse and vary depending on sector agency, even though some challenges are cross cutting. The researcher observed that although there are challenges in the implementation of the regulations, Kakamega County is embracing environmental conservation practices based on the various international conventions and domestic regulations.

The chapter examines access to information vis-à-vis citizen's participation in environmental conservation in Kakamega County. It provides presentation, analysis as well as interpretation of the collected data and a discussion of the findings on the study's objective three on how availability of accessible information influences members of the public's involvement in environmental conservation in Kakamega County. It examines how accessible environmental information influences community members' involvement in environmental conservation as shaped by the Rio Summit of 1992 and subsequent international conventions. The chapter observes that access to information may guarantee public participation in decision-making which is essential for local level development in general and in the management of natural resources, in particular.

The findings in table 6.1 indicate that 97% of the respondents need information on environmental issues in order to participate in environmental conservation while 3% of the respondents view information as not that important.

**Table 6.1: Need information to Participate in Environmental Conservation**

<b>Need information</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	338	97%
No	12	3%
<b>Total</b>	<b>350</b>	<b>100</b>

From the findings on table 6.2, the study indicates that majority of the respondents (40%, n=128) got environmental information by visiting relevant government departments; 17% of the respondents have access to library materials on environment, 10% get information from relevant departments' websites while 26% of the respondents get environmental information by attending and participating in trainings programs on environmental issues.

**Table 6.2: Where to get the Environmental Information**

<b>Source of Environmental Information</b>	<b>Frequency</b>	<b>Percentage</b>
Visiting relevant government departments	128	40%
Library materials on environment	54	17%
Website of relevant agencies/departments	30	10%
Training programs on environment	84	26%
Other	22	7%
<b>Total</b>	<b>318</b>	<b>100</b>

On challenges to access to environmental information, 81% of the respondents admitted to have challenges in accessing environmental information while 19% of

the respondents do not have challenges in accessing environmental information as indicated in table 6.3

**Table 6.3 Challenges in Accessing Environmental Information**

<b>Challenges in Environmental Information Access</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	264	81%
No	62	19%
<b>Total</b>	<b>326</b>	<b>100</b>

The study findings also indicate that 27% of the respondents view the amount of fees to be paid to access information as a challenge. 23% on the other hand observe that poor customer reception is the challenge in accessing environmental information while 21% do not know where to get environmental information. 25% of the respondents are of the view that the offices are quite far from them hence accessing environmental information becomes a challenge since they have to incur travelling expenses to reach the relevant offices. The results are given in table 6.4 below.

**Table 6.4: Type of Environmental Information Challenges**

<b>Type of Environmental Information Challenges</b>	<b>Frequency</b>	<b>Percentage</b>
Fees to be paid	70	27%
Poor customer reception	62	23%
Ignorance on availability of such information	56	21%
Offices are far	66	25%
Other	10	4%
<b>Total</b>	<b>264</b>	<b>100</b>

## **6.2 Access to Information and Public Participation in Environmental Conservation in Kenya**

As already discussed, Kenya has been active in matters sustainable development since the adoption of Agenda 21 in 1992 and so far much has been achieved in the country in terms of environmental conservation. Kenya continues to put in place interventions to tackle environmental challenges. The Rio Declaration of 1992 for instance observes that environmental concerns are best handled at the relevant level with involvement of all members of the public with concerns. At country level, it gives the provision that every citizen ought to have access to appropriate information on environmental issues held by public authorities. It places on states an obligation to facilitate and encourage public awareness as well as participation by making information available widely. Hence, effective access to justice in environmental concerns requires members of the public to have information that can bring actions before informed institutions.

Kariuki and Maigua (2014) observe that communities can be engaged meaningfully on issues touching on environment including exploitation of natural resources if they understand what the ideals should be in a society where there is environmental justice. Hence, the first step towards achieving environmental justice in Kenya must be to afford its citizens access to the relevant environmental information in forms that they would appreciate. This can be through newspapers, television, posters, release of reports and barazas among others.

Citizens will more often take part in the process of arriving at informed decisions on environmental activities being proposed if their right to public participation in sound decision making is observed. This can be, for example, through public

hearings where citizens are involved in government processes to enable them influence the decision-making process. However, this cannot be achieved where the citizenry do not have an understanding of the problem at hand as well as in situations where they do not have any information concerning the proposed environmental activity to be undertaken. Therefore, decisions arrived at with the involvement of citizens may have greater legitimacy as well as more chances of being implemented successfully (Community Guide to Environmental Management in Kenya, 2004).

Public participation in environmental and natural resource governance should not be cosmetic. It should be meaningful in order for the public to feel that their concerns are being addressed and consequently for them to have trust as well as support the decisions of the government relating to particular natural resources and environmental concerns. However, this cannot be achieved in a situation where the citizenry do not have an understanding of those problems and where they have any knowledge be it traditional or any other, there must be a harmonization of the same with the scientific knowledge. This can be achieved through educating the public on the available scientific knowledge in a comparative manner so as to make them appreciate the similarities or differences arising therein (Kariuki and Maigua, 2014).

Participation by members of the public in environmental conservation has in some cases been seen as just an administrative procedure to the effect that degradation of the environment in Sub-Saharan Africa has been mostly associated with lack of accessible information and public involvement. However, involvement of

members of the public in environmental conservation has been acknowledged at different levels each with its advantages and disadvantages. For instance, the Kenyan government appreciates the role of members of the public's participation in democratic governance and sustainable development. Article 69 (d) of the 2010 Kenya constitution provides that, "*[T]he State shall encourage public participation in the management, protection and conservation of the environment,*" demonstrates Kenya's commitment to public participation and reiterates the responsibility to ensure that public participation serves the purposes for which it is intended (Mwenda and Kibuti, 2012).

One of the important ways of encouraging and ensuring public participation in environmental concerns in Kenya is through the Environmental Impact Assessment (EIA) process. The EIA process essentially means an analysis of the likely environmental impacts of a proposed human activity on the environment. Its aim is to ascertain the possible proposed project effects and suggests mitigation measures to counter the negative effects if any. Once an EIA report has been prepared and published, citizens and lead agencies are required within 30 days to submit to NEMA their oral or written comments concerning the published project reports' details to enable NEMA to arrive at an informed decision whether to license or not to license the proposed project. This demonstrates the government of Kenya's commitment to meeting constitutional obligations of public participation in environmental conservation since the process enhances environmental democracy by guaranteeing public participation or involvement in

vetting projects that impact on the environment. However, majority of the lead agencies do not submit their written comments as required (NEMA, 2012).

NEMA has a duty to prepare guidelines, codes and manuals relating to environmental conservation and prevention of environmental degradation as well as preparing the state of the environment reports. These are possible ways through which information on environmental issues can be disseminated to members of the public. However, there is no requirement for publication or dissemination of the state of environmental report. The only condition is on the Minister of Environment to place the report before the National Assembly of Kenya as soon as possible upon its publication. The failure to provide for mandatory publication in the local dailies limits accessibility of the state of environment report to the members of the public (Muigua and Musyimi, 2014).

Majority of members of the public in Kenya continue to depend on natural resources for their sustenance and livelihood. This has resulted to a significant amount of indigenous knowledge that is further embedded in people's cultural, religious and social lives. The present constitution, in Article 69 (c) provides that, "The state shall protect and enhance intellectual property in and indigenous knowledge of, biodiversity and the genetic resources of the communities." This is seen to be safeguarding indigenous knowledge systems as well as acknowledging their role in the conservation of biological diversity. Article 69 (d) of the constitution of Kenya, also provides that, "The State shall encourage public participation in the management, protection and conservation of the environment." This shows that Kenya is committed to public participation as well

as reiterating Kenya's responsibility to ensuring that public participation serves its intended purpose (Constitution of Kenya, 2010).

Effective citizen involvement in environmental conservation programs have been associated with several benefits to the process of planning which include ideas and information on public concerns, support by members of the public on planning decisions as well as avoidance of conflicts and costly delays. Other benefits are a reservoir of good will which can carry over to future decisions as well as spirit of cooperation and trust between the agency and the public. Most of these are beneficial to the natural resource management debate and especially social acceptance of any plans on use or exploitation of these resources in a country. Lack of social acceptance of such management decisions may result in court battles and lack of in most members of the public with regard to natural resource governance in Kenya (Muigua and Musyimi, 2014).

The National Environment Policy (2012) encourages the use of modern technology to improve environmental conservation. Information gathered from environmental research improves the country's ability to make reliable decisions on environmental challenges for example climate change. The government will develop a national data and information management policy on environmental resources as well as include the use of traditional knowledge in planning and managing the environment and support creative development projects which use modern methods for managing the environment. Further, the Environment Policy recognizes environmental education as important in changing people's attitude from wasteful citizens to keepers of a clean and healthy environment. An

informed public is able to develop a strong sense of responsibility on environmental issues. As per the policy, the government will establish a National Strategy on Environmental Education and Public Awareness that will target communities through community associations, women groups, CBOs and NGOs. It will also develop a National Environmental Education Curriculum that will be used in all levels of learning namely primary, secondary and in colleges (Omollo, 2013).

Availability of reliable information is a precondition of the functioning of the foreseen licensing system in Kenya. For instance, licensing system in forest plantations creates the conditions for the markets to operate efficiently and ensures that the Government of Kenya gets the best possible sustainable returns from the commercial use of the plantations. It is also a fundamental enabling factor for the Community Forest Associations (CFAs) and local governments to effectively participate in forest management and conservation and to ensure equitable revenue or benefit sharing between KFS and other partners (Indufor et al, 2011).

The development and adaptation of a national Education for Sustainable Development (ESD) implementation strategy in April 2008 formed the basis of coordination, implementation and monitoring and resources mobilization for ESD activities. Networks have been established at local and international levels with other institutions. Partnership and networking has also been enhanced by the establishment of RCEs at regional levels. However, lack of regular forums inhibits regular and systematic exchange of experience and therefore poor

synergies. NEMA has also come up with the Green Points concept; these are centres that will provide space where demonstration of local innovations that may include green growth and adaptation to climate change will be showcased (Communication Strategy ESD, 2012).

### **6.3 A discussion on the study's findings on Access to Information and Public Participation in Environmental Conservation in Kakamega County.**

Environmental Information Education and Communication (EIEC) initiatives aim to promote and encourage understanding and motivates citizens' involvement in environmental conservation as well as in wise use of the natural resources. EIEC includes information exchange, participatory dialogue, education and social marketing. Various stakeholders may require different and unique information packaging. Environmental information may include any form of material on the state of environmental elements such as water, air and land as well as the state of human health and safety among others (Kakamega County State of the Environment Report, 2012).

In Kakamega County, involvement in the management of forests through community groups namely community forest associations (CFAs) is seen to be greatly enhancing people's attached value to forest ecosystems and the need to protect them. This in turn has resulted in people's desire to increase forest cover on their farms. Participation in community-based conservation groups enhances farmers' access to diversity, quality and quantity of tree species (Nyangena 2011). Further, Nyangena observes that education level of the household heads and their awareness of the Forest Act (2005) in Kakamega County favour development of farm forestry. This underscores the need to target household heads in

dissemination of information on importance of forests at household, local, national and global level (Nyangena, 2011).

The study findings established that some residents of Kakamega County get environmental information by attending and participating in training programs on environmental issues. Water users associations (WRUAs) are actively involved in environmental conservation initiatives in Kakamega County through training programs. They usually engage government departments and through these engagements they gather information relevant to their projects and make them available to community members through their environmental education, awareness and advocacy campaigns (Lutiali, O.I, 2015). For example, WRUAs promote legal water abstraction including efficient and proper water use. They also promote water development, management and sustainable water use. To achieve this, WRUAs in Kakamega County organize workshops and engaged representatives from relevant government departments to facilitate the workshops through capacity building the participants on the relevant tools and instruments used in general environmental conservations. The facilitators prepare presentation notes and make them available to the participants including brochures on various legislations, environment reports, briefs and other relevant materials (Egesa, O.I 2015).

In forest plantations, the Forest Act gives provision for CFAs to consent with collaborators through KFS to manage forests adjacent to them. These collaborators are usually equipped in plantation management as well as in nursery techniques. They usually engage government departments to get useful

information on a particular activity and in turn they make the information available to community members. With this information community members are able to participate actively in environmental conservation initiatives in the County. For instance, in February 2015, Sustainable Organic Farming and Development Initiative (SOFDI), a charitable organization collaborated with government officials from Kenya Forest Service, Kenya Forest Research Institute and National Environmental Management Authority as well as Kakamega county government and community members to participate in school greening initiative through a tree planting exercise at Eluwangale primary school in Kakamega County (Picture 1.9). Timely dissemination of information to community members by SOFDI encouraged members of the community to actively participate in the initiative (Orioki O.I 2015)



***Plate 1.9, Community member participate in Tree Planting exercise in Elwangale primary school in support of greening schools initiative supported by SOFDI***  
***Source: SOFDI Kakamega***

Kakamega County is also supporting access to information and public participation in environmental conservation through the Regional Centre of Expertise (RCE) being hosted at MMUST. The RCE Western Kenya Region covers Vihiga, Kakamega, Bungoma and Busia Counties. It has implemented a number of activities including advocacy and vision building among others. Several meetings have been held, the recent one being in March 2015. Several consultative meetings with stakeholders to build ownership and shared vision have also been held. However, there is lack of sustainable mechanisms to ensure

consultations are a continuous process. The RCE deals with indigenous knowledge, land degradation, flood risk mitigation and siltation among other environmental conservation issues. The RCE Western Region has been engaging educators on the sustainable development discourse and this has resulted in green initiatives in schools (Sifuna, O.I 2015).



**Picture (1.10):** Primary pupils and teachers participate in tree planting, a green initiative effort of RCE Western Region.

**Source:** Kakamega, MMUST RCE

The Convention of Access to Information, Public Participation in Decision making and Access to Justice in Environmental Matters (Aarhus Convention) of 1998 recognize the benefits of public participation in environmental decision making. In line with this convention, Nature Kenya an NGO with interest in environmental management has had a number of environmental interventions in its project operation area in Kakamega County. These interventions have enabled

community members to participate in environmental decision making. The NGO supports community participatory forest management in Kakamega County. It supports research, publication and dissemination of community participatory forest management publications. It also supports publication of relevant environmental policy documents such as the environment action plan and the state of environment reports. For instance, it supported the preparation of the first Kakamega County State of Environment Report 2012. The report was launched and thereafter distributed to various stakeholders including learning institutions, the Kenya National Library western region and Masinde Muliro University Library among others for the purpose of disseminating information for public use (Oluchiri, O.I 2015).

There have also been a number of interventions in other sectors apart from Nature Kenya that are being supported by development cooperation and have addressed environmental issues directly or indirectly. These include support to agriculture and water resources, provided by development partners such as World Bank. Agricultural Sector Support Development Program (ASSDP) is also being implemented in Kakamega County and it addresses environmental issues directly or indirectly (Achieng', O.I 2015).

World Bank is supporting a project on flood mitigation in Western Kenya that stretches up to Kakamega County. Most of the World Bank funded projects require the implementing sectors or agency to put environmental consideration measures in place during project implementation. Since the implementations of these projects usually take place at the community level they serve to indirectly

promote public participation in environmental conservation. For example, it is a requirement by the World Bank that flood mitigation projects being implemented in Western Kenya and Kakamega County in particular undergo screening to ascertain whether the projects will have adverse impact on the environment. If the results of the screening exercise shows that the project is likely to impact negatively on the environment, then the project must go through the environmental impact assessment process and an environmental impact assessment license issued by NEMA before the commencement of the project in question (Ambayi, O.I 2015).

The process of subjecting the project to environmental impact assessment requires public participation to provide information in support or against the project. Therefore, these sector specific interventions have to a greater or lesser extent incorporated environmental aspects, and have as such contributed to the pick-up of environmental concerns and management among sector agencies in Kakamega County (Ambayi, O.I 2015).

Kanyiri (2014) observes that Kenya Forest Working Group (KFWG) is a gathering of individuals and organizations (government and non-government, local, national and international) concerned with forests, their conservation and management. KFWG was formed in 1995 to provide a forum for exchanging and sharing information as well as experiences among members. Although it exists as a sub-committee of the East African Wild Life Society, it has done a commendable job by trying to bring on board various stakeholders in curbing climate change through forestry. This has been achieved through improving the

status of Kenya's forests and that of Kakamega County in particular (Kanyiri 2014)

Government officials in Kakamega County with a mandate over environmental conservation usually engage directly with the public either through enquiries and complaints raised or through planned events, forums and workshops. Enquiries and complaints reporting take place by people turning up to the concerned offices or when officers are on field duties such as inspections and site visits. The enquiries often vary according to the concerned line ministries, for example, enquiries on licenses to develop a facility or exploit natural resources, funding advice or complaints as a result of environmental pollution among others. Most of these information end up helping members of the public to participate in sound environmental practices or in promoting environmental justice (Otieno, O.I 2015).

The means of engagements involving planned events consisting mainly of inspections and environmental education activities may consist of sensitization efforts in communities where the government officials inform on particular laws, sustainable resource management and information on the departments activities. These events in some departments are typically arranged via CFAs and WRUAs which have increasingly been seen as the contact points between the concerned government departments, for instance KFS and the local communities in Kakamega County thereby increasing public participation in environmental conservation. Currently, the WRUAs and CFAs in Kakamega County are considered as grass roots level environmental conservation scouts in water resource and forest resource respectively (Isutsa, O.I, 2015).

In Kakamega, a number of sensitization materials have been produced and distributed to stakeholders and members of the public by relevant environmental line ministries for example periodic newsletters, reports, posters and brochures with an aim of disseminating information to the public to enhance their participation in environmental conservation initiatives. However, most of these materials produced are not county based. They are produced at the national level and therefore they do not reflect the true picture of Counties and Kakamega County in particular. The information captured for Kakamega County is usually limited. To suit the concerns of Kakamega County, the reports should be prepared at the county level so that all the concerns of the county are fully captured. For example, NEMA has its headquarters in Nairobi where most of the sensitization and public information materials are produced and thereafter distributed to field or county offices, the materials usually reflect the status of the Country and not a specific County status. NEMA Kakamega County field office has so far only produced the State of Environment Report 2012 as the main sensitization material; this is attributed to lack of financial allocation to produce sensitization materials at the County level. The rest of the important sensitization materials in custody of the office are distributed from the head office in Nairobi (Amakove, O.I 2015).

The state of environment report is a means of reporting on issues of environment as well as assessing the progress towards sustainable development. It provides scientific information that forms the basis for developing policies, the formulation of plans and initiation of process for the management of the environment. Agenda

21 spells out the need for regular reporting of the state of environment and member states have been implementing this requirement. In Kenya, this has been done through the enactment of the Environment Management and Coordination Act No. 8 of 1999, which made State of Environment reporting mandatory in section 9 subsection 2(p). In line with the devolved system of governments and in supporting the country in fulfilling its obligation as a signatory to Agenda 21, Kakamega County produced its first state of environment report in the year 2012 while the latest Kenya State of environment report is of 2011 (NEMA, 2012).

It is well-established that public participation in decision-making is essential for local level development in general as well as in the management of natural resources, in particular. The principle may be directed at empowerment of the civil society in decision making or empowering community members to seek enforcement of environmental protection through judicial or administrative procedures. Goulding (1990) found that, factors of information, education, organization, as well as mutual understanding between individuals and organizations as effective factors in public participation, particularly in environmental activities. Besides this, individual characteristics such as sex, maturity, idea development, one's familiarity with participation as well as being alert of the prevailing problems and information concerning the precedent pertinent activities are some other important factors of participation (Akabayashi, 2003).

#### **6.4 Conclusion**

It was the objective of this chapter to examine how access to information influences participation of members of the public in environmental conservation in Kakamega County. We have demonstrated that NGOs, CFAs and WRUAs are the grassroots avenues used by members of the public to participate in environmental conservation initiatives particularly in Kakamega County.

There is established an RCE Western region that is hosted in Kakamega County in which stakeholders engaged in consultations and meetings and one of the achievement the RCE has made is promoting green initiatives in schools and Masinde Muliro University main campus. We have demonstrated that lack of clear mechanism to fund the RCE is the challenge behind why it has not been able to produce sensitization materials for public access in Kakamega County.

We have also demonstrated that government officials engage directly with the public through enquiries and complain raised as well as planned events, forums and workshops. These are the main avenues for members of the public to access information concerning environmental issues in Kakamega County.

The study observes that access to information influences participation of members of the public in environmental conservation. The study has established that access to information may guarantee public participation in decision-making which is essential for local level development in general and in the conservation of natural resources, in particular.

The study observes further, that there are no enough sensitization materials such as published reports and brochures that are produced at the county level by the

concerned government departments for public access. Most of the materials available in the departments offices are for their library and are the ones prepared by the head office or the parent ministry and distributed to the counties and they contain limited information on counties since they reflect the National perspective. Lack of materials produced at the county level is attributed to lack of allocation in terms of funding to cater for the production of sensitization materials.

The study has also demonstrated that Kakamega County is embracing the implementation of Agenda 21 by having prepared the first Kakamega County State of Environment Report 2012. However, the state of environment reporting is supposed to be an annual event. In chapter seven, we summarize the main findings of this research work.

## **CHAPTER SEVEN**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **7.1 Introduction**

This chapter presents a summary of the study. Conclusions and recommendations suggested based on the study findings are given at the end of the chapter.

#### **7.2 Summary**

This study set out to investigate environmental conservation in Kakamega County in Kenya. The objectives of the study were to examine the impact of environmental conservation mechanisms in Kakamega County, to investigate the challenges that hamper effective implementation of environmental regulations in Kakamega County and to establish how access to information influences public participation in environmental conservation in Kakamega County with an aim of looking at how the Rio Summit of 1992 and subsequent international environmental regulations have contributed to Kakamega County's environmental conservation.

The literature reviewed in this study established that some studies had been done on environmental issues in Kakamega County. However, very little attempt has been made towards establishing the impact of environmental conservation mechanisms in Kakamega County based on the Rio Summit of 1992. Hence the need for this research work to fill the gap by demonstrating how the Rio Summit of 1992 and subsequent international environmental regulations have contributed to Kakamega County's environmental conservation practices.

The study is important as it provides an analysis of environmental conservation of a specific county rather than the general analysis of the entire Country by adopting local level investigations in the realm of area studies in addition to

contributing to the inadequate literature on environmental conservation in Kakamega County which has not been given much scholarly attention. Both primary sources as well as the secondary sources of data were applied in this study. The study employed questionnaires and oral interviews including observations to harness primary data while secondary data was obtained from the local libraries and on line sources.

In this study, Kakamega is considered as one of the counties in Kenya endowed with vast natural resources that provide both ecological goods and services to the national as well as the local economies. The subject of environmental conservation assumes even greater significance in such a large County with huge population that has through time and again depended on ecological goods and services for raising the capital for economic take off. The rivers for example, provide important sources of water for domestic, agriculture, wild life and also contribute to the hydrological cycle and maintain the atmospheric temperature and neutrality that is important to the life of many organisms. In such a county, unless a sense of environmental sustainability is embraced, its glory in terms of environmental conservation may be lost by the impacts of environmental degradation (NEMA, 2012).

In Chapter Four, the study examines the impact of environmental conservation mechanisms in Kakamega County based on the Rio Summit of 1992. The study has demonstrated that the Rio conference of 1992 outcomes shaped environmental conservation strategies in most countries including Kenya with its focus on harmony between economic development and environment. Agenda 21 for

instance, indicated that all sectors of society should be involved in a life-long learning process oriented towards sustainable development. This has well been domesticated in Kakamega County. The study has established that environmental awareness programs cut across all sectors of society in Kakamega County. This has enabled most residents of Kakamega County to actively participate in environmental conservation initiatives.

It has been demonstrated that Kakamega County has a high literacy level that offers an opportunity for uptake of environmental education interventions and implementation of environmental sustainability. There are a number of institutions and NGOs already undertaking environmental awareness and education in Kakamega County. In addition, the annual World Environment Day (WED) celebration provides an opportunity for educating members of the public on environmental conservation benefits while recognizing the progress made so far in the management of the environment by diverse stakeholders. The study has established that most residents in Kakamega County usually attend this important environment calendar function.

It has also been demonstrated that substantial progress has been made regarding Education for Sustainable Development (ESD) in Kakamega County. A number of capacity building and training initiatives have been realized through NGOs, CBOs and Community Forest Associations in the County. However, there is need to broaden the scope to include ESD materials development, planning, management and monitoring although MMUST is spearheading several innovations and research on ESD. Examples of the innovations include

development of e-content, pilot projects on greening schools and use of sisal waste to produce biogas and mushroom growing substrate particularly at MMUST.

It has also been demonstrated that MMUST is one of the Regional Centers of Expertise (RCE) in Kenya representing the larger Western region. It identifies sustainable development issues in a particular region and tries to solve them through promotion of information sharing, networking and partnerships among all stakeholders in Kakamega County. That MMUST focuses on knowledge and understanding of local environmental problems and promotes partnerships in finding solutions to common environmental problems through grassroots levels environmental projects.

Chapter Five explores the challenges that hamper effective implementation of environmental regulations in Kakamega County. The challenges as evaluated and demonstrated include issues such as conflict in the implementation of different provisions in the various legislations. The associated impacts of devolution whereby some functions are being handled by the National government while others are being handled by the County governments under the same regulation and lack of clear policies and structures to implement the Acts at the County level as well as under staffing among others. Kakamega County is embracing environmental conservation practices based on both International conventions and domestic regulations despite the associated challenges.

In Chapter Six, the study focuses on how access to information influences participation of members of the Public in environmental conservation in

Kakamega County. The study has demonstrated that NGOs, CFAs and WRUAs are the grassroots avenues used by members of the public to participate in environmental conservation initiatives particularly in Kakamega County. The study has also demonstrated that lack of clear mechanism to fund the RCE is the challenge behind why it has not been able to produce sensitization materials for public access in Kakamega County.

The study has demonstrated that government officials engage directly with the public through enquiries and complain raised as well as planned events, forums and workshops. These are the main avenues for the general public members to access information on environmental issues.

The study observes that access to information influences participation by members of the public in environmental conservation. The study has established that access to information may guarantee public participation in decision-making which is essential for local level development in general and in the management of natural resources, in particular.

The study observes further, that there are no enough sensitization materials such as published reports and brochures that are produced at the county level by the concerned government departments for public access. Most of the materials available in the departments offices are for their library and are the ones prepared by the head office or the parent ministry and distributed to the counties and they contain limited information on counties since they reflect the National perspective. Lack of materials produced at the county level is attributed to lack of allocation in terms of funding to cater for the production of sensitization

materials. The study has also demonstrated that Kakamega County is embracing the implementation of Agenda 21 by having prepared the first Kakamega County State of Environment Report 2012. However, the state of environment reporting is supposed to be an annual event.

### **7.3 Conclusions and Recommendations**

The study concludes that Agenda 21 has shaped and continues to shape environmental conservation mechanisms in Kakamega County. That environmental awareness programs cut across all sectors of society in Kakamega County. This has enabled most residents of Kakamega County to actively participate in environmental conservation initiatives. There are a number of institutions and NGOs already undertaking environmental awareness and education in Kakamega County. In addition, the annual World Environment Day (WED) celebration provides an opportunity for educating the public on the importance of the environment. These interventions have impacted positively in Kakamega County's environmental conservation.

Similarly, the study has identified the challenges that hamper effective implementation of environmental regulations in Kakamega. The study also concludes that access to information may guarantee public participation in decision-making which is essential for local level development in general and in the management of natural resources, in particular.

The study observes that it is essential to mobilize the necessary resources including financial resources at all levels by donors as well as the world bank family and the NGOs in order to complement the efforts of the National

government in supporting County governments. The same support should be extended to community groups to increase awareness of environmental rights and the benefits of sustainable environment.

Similarly, there are a number of environmental celebrations days cutting across the relevant departments with mandate to conserve the environment. These days are occasioned in several months in the year such that if well utilized, environmental awareness can be a continuous event throughout the year. The departments involved in environmental conservation should therefore team up and develop a more structured environmental education programme and jointly coordinate the programme through a committee to make valuable use of the calendar environmental celebration days. This, particularly in Kakamega, will enhance and broaden the environmental education and awareness programmes already being undertaken in the County by taking advantage of the high literacy level and the existence of an active learning community and population.

In pursuit of national as well as county development targets, the environment has become more vulnerable both to natural and human induced factors such as climate change resulting into negative impacts on the environments. The rivers, for instance, provide major water sources but are increasingly becoming polluted and the water becoming less and less portable. It is therefore important to constantly keep watch on such trends and raise alarm at the opportune time for the environmental changes to be stopped. State of environment reporting attempts to address this need through monitoring, assessment and reporting.

EMCA, the Act containing provisions to guide the state of environment reporting provides that NEMA shall prepare the state of environment report and present to the National Assembly for debate and adoption. Although, the state of environment reporting should be an annual event, the Act is silent on timelines for preparation of the report and it does not make it mandatory for NEMA to prepare the report since the Act only states that "NEMA shall prepare the state of environment report and present to the National Assembly...." hence NEMA is at will to prepare the report as long as it presents to the National Assembly, the Agency can as well decided not to prepare the report either.

This demonstrates why the Agency has been reluctant in the timely preparation of the State of environment report, the latest National state of environment report as this study observes is for the year 2011 and for Kakamega County is for the year 2012. Therefore, this study recommends that a policy should be formulated alongside the EMCA amendment Act, 2015 to make it mandatory for NEMA to prepare the state of environment report after every two years as provided in the EMCA amendment Act, 2015. The policy will ensure constant and timely monitoring of environmental changes. It will also guarantee the Authority's commitment and allocation of resources by the government towards preparation of the State of Environment report. This should be replicated to counties, Kakamega in particular.

Equally important to observe is that, this study revealed that EMCA and its subsidiary EIA regulations of 2003 provides for preparation of EIA reports for the proposed listed projects under the second schedule of EMCA, thereafter, the

reports are submitted to NEMA. It is a requirement that NEMA then circulates the reports to relevant lead agencies for review and comments concerning their sectors and communicates the review comments back to NEMA within 30 days. However, the lead agencies are at will to review and communicate back the review comments. Similarly, this study recommends for a policy to be put in place to make it mandatory for the lead agencies to communicate back their EIA review comments to NEMA. This will guarantee an informed decision when NEMA makes a decision on project licensing as well as promoting environmental stewardship in Kenya and Kakamega County in particular.

This study observed that in Kakamega there is no space for planning and location of disposal site and other land use activities and the physical planning Act does not give provisions to address this challenge. The Act is old and it does not conform to the current Kenya Constitution of 2010. This study gives a policy recommendation that the Act needs to be reviewed to conform to the constitution and to provide provisions to address the underlying issues of planning. The department should also consider making physical planning services available to rural areas as opposed to the current situation where the services are confined only in urban areas. Urbanization is real and is taking place in rural areas and soon they will grow into urban centres. More sensitization needs to be conducted in rural areas to empower the communities to embrace the idea.

The study also recommends that there is need to strengthen the Forest Act framework and review the existing ones to enhance access and benefits sharing process from forest resources particularly in Kakamega. This will enhance

partnerships with the community that would be of benefit for forest sustainability. Similarly, politicians should also engage themselves in enhancing partnerships in the conservation of forest instead of championing their political interest with regard to forest products. Indeed, they can be good champions of forest conservation at the local levels.

This study also established that some environmental regulations are conflicting hence there is need for harmonization of the conflicting regulations to guarantee adequate enforcement measures. This can be done through appointment of a committee(s) to streamline regulations thereby reducing duplication of processes and fees charged to the public. The study gives a policy recommendation for regular engagement forums of the lead agencies, communities and other relevant stakeholders to discuss environmental regulations and conservation issues. The government should also consider developing new funding plans for environmental agencies and departments that supplies them with adequate resources to fulfill their legislations mandates. This will serve to remove among the lead agencies the fee competition charged to the public.

Based on the findings and discussions with regard to mining Act, this study recommends that the government should consider a comprehensive policy that gives timelines in licensing and outlines the role of communities in conservation and management of mineral resources as well as providing for provisions to cater for different scales of operations. Above all, the policy should provide for a clear legal framework to counter the many accidents to small scale miners in Ikolomani, Kakamega County in particular.

To start with, the government should first consider fast tracking the passage of mining bill 2014. Hopefully, the bill if passed will try to address some of the underlying issues. Similarly, this study observed that NEMA has sand harvesting guidelines of 2007 that guides on sand harvesting. This study therefore, recommends that the sand harvesting guidelines can be used to formulate a policy on mineral harvesting. The department of mining should therefore engage NEMA and come up with a policy on mineral mining.

This study, further, established a challenge in the implementation of the Wild life Act 2013 although the Act is still new. The Act provides for compensation in respect to damage caused to human or livestock by wild life, it lists the kind of animals that when they cause damage to human or livestock, one qualifies for compensation, the animals listed included elephant, lion and leopard among others. The animals listed for compensation are not found in all counties for example monkeys are very common in Kakamega and are not specified in the compensation yet they are very distractive. This study recommends that a comprehensive policy to guide on compensation and compensation timeliness should be formulated at the county levels to avoid instances of biasness since the policy will reflect the likely losses to be expected based on wild life found in the specified county.

The government should support Counties to establish institutional mechanisms, among them international conventions coordinating committees to support replication of domestication of the international conventions and policies at the County level, particularly in Kakamega County. Currently, most of these

conventions are handled at the national level. No records to justify their implementations at the county level hence the need for coordinating committees.

The government should also consider facilitating formulation of policies, bills and laws to align national policies to county levels and harmonize functions of the National government and county levels to cushion against the associated challenges of devolution, specifically in Kakamega County.

This study observed that for effective public participation in environmental conservation in Kenya and Kakamega in particular, there is need to have access to correct information. It is therefore imperative to provide the public with information that will enable them to participate in environmental conservation initiatives at the grassroots levels as well as critic environmental conservation strategies in key sectors. These could also check corruption and promote accountability in government institutions. Lack of information makes it difficult for any member of the public to participate meaningfully in conservation activities and even to demand environmental justice. Therefore, this study recommends for a policy to enforce article 235 of the constitution by making all key environmental documents and monthly monitoring reports freely available to the public.

Public participation should not only be in the implementation of the policies but rather it should start from the formulation of the policy. This is because people on the ground are the ones who later implement the formulated policies. Similarly, field level government officials should equally be involved in the formulation of field or county level policies since their input may be very important because of

their experiences at the field and considering the fact that they are the key implementers of various regulations and policies.

Kakamega is domesticating Agenda 21 for instance it has been able to prepare the state of environment report of 2012 and it is currently preparing county environment action. It is also implementing the United Nations World Environment Day celebrations having held several WED celebrations including the celebrations of June 2015. Preparation of the county environment action plan incorporates the domestication of CBD since the environment action plan provides for a broad participation and coordination of all institutions involved in the conservation and management of biological diversity.

There is also a biodiversity section within KWS in Kakamega that is actively involved in the conservation and management of biological diversity. The Kenya Meteorological Department also provides useful climate change information that facilitates the domestication of UNFCCC in Kakamega. Therefore, the study contends that the Rio Summit of 1992 and the implementation of subsequent international environmental conventions in Kenya have contributed positively in shaping environmental conservation mechanism in Kakamega County.

This study suggests a research needs to be carried out on how well environmental policies and regulations can be formulated and implemented specifically in this era of devolution. Further, similar studies should be carried out to establish how well international environmental conventions can be implemented at the local level.

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Nelima Celestine, O.I 17/05/2015  
Nekesa Zelea, O.I 08/06/2015  
Ndung'u Felix, O.I 14/05/2015  
Ngetich Titus, O.I 14/05/2015  
Nguru Brian, O.I 30/04/2015  
Obiero Irine, O.I 02/05/2015  
Ochieng James, O.I 10/06/2015  
Odeke Paul, O.I 06/05/2015  
Odera Allan, O.I 02/06/2015  
Odero Jane, O.I 22/04/2015  
Odworu Anne, O.I 18/06/2015  
Ofula Jared, O.I 06/05/2015  
Oluchiri Stanley, O.I 17/06/2015  
Omale Isaac, O.I 06/06/2015  
Omondi Martin, O.I 02/06/2015  
Omodia Jane, O.I 25/05/2015  
Omusee Simon, O.I 14/05/2015  
Ombima Kennedy, O.I 17/06/2015  
Omwenga Benard, O.I 14/05/2015  
Ondiek Edwin, O.I 22/04/2015  
Opwolo Anthony, O.I 08/06/2015  
Oranga David, O.I 08/06/2015  
Osore Joseph, O.I 12/05/2015  
Osore Stephen, O.I 06/05/2015  
Osundwa Silas, O.I 22/04/2015  
Otieno Amos, O.I 12/05/2015  
Otieno Titus, O.I 10/06/2015  
Owino Irine, O.I 17/06/2015  
Oyiemba Washington, O.I 27/05/2015  
Sajita Kenneth, O.I 10/06/2015  
Sichangi Kenneth, O.I 08/06/2015  
Sifuna Elizabeth, O.I 17/06/2015  
Shitabai Elijah, O.I 27/05/2015  
Shayo Benjamin, O.I 22/04/2015  
Wafula James, O.I 17/06/2015  
Wafubwa Linet, O.I 17/06/2015  
Walera Titus, O.I 22/04/2015  
Walera Christine, O.I 18/06/2015  
Wamboi Jemima, O.I 15/06/2015  
Wanyonyi Barton, O.I 25/03/2015  
Wanyonyi Richard, O.I 20/05/2015  
Wanyonyi Zachary, O.I 20/05/2015  
Wawire Phanice, O.I 18/06/2015  
Wekesa Edwin, O.I 30/04/2015  
Wekesa Paul, O.I 22/04/2015  
Wekesa Judith, O.I 17/06/2015

Were Monica, O.I 27/05/2015  
Wesonga Fred, O.I 14/05/2015  
Yeswa Annette, O.I 14/05/2015

## APPENDICES

### Appendix i

#### A STUDENTS QUESTIONNAIRE

This questionnaire seeks to collect information about the state of Kenya's environmental conservation in Kakamega County, the information obtained will be treated confidential and shall not be used for any other purpose except for my studies. Kindly respond to each item objectively by ticking and/or giving a brief statement accordingly. Thank you.


#### SECTION A: RESPONDENTS' DEMOGRAPHICS

1. Please indicate your name (Optional) \_\_\_\_\_


2. Please indicate your sex?

Female ( )

Male ( )

3. Please indicate your age groups position by ticking  in the appropriate box

18-30 Years	
31 – 40 Years	
41 – 50 Years	
Over 51 Years	

3 Education Level. Please indicate by ticking  in the appropriate box


Primary School Level	
Secondary School Level	
College Certificate Level	
College diploma Level	
Undergraduate Level	
Masters Level	
Phd Level	
Others (Specify)	

#### SECTION B: IMPACT OF ENVIRONMENTAL CONSERVATION

##### MECHANISMS IN KAKAMEGA COUNTY

5. Are there organizations/institutions undertaking environmental education

programs in your community? Yes ( ) No ( )

6. If yes, how did you come to know about the organizations and the environmental education programs? Please Tick  appropriately in the space corresponding to the answer.

Read/heard about them through media/school program	
Participated in the programs	
Learned/explained to you by a friend	
A member of the organization	
Informed by government officials	
Other (Specify)	


7. Are you able to name some of these organizations? Yes ( ) No ( )
8. If yes, please Name them \_\_\_\_\_
9. What are some of the activities/roles of these organizations?  
\_\_\_\_\_
10. Have you ever attended any function/celebrations organized by government officials touching on environmental issues in your area? Yes ( ) No ( )

11. If yes, Which one(s)

World Environment Day Celebrations	
Tree Planting Function	
Clean up	
Other (Specify)	

**SECTIONC: EFFECTIVE IMPLEMENTATION OF ENVIRONMENTAL REGULATIONS**

12. Are you aware of NEMA as the main institution mandated to conserve the environment? Yes ( ) No ( )


13. If yes, how did you come to know about NEMA? Please Tick  appropriately in the space corresponding to the answer.

Heard/ Learnt about the organization through media	
Heard/ Learnt about the organization through friend	
Visited NEMA office	
Attended their function/celebration	
Complained to the organization	
Other (Specify)	

14. Are you aware of any other organization apart from NEMA that handle (s) environmental pollution issues in this area? Yes ( ) No ( )


15. If yes, please Name them \_\_\_\_\_

16. Have you taken any action with regard to pollution in your area? Yes ( ) No ( )

17. If yes, what type of action? Please Tick  appropriately in the space corresponding to the answer.


Reported to the concerned agency	
Reported to the police	
Cleaned up the mess	

18. Have there been any actions taken by an agency with regard to pollution in your area? Yes ( ) No ( )

19. If yes, what type of action? Please Tick  appropriately in the space corresponding to the answer.

Arrested the concerned party/parties	
Ordered them to clean up the mess	
Stopped the activity	
Other (specify)	

20. What do you think are some of the reasons that make government officials fail to take action on some of the pollutions in your area? Please Tick


 appropriately in the space corresponding to the answer.

Corruption	
Lack of Capacity(few staff)	

Lack of resources (transportation means)	
Other (specify)	


**SECTION D: PUBLIC ACCESS TO ENVIRONMENTAL INFORMATION**

21. Do you need information to participate in environmental conservation?  
 Yes ( ) No ( )

22. Where do you get environmental information? Please Tick  appropriately in the space corresponding to the answer.

Visiting relevant government agencies/departments	
Library materials on environment	
Website of concerned agencies	
Trainings on environmental programs	
Other (specify)	

23. Have you had any challenge in accessing environmental information? Yes  
 ( ) No ( )

24. If yes, what are the challenges? Please Tick  appropriately in the space corresponding to the answer.

Fees to be paid	
Poor customer reception	
Ignorance on availability of information	
Offices are far	
Other (specify)	

*Thank you for your participation*

**N/B:** This is a flexible questionnaire. It will be enriched in the field.

## Appendix ii

### A STUDENTS INTERVIEW SCHEDULE (Government officials)

*I am a student and I seek to assess the state of Kenya's environmental conservation in Kakamega as part of my research for completion of my studies. The exercise aims at collecting useful data that will offer a set of environmental policy recommendations, the information obtained will be treated confidential and shall not be used for any other purpose except for my studies. Kindly respond to each item objectively by ticking and/or giving a brief statement accordingly. Thank you.*

#### Section A: Respondent information (Government officials)

1. Name of the Institution or Department \_\_\_\_\_

Legislation (s) being implemented by the department/Institution:  
\_\_\_\_\_

2. **Personal details:** Gender M  F  Name (Optional) \_\_\_\_\_

Age 18-30 yrs  31-40 yrs  41-50yrs  above 61 yrs

Your position \_\_\_\_\_

3. Highest level of education attained/completed by respondent:

None  Primary  Secondary/High school  College/University

#### Section B: Environmental regulations awareness.

4. Are the local residents or stakeholders that you regulate fully aware of your department and the Act you implement? Yes  No  if yes, how did you achieve this?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If No, what may be the reason (s) behind the low awareness (e.g. lack of capacity building programs in you institution etc.)?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### Section C: Challenges that hamper effective implementation of

**environmental regulations** How many (number) permits/licenses etc have you issued/processed in the last 5 financial years (FY)- Estimate

FY 2009	FY 2010	FY 2011	FY 2012	FY 2013

How do you rate the level of compliance to the Act in the last 5 financial years? Low  High  what may be the reason (s) for low or high compliance level?

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5. Do you have enforcement and compliance tool (s) such as orders/permits etc.?  
Yes  No  if yes, please give them \_\_\_\_\_

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If No, how do you enforce the Act?

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6. Do you have adequate capacity in terms of (a) inspectors/prosecutors etc to deal with the law offenders? Yes  No  if yes how many inspectors/prosecutors etc do you have? \_\_\_\_\_ if No, how do you meet the objective of the Act by ensuring that the citizens comply to it? \_\_\_\_\_

(b) Do you have adequate capacity in terms of budget allocation? Yes  No   
If No, what may be the reason behind limited budget allocation?

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7. What are the powers bestowed to you as an institution by the Act?

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8. Have you ever arrested and presented the non-compliant with the Act to a court of law in the last 5 financial years? Yes  No  if yes, how many cases (estimate)?

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**Section D: How access to information influences public participation in environmental conservation**

9. In your view, what should be done to enhance your capacity in order to boost your service delivery?

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10. In your view, is there gap (s) in your Act (such as your Act conflicting with another departments Act)? Yes  No  if yes, what can be the solution to it?

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11. Suggest way (s) in which allocation of funds towards implementation of your Act can be done to avoid instances of government corruption or misuse of funds if any?

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12. In your opinion, what are the Key contributors to environmental degradation in Kakamega?

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13. Please give any suggestion/recommendation (s) you may have with regard to environmental legislations/Acts and institutions in general?

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Thank you

**N/B:** This is a flexible interview schedule. It will be enriched in the field.

### Appendix iii

#### Table for Determining Sample Size for Finite Population

To simplify the process of determining the sample size for a finite population, Krejcie & Morgan (1970), came up with a table using sample size formula for finite population. Table below: Required sample size, given a finite population, Where N=population size and n=Sample size required.

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384

*Note: N is Population Size; S is Sample Size* *Source: Krejcie & Morgan, 1970*

*Source: Krejcie and Morgan (1970:608) in Hill (1998)*

Krejcie and Morgan (1970) observe that using the above calculation, as the population increases the sample size increases at a diminishing rate and remains eventually constant at slightly more than 380 cases.