AN ENVIRONMENTAL HISTORY OF MACHAKOS COUNTY, KENYA, c.
1895-1999

LYDIA KANINI MUENDO (MA)

C82/38120/2017

A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR
THE AWARD OF DOCTOR OF PHILOSOPHY IN THE SCHOOL OF
HUMANITIES AND SOCIAL SCIENCES OF KENYATTA UNIVERSITY

APRIL 2022
DECLARATION AND APPROVAL

Declaration

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

Lydia Kanini Muendo

C82/38120/2017

Signature: ____________________

Date: ________________________

Approval

This thesis has been submitted for review with our approval as University Supervisors

Dr. Edwin Gimode

Department of History, Archaeology and Political Studies

Kenyatta University

Signature: ____________________

Date: ________________________

Dr. Pius Kakai Wanyonyi

Department of History, Archaeology and Political Studies

Kenyatta University

Signature: ____________________

Date: ________________________
ACKNOWLEDGEMENT

First of all, I thank the Almighty God for life, health and grace to undertake this PhD course.

I thank Kenyatta University for the opportunity to undertake my studies in the institution and for a partial tuition waiver which went a long way in enabling me complete this PhD course.

I am grateful to my supervisors, Dr. Edwin Gimode and Dr. Pius Kakai, who gave me academic guidance and counsel throughout the period of the study. This work would not have been possible without their sincere and firm academic input and direction.

I am indebted to my academic mentor, Prof. Reuben Matheka of Egerton University. Words are not enough to express my gratitude for his support and encouragement for the entire period of this study.

During the period of this research I requested and got assistance from numerous individuals. These included respondents, personnel from the Kenya National Archives in Nairobi and the County Commissioner’s office in Machakos, as well as the staff of the County Government of Machakos. I sincerely thank everyone for their assistance and contribution.

Tabitha Nduku has managed my household for several years now. She is the invisible hand, the support I could not do without, in the process of this study. May God immensely reward her for her sacrifice.

Special thanks go to my husband Calvince, who supported and encouraged me throughout the period and took care of our children during my long absences.
DEDICATION
To all who desire to know the past and to make it known
TABLE OF CONTENTS

DECLARATION AND APPROVAL................................................................. ii

ACKNOWLEDGEMENT............................................................................... iii

DEDICATION.............................................................................................. iv

TABLE OF CONTENTS................................................................................. v

LIST OF FIGURES....................................................................................... viii

LIST OF ABBREVIATIONS........................................................................... ix

OPERATIONAL DEFINITION OF TERMS..................................................... xi

GLOSSARY OF TERMS................................................................................ xiv

ABSTRACT..................................................................................................... xv

CHAPTER ONE ........................................................................................... 1

INTRODUCTION............................................................................................ 1

1.1 Background to the Study .................................................................... 1

1.2 Environmental History in Context ....................................................... 8

1.3 Statement of the Problem .................................................................... 13

1.4 Research Objectives............................................................................ 15

1.5 Research Questions.............................................................................. 15

1.6 Research Premises............................................................................... 16

1.7 Justification and Significance of the Study ......................................... 17

1.8 Scope of the Study............................................................................... 19

1.9 Limitations and Delimitations of the Study ......................................... 20

1.10 Literature Review............................................................................... 21

1.10.1 Background to Environmental History.......................................... 21

1.10.2 The Impact of Colonialism on the Environment.................................. 23

1.10.3 Independence and Environmental History...................................... 30

1.11 Theoretical Framework....................................................................... 37

1.12 Methodology....................................................................................... 41

1.12.1 Research Design............................................................................. 41

1.12.2 Area of Study ................................................................................ 41

1.12.3 Target Population and Sample....................................................... 42

1.12.4 Sampling Techniques and Sample Size ......................................... 44
1.12.5 Instruments of Data Collection ................................................................. 44
1.12.6 Data Collection Methods ........................................................................ 45
1.12.7 Methods of Data Analysis and Interpretation ........................................... 46
1.12.8 Ethical Considerations ............................................................................. 47

CHAPTER TWO ................................................................................................. 48

MOVEMENT, SETTLEMENT AND LAND USE BY THE AKAMBA OF
MACHAKOS COUNTY BEFORE c.1895 ............................................................ 48

2.1 Introduction .................................................................................................... 48
2.2 Machakos County’s Physical Environment .................................................. 48
2.3 Migration, Settlement and the Emergence of the Akamba Community ........... 54
2.4 Land Tenure Systems .................................................................................... 58
2.5 Socio-political Organisation of the Akamba .................................................. 62
2.6 Ecological Change and Human Response .................................................... 64
2.7 Summary ........................................................................................................ 68

CHAPTER THREE .............................................................................................. 70

COLONIAL LAND POLICY, LAND DEGRADATION AND AKAMBA
RESPONSE, 1895-1932 .......................................................................................... 70

3.1 Introduction .................................................................................................... 70
3.2 Establishment of Colonial Rule in Machakos County .................................... 70
3.3 Land Alienation in Machakos County ............................................................ 75
3.4 African Grievance and the Kenya Land Commission ..................................... 91
3.5 Summary ........................................................................................................ 95

CHAPTER FOUR ................................................................................................. 97

ENVIRONMENTAL DEGRADATION, CONSERVATION AND THE
DESTOCKING QUESTION, 1932-1945 ............................................................... 97

4.1 Introduction .................................................................................................... 97
4.2 Background of the Destocking Question: Myth and Reality ......................... 97
4.3 Forced Destocking and the Akamba Resistance ........................................... 104
4.4 Counter-Soil Erosion Measures in Machakos, 1938-1945 ............................. 117
4.5 Summary ........................................................................................................ 124

CHAPTER FIVE .................................................................................................. 125
LIST OF FIGURES

Figure 1: Location of Machakos County in Kenya..................................................43
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADC</td>
<td>African District Council</td>
</tr>
<tr>
<td>ALDEV</td>
<td>African Land Development Board</td>
</tr>
<tr>
<td>ASAL</td>
<td>Arid and Semi-Arid Lands</td>
</tr>
<tr>
<td>DC</td>
<td>District Commissioner</td>
</tr>
<tr>
<td>DDC</td>
<td>District Development Committee</td>
</tr>
<tr>
<td>DDT</td>
<td>Dichlorodiphenyltrichloroethane</td>
</tr>
<tr>
<td>DEC</td>
<td>District Executive Committee</td>
</tr>
<tr>
<td>DFRD</td>
<td>District Focus for Rural Development</td>
</tr>
<tr>
<td>DO</td>
<td>District Officer</td>
</tr>
<tr>
<td>DRA</td>
<td>Development and Reconstruction Authority</td>
</tr>
<tr>
<td>EAA</td>
<td>East African Association</td>
</tr>
<tr>
<td>IBEAC</td>
<td>Imperial British East Africa Company</td>
</tr>
<tr>
<td>ITCZ</td>
<td>Inter-Tropical Convergence Zone</td>
</tr>
<tr>
<td>KADU</td>
<td>Kenya African Democratic Union</td>
</tr>
<tr>
<td>KANU</td>
<td>Kenya African National Union</td>
</tr>
<tr>
<td>KAU</td>
<td>Kenya African Union</td>
</tr>
<tr>
<td>KCA</td>
<td>Kikuyu Central Association</td>
</tr>
<tr>
<td>KNA</td>
<td>Kenya National Archives</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MIDP</td>
<td>Machakos Integrated Development Programme</td>
</tr>
<tr>
<td>MSB</td>
<td>Machakos Settlement Board</td>
</tr>
<tr>
<td>NES</td>
<td>National Environmental Secretariat</td>
</tr>
<tr>
<td>PC</td>
<td>Provincial Commissioner</td>
</tr>
<tr>
<td>RDF</td>
<td>Rural Development Fund</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>SAPs</td>
<td>Structural Adjustment Programmes</td>
</tr>
<tr>
<td>UMA</td>
<td>Ukamba Members Association</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environmental Programme</td>
</tr>
</tbody>
</table>
OPERATIONAL DEFINITION OF TERMS

Ecology – This is the study of relationships between living organisms, including humans, and their physical environment. Ecology is an environmental science that seeks to bring out the vital connections between, plants, animals and human beings and the world around them.

Environment – in science, environment is the complex of physical, chemical, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival. These are air, water, and land in or on which people, animals, and plants live, which form part of the environment. A central underlying assumption is that the environment exists in connection to human beings. Hence the environment is the backdrop against which the interface of the unfolding narrative of human history, the habitats and resources that humans exploit, the hinterland that surrounds human settlement and the wilderness that humans have not yet domesticated or dominated play out. In its most literal sense, environment simply means surroundings (environs) hence the environment of an individual, object, element or system includes all of the other entities with which it is surrounded. However, in reality, individuals, objects, elements and systems rarely exist in isolation. Instead, they tend to interact to varying extents with their surrounding entities. Individuals, objects, elements and systems influence - and are in turn influenced by - their surroundings. The environment is the space or a field in which networks of relationships, interconnections and interactions between entities occur.

Environmental degradation – This is the erosion of the quality of natural environment caused, directly or indirectly, by human activities. It is a consequence of depletion of the earth’s natural resources. Degradation is compromised in the form of
global climate change, industrial pollution, and a decrease or even vanishing of species. Within political ecology the earth is rapidly moving into a less biologically diverse, less forested, much warmer, and probably wetter and stormier state. Environmental degradation is related to land degradation which refers to a temporary or permanent decline in the productive capacity of land. Poverty and social welfare are closely linked to environmental degradation.

**Nature** – This consists of the elements of the physical world, that is, animals, plants and the terrain, and other features and products of the earth, as opposed to human beings or human creations.

**Political Ecology** – is a research field within history and related disciplines that examines how and why economic structures and power relations drive environmental change in an increasingly interconnected world. A central premise of the field is that ecological change cannot be understood without consideration of the political and economic structures and institutions within which it is embedded. It critically interrogates the nature–society relations, particularly looking at the power relations that intersect and affect access to natural resources, in order to reveal disparities and injustices in the distribution of costs and benefits. In the beginning it was applied to the investigation of activities and effects of large-scale resource development projects in communities whose economy was subsistence in nature in the Global South. With time, political ecology expanded its study arc to embrace analyses of environmental politics and socio-ecological degradation in urban and industrialised regions as well. It attempts to understand the central relationships between environmental degradation and social marginalization, the causes of environmental conflicts over changing
patterns of access to and control of resources, and the fundamental connections between place, identity, and social movements.

**Reconditioning** – An attempt to restore the usefulness of degraded land through tree and grass planting as well as control of soil erosion. Mechanical reconditioning involved the use of tractors in dam and terrace construction as well as levelling of fields for grass planting.
GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ng’undu</td>
<td>cultivatable land where homesteads were established</td>
</tr>
<tr>
<td>Kyengo</td>
<td>privately used but not permanently owned land in the weu for grazing purposes</td>
</tr>
<tr>
<td>Ikithathi</td>
<td>first born son</td>
</tr>
<tr>
<td>Ilumaita</td>
<td>last born son</td>
</tr>
<tr>
<td>Mbai</td>
<td>clan</td>
</tr>
<tr>
<td>Musyi</td>
<td>home, homestead</td>
</tr>
<tr>
<td>Weu</td>
<td>open land devoid of human settlement or individual claim</td>
</tr>
<tr>
<td>Mwathani</td>
<td>prophet</td>
</tr>
<tr>
<td>Mundu mue</td>
<td>medicine man</td>
</tr>
<tr>
<td>Utui</td>
<td>village</td>
</tr>
<tr>
<td>Kivalo</td>
<td>settlement made up of several villages</td>
</tr>
<tr>
<td>Atumia</td>
<td>elders/council of elders</td>
</tr>
<tr>
<td>Asili</td>
<td>judges</td>
</tr>
<tr>
<td>Ngai</td>
<td>God</td>
</tr>
<tr>
<td>Mumbi</td>
<td>Creator</td>
</tr>
<tr>
<td>Kisuka</td>
<td>men’s club</td>
</tr>
<tr>
<td>Nthele</td>
<td>young married men</td>
</tr>
<tr>
<td>Kituto</td>
<td>village recreational ground</td>
</tr>
<tr>
<td>King’ole</td>
<td>a kivalo’s law enforcement</td>
</tr>
<tr>
<td>Ithembo</td>
<td>An altar, a place set aside for offerings and sacrifices</td>
</tr>
<tr>
<td>Muthiani</td>
<td>young men who acquired social status through wealth</td>
</tr>
<tr>
<td></td>
<td>accumulation though basically younger than the elders</td>
</tr>
<tr>
<td>Mwethya</td>
<td>self-help groups</td>
</tr>
<tr>
<td>Athiani</td>
<td></td>
</tr>
<tr>
<td>Ikundi</td>
<td></td>
</tr>
</tbody>
</table>
This study examines the intersection of environmental change, government policy and the response of indigenous populations in Machakos County from around 1895 to 1999. The concern of this study is that there is a dearth of knowledge in the field of environmental change, policy and people response in spite abundance of studies carried out on Machakos County. This is the gap that the study has sought to fill. The main objective of the study was to analyse the relationship between the people of Machakos County and their environment in relation to government policy in the period between 1895 and 1999, although environmental history rarely falls into neat and specific dates. The first objective evolved from the pre-colonial period in an attempt to lay a foundation for assessing the interplay of colonial policies and the response of the indigenes on the environmental history of Machakos County up to 1963. The period after independence, up to the eve of the new millennium, examines the post-independence politics, policies and environmental change as played out in Machakos County. Political ecology as a perspective guided the study to explain the relationship between the expansion of colonial capitalism and the over-exploitation of resources and disorganisation of pre-colonial socio-economic relations that led to the environmental problems experienced in Machakos as elsewhere in Africa. The study demonstrates that government intervention in the environment did not stop at independence. Rather the government was increasingly involved in the environmental history of Machakos County. Hence, political ecology was found suitable for examining the extent to which the environment was politically conceptualised and handled in both the colonial and independence eras. The study was limited to the area occupied by the Akamba and historically known as Machakos from the pre-colonial era, through colonialism, to the post-independence time. Over this long stretch of time, its name and extent has been severally changed at the dictation of the politics of the day. Presently, the area goes by the name of Machakos County. Data for the study was drawn from both primary and secondary sources. Primary sources included archival records at the Kenya National Archives and oral interviews. Secondary data was obtained from both published and unpublished works. Descriptive data analysis using qualitative methods of content analysis followed immediately after data collection. The data was categorised according to themes in relation to the objectives of the study which formed the ultimate chapters of the final thesis write up. The findings of the study should be useful to policy makers who shall formulate informed policy decisions in environmental conservation and management as well as land use. It should also be useful to the residents of Machakos County who will, based on historical research, make better decisions concerning natural resource utilisation and rural development. It will add to the historiography of environmental change and policy-making laying the ground for further research for the twin but dialectical processes of environmental degradation and conservation.
CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Human beings are, before anything else, biological entities. Their interactions with other species and with the natural environment, and their appropriation of natural resources without which life is impossible, must be central elements in human history (Beinart, 2009:219). Environmental history concerns itself with how human affairs and activities occurred and were influenced in one way or another by the natural environment of the areas in which they occurred. In turn, human beings have also influenced the environment with either positive or negative consequences. Therefore, the history of a particular people cannot be separated from the environment they have inhabited. Environmental history is “a kind of history that seeks understanding of human beings as they have lived, worked and thought in relationship to the rest of nature through the changes brought by time” (Hughes, 2006:3).

While some environmental studies discuss how humans have attempted to attain equilibrium with the environment, others limit themselves to the negative changes and effects of human activities. Others still trace the course of political decision-making in regard to the environment, and the struggles between environmental conservationists and the often powerful political opponents. Power to make environmental decisions is not equally distributed in any society (Worster, 1988:306). This argument gives rise to the perspective of political ecology. Political ecology borrows much from history and political economy as well as environmental history. Political ecologists are convinced that the environment is adequately political and that politics is the foundation of environmental control. There is therefore a need for a greater awareness of the interrelationship between social and political structures in the analysis of
environmental change. In addition, failure to perceive environmental adaptation in its historical perspective has tended to obscure the continuity of social struggles for survival in the face of changes in power arrangements (Kimambo, 1996:245).

The third theme of environmental history deals with environmental perception, that is, “the purely mental or intellectual, in which perceptions, ethics, laws, myths, and other structures of meaning become part of an individual’s or group’s dialogue with nature” (Worster, 1988:297). This intellectual theme studies “human thought about the natural environment and human attitudes toward it … and the ways in which systems of thought such as religions, philosophies, political ideologies, and popular culture have affected human treatment of various aspects of nature” (Hughes, 2006:5). Human world-views manifest themselves in both the individual and the collective. This social and intellectual history of various groups of people in different parts of the world gives a partial understanding of previous occurrences in the world such as wars and different modes of natural resource utilization (modes of production).

A myriad of subjects have been considered by African environmental historians. These include the impact of urbanisation and industrialisation, conservatism, agricultural production, population increase, over-exploitation of natural resources, global trends on policy making in environmental affairs among others. Many African histories, with the exception of a few, in the twentieth century however, tended to treat the natural environment merely as an inconsequential background upon which historical action developed. Environmental history was thus not a central subject of inquiry among these African historians. The environment was not regarded as a crucial phenomenon in the development of Africa’s history probably for the fear of environmental determinism. Historical processes are influenced by environmental
factors in the background. Economic survival and subsistence of communities will often immediately shape actions and events in history. In addition the drive for material benefits or particular forms of environmental perception as well as political eventualities plays a part in shaping historical events (Beinart & Hughes, 2007:11).

There is need to look at rural communities or the history of African communities in the colonial period and beyond, not as inert masses that were merely the objects of capitalist transformation but as dynamic for they were always attempting to control environmental forces and adapt to changes in structures of political power. Colonial administrators and settlers found themselves in sharp debates over the environment with the indigenous peoples of Africa. With this in mind, the environmental historian proceeds to look at the interrelationship between the coloniser and the colonised that can easily invert colonial stereotypes that celebrated European ecological knowledge and considered Africans as lacking in environmental understanding (Beinart, 2009:220).

Crosby’s work Ecological Imperialism: The Biological Expansion of Europe, 900-1900 (1972) placed the environmental impact of European expansion at the centre of world history. This became a stepping stone to explain the environmental history of most of the regions that came under colonial domination in the twentieth century. This new form of environmental history provided the stimulus to African historians because it shared most of their moral concerns and viewpoints. In the roughly seventy years since African countries begun to shake off colonial control, major advances were made in revealing the African past and a vast volume of literature produced. Several attempts have also been made to unravel Africa’s environmental past.
Constant interaction between human communities in Africa and their physical environment existed from the inception of human existence in the continent. This interaction was between given sizes of population and the socio-economic activities which these people have pursued on the one hand, and the resources of the environment available to them on the other. This interaction has been highly dynamic and it has varied from region to region. This is not only because natural environmental resources vary but because the activities of the people are themselves influenced by history (wider historical events and occurrences) and by their cultural outlook. Africans did not necessarily engage in activities that resulted in the land degradation. Rather environmental histories are called to objectivity in the analysis of the relationship between man and his environment in Africa. Some scholars like Zeleza (1993) and Ogot (1979) attempted to show the crucial position of the environment in Africa’s history. These pioneer African nationalist historians agreed that the environment is not the determinant of human activity but rather that it affects human behaviour insofar as the environment provides resource alternatives depending on the technologies and cultures of the social groups of historical inquiry.

African communities in the pre-colonial period developed land use systems that integrated environmental conservation strategies. Farming communities practiced shifting cultivation which allowed resource regeneration and communal control of resources including forests and special (cultural, religious, medicinal) plant species. Due to the abundance of land in their areas, Kikuyu farmers for example, ensured the sustainability of their resource base through a complex of measures. These included a relatively lengthy fallow period of between five and seven years, crop rotations (kugarurira irio) and intercropping (kibococo), as well as the erection of miconjo (lines of vegetable refuse at right angles to the slope) to limit land wash as well as
improve soil fertility (Mackenzie, 2000:706). Among the pastoralists, communal grazing systems such as transhumance, designed to conserve land resources in which livestock and wildlife coexisted were practiced. These indigenous and traditional land conservation practices were passed from generation to generation. This was the case for the Machakos Akamba who practiced shifting cultivation and transhumance pastoralism ensuring equilibrium in resource utilisation and environmental sustainability.

The nationalist historiography of the 1960s challenged colonial historiography majorly for its lack of objectivity. Nationalist historiography made a case for the existence of African history in its own right. However, insufficient attention to environmental issues prevented nationalist historiography from appreciating the complexity of local ecological knowledge before and during colonial rule. This hindered an objective attempt to show that Africans had local systems of environmental knowledge and that there were changes initiated by Africans themselves in the areas they inhabited (Kimambo, 1996:247). Nationalist historiography waned towards the end of the 1960s. Most nationalist historians were disillusioned since the anticipated fast development towards greater political freedom and economic emancipation in the new African nations did not take place.

Historical research and writing in the 1970s was informed by the underdevelopment theory as scholars begun to question the absence of speedy development in the African continent after the ouster of foreign domination1. Throughout the 1970s

---

research concentrated on the economic system brought by colonialism thus a focus on political economy of colonialism and post-colonialism. Historians concentrated on the colonial period in order to show the impact of capitalism under imperialism. The aim of underdevelopment scholars was to prove that as a periphery of the capitalist system, African colonial economies were underdeveloped through systematic extraction of capital to the European centres. The historiography of the 1970s however, just like the nationalist one, did not pay sufficient attention to environmental issues and thus could not explain local initiative in ecological matters.

Questions began to be raised in relation to African development and the environment in the 1980s. The chief concern was the sustainability of African environments in the face of externally imposed developmental agendas especially in the rural areas. This coincided with the broadening of the scope of history as discipline to include branches of study such as environmental and gender history (Anderson, 2002:12). Doubts were raised about African environment in relation to development strategies that impoverished the poor peasant and enriched the capitalist system though this not being the motive of the strategies. For example, inputs such as credit extension, marketing and infrastructure were poorly distributed in Africa and in accordance to or in agreement with colonial patterns favouring the so-called ‘high-potential areas’. These patterns were perpetuated by the independent governments. In addition, large-scale hydro-power projects resulted in the loss of agricultural land and human settlements (Richards, 1975: x). Although Africa is not yet a net contributor to the build-up of carbon dioxide in the atmosphere, this continent cannot escape the worldwide negative consequences of this phenomenon. Clearing forests for

---

agriculture and logging robs the world of an important sink of greenhouse gases. In Kenya, the wood energy policy stresses the need to ensure adequate supplies of wood energy through sustainable yields, while protecting the environment (Scherr & Yadav, 1996:29).

During the 1990s, the importance of the environment in history began to occupy studies of the African society with theories of underdevelopment and dependency underlying their studies. The dominant academic discourses of environmental degradation and decline as well as the idea of Africa’s incapacity to manage its own environment began to be questioned in a critical way. With the establishment of colonial rule, populations were moved to infertile and fragile ecological zones resulting in collapse of pre-colonial ecosystems and the emergence of a cycle of poverty due to environmental degradation. Fertile soils and healthy ecological zones were reserved for Europeans. In the various historical epochs, the struggle over Africa’s natural resources necessitated a narrative of degradation to blame the people for mismanagement or see rural people as passive victims. The narrative was discernible through a conflict set up between the international forces of conservation and those local and international interests that were pushing for the exploitation of natural resources as an engine for development (McCann, 1999:6). As such, due to the impact of colonialism on human societies and their environment, African scholars began to engage with the subject of conservation and environmental degradation towards the end of the twentieth century.

Due to constant conflict between the Africans and the colonial administration over natural resources and land use, the Machakos region has been analysed with subjects such as land utilisation, famine and destocking receiving considerable attention.
Machakos was an area whose environmental problems kept the colonial administration occupied as they tried to mitigate environmental degradation. Destocking and reconditioning activities (terracing, tree planting, grass planting and better farming practices) were all seen as ways of reversing land degradation in the County in the colonial period. These reconditioning activities were often severely resisted by the residents of Machakos region. As such, it is important is to investigate colonial environmental policy in the region and how Africans responded to it. Further, the interaction between the policy (what constrained colonial policy) and Africans (what motivated African response) will be sought so as to find out if colonial policy was successful in mitigating environmental degradation.

The onset of colonialism brought with it great changes in the livelihoods of the Akamba but also in the ways in which they interacted with their environment. These changes forced the Akamba to look for alternative means of ensuring that they get returns from their land in ways that were in line with the capitalist colonial policies. This is because environmental historians agree that the environmental problems facing Africa are not as a result of misguided policy or land mismanagement but rather are “a manifestation of broader political and economic forces” (Bryant & Bailey, 1997:3). Those forces are associated with the worldwide spread of capitalism since the nineteenth century. The work of political ecologists has been an attempt to describe the spatial and temporal impact of capitalism on Third World peoples and environments (Bryant & Bailey, 1997:4).

1.2 Environmental History in Context

The idea of environmental history first appeared in the 1960s, as conferences on global warming were taking place and environmentalist movements were gaining
speed in several countries. Environmental history was born out of concerns about environmental degradation and sustainable development. Over time it developed into a scholarly venture that had neither any plain, nor any sole, ethical or political schema to advance. Its principle objective became one of “widening our perception of how human beings have been impacted by their natural surroundings over time and on the other hand, how they have impacted that environment and with what outcomes” (Worster, 1988:14).

The subject of nature, however, has occupied scholars since classical times with historians such as Herodotus and Thucydides considering environmental circumstances and how man’s activities related negatively to the environment. However, the environment was not always a serious consideration by historians until the Annales School founded in 1929 by two scholars at the University of Strasbourg in France: Lucien Febvre and Marc Bloch. In his book, Geographical Introduction to History, Febvre argued that historians needed to consider environment and geography in their works. Indeed, both scholars were interested in the environmental basis of society.

One of the objectives of Annales scholars was to broaden the scope of history so that historians did not dwell on political and military affairs which were not inclusive of all actors in the entire historical process. They acknowledged the importance of other categories of historical analysis and study such as culture, social institutions and economic activities as forming the larger picture in the history of societies. They emphasized the importance of geographical settings of human societies and their writings greatly influenced historians and geographers. Fernand Braudel, a student of Marc Bloch, made the environment a prominent part of his authorship. For Braudel,
the environment was “the shape of the land as an almost timeless element shaping human life over the long duration” (Hughes, 2006:5). According to him, there was more to history than the actions of great men (heroes in history), and that the environment was vital in the recurrence of human activity. Moreover, Braudel’s argument was that world-economies and world-ecologies are dialectically connected varying in dynamics and scales at different times thus offering an understanding of environmental history in relation to land, labour and the world system (Moore, 2003:439). As such he gave a basic understanding of the relationship between the environment and politics.

Such in-depth ideas led to the birth of environmental history. It was in the United States that environmental history became organised as a branch of history. It was there that the conservation movement began and by the 1970s, historians were analysing subjects such as pollution, environmental degradation and environmental legislation. Much of the work within environmental history however, tended to focus on environmental problems that posed a challenge to humanity, or which required a sort of intervention to ensure social well-being such as management, recovery or restoration (Endfield, 2009:224).

Environmental historians differ in their individual interests and approaches, and in their beliefs and theories, in regard both to historical methods and subjects as well as approaches to the environment. There are three broad themes of environmental history. First are environmental changes caused by human beings and how these changes affect human societies, second, how the environment influences human history and third, environmental perception and how such perception guides human
interaction with the environment. Many studies of environmental history emphasize one or two of these themes (Sorlin & Warde, 2007:112).

The influence of the environment on human history deals with those changes that are considered to be of non-human causation such as volcanic activity, climate and weather or even variations in sea level. For the historian, background data on these non-human factors can only be obtained from scientists or geographers. As historians discuss the impact of these natural occurrences on human societies, they are regarded as environmental historians. In the process of interpreting the impact of natural phenomena on human affairs, historians need to be aware of environmental determinism which purports nearly exclusive dictation of the environment on human activities in the past. It is trying to explain human cultures or the development and disintegration of states or empires, or war, or even food scarcities, due to immediate environmental influences. Environmental determinism carries the belief that the physical or natural environment by itself shapes humans, their thoughts and their actions. However, human-ecological change is dialectical, that is, environments shape human action and human action in turn shapes the environment (Leibhardt, 1988:30).

The environment is one of many factors that condition human behaviour in the aggregate, but offer too blunt an instrument to cite as direct causation. Actions of the environment are important since they offer the contour and context for historical events and movements. They are, therefore an important component of the conditions that undergird economic change and the emergence and advancement of social institutions (McCann, 1999:3). Thus the valid value of linking the environment to historical processes lies in a fainter but finely separate view sets the background from the general social life of a community. Nature as a concept and as a set of processes is
at work in all aspects of people’s socio-economic and political activity (Sorlin & Warde, 2007:115). The environment therefore is a shifting state that demands a continuous adaptation of economic and political systems and structures.

Studies that focus on technological adaptation through time, or the dynamics of human resilience to and the ability to cope with environmental transformations are vital (Endfield, 2009:225). Consequently, the dominant theme of environmental history is the evaluation of the reciprocal nature of the changes caused by human activities on the environment and how the environment responds to these changes with a positive or negative impact on human societies. This is a theme that seeks to merge the socio-economic realm as it interacts with the environment (Worster, 1988:290). The activities that ensure sustenance of a people provide an open way into the understanding of social and environmental relations (Forsyth, 2003:110). The concern then is “tools and work, the social relations that grow out of that work and the various modes people have devised of producing goods from natural resources” (Worster, 1988:297). Some human activities include those that are for basic sustenance such as herding, hunting and gathering, and farming.

Yet others provide for the increasingly complex nature of human settlements and the need to sustain these both in the villages and the urban centres. This gives considerations for industrialisation, technology and warfare. These activities can lead to the environment to be more accommodative to human activity while others can cause change that is destructive such as pollution, soil erosion and reduction of biodiversity and even extinction of plant and animal species. These damaging changes thus make the environment less suitable for sustained human use. As long as human societies continue to act in their environments however, there will be no time when
the process of adaptation can cease. The fact is that adaptation and control of the environment are the concerns of all human communities (Kimambo, 1996:243).

1.3 Statement of the Problem

Interest in the history of ecological change in Africa has been provoked by a concern to comprehend authentic and salient problems of environmental degradation, drought and food shortage in the continent. There has been a necessity to rectify colonial historiography thus looking critically at the past to understand what actually happened versus the colonial narrative. Studies have been driven by the need to understand the impact of colonialism on African environments and how this affected rural development over time (such as McCann, 1999; Kjekshus, 1977; Matheka, 1992 Anderson, 2002). History addresses these fundamental subjects. Historians, along with others in the humanities and social sciences, who have adopted a historical perspective, have offered descriptions of and explanations for the process of environmental change. These studies go further to contribute to the process of development planning and policy-making by suggesting prescriptions for the solution to Africa’s environmental and developmental problems on the basis of historical evidence. For development planners, the historical dimension has been accepted as an essential component in research and planning. Thus, an understanding of ecological change is of great importance to the historian of East Africa and Machakos County in particular (Anderson, 2002:6).

---

Though many works on agrarian challenges in Machakos County abound, these works are not based on a wholesome conceptualisation of the environmental history of the County. They are investigated as sub-themes and not as main themes of research works. Historical writing cannot be objective without a consideration of the natural environment within which these occurrences took place. There is therefore, a gap in knowledge continuity of the environmental history of Machakos County. This study therefore examined the process of interaction between the physical world of plants, soil, climatic conditions, weather patterns and animals with human action and response within a changing political framework from about 1895 to 1999. The study as such gives continuity to the political ecology of Machakos region.

Conservation policies and actions are better informed by historical research rather than speculation. Although environmental histories do not fall neatly within specific time frames, there is need for a systematic analysis of environmental history since the inception of colonial rule to establish whether the problems of Machakos region were due to colonialism and if so, what measures have been undertaken after independence to reverse the negative impact. Subsequently, a brief overview of the pre-colonial conditions was presented. The objective was therefore an attempt to incorporate a pre-colonial past along with the full range of the County’s engagement with colonialism, the world industrial economy, and the global economic changes of the twentieth century. Hence, the agrarian problems of Machakos County can only be understood through a critical study of the relationship between people, politics and nature in the County over time. The study endeavoured to examine to what extent the legacy colonial capitalism impacted on the environmental history of the Machakos region.
1.4 Research Objectives

The general objective of this study was to examine the intersection of environmental change, government policy and the response of indigenous populations in Machakos County from around 1895 to 1999.

The study was guided by the following specific objectives:

i. To provide a synopsis of the physical environment of Machakos County, the settlement of the Akamba and pre-colonial land-use patterns in the period before 1895.

ii. To establish the relationship between colonial land policy, land degradation and the response of the Akamba from 1895 to 1932.

iii. To examine the interface between the process of degradation and the initiative of conservation during the destocking era and the Second World War in Machakos County between 1932 and 1945.

iv. To assess the impact of colonial environmental policy on the Kamba land and people in the period of the Mau Mau War and nationalism towards independence between 1945 and 1963.

v. To establish the influence of post-colonial politics on the processes of environmental degradation and conservation in Machakos County between 1963 and 1999.

1.5 Research Questions

This study sought to answer the following questions:

i. How did the physical environment of Machakos County determine the Akamba patterns of settlement and land-use in the pre-colonial period?
ii. In what ways did the establishment of colonial rule lead to land degradation with what Akamba responses in Machakos County c. 1895 to 1932?

iii. In what ways did the processes of land alienation, land degradation and environmental conservation play out in the destocking campaign by the colonial government in the period between 1932 and 1945?

iv. In what ways did the colonial environmental policy in the face of the Mau Mau and heightened call for independence impact the physical and the social endowments in the post-Second World War period up to 1963?

v. How did politics in the post-colonial state in Kenya influence trends in the processes of degradation and conservation in Machakos County up to 1999?

1.6 Research Premises

The current study was based on the following premises:

i. The Akamba had developed appropriate socio-economic patterns that ensured sustainable land use in the period prior to 1895.

ii. Colonial policy disrupted and disorganised the Machakos ecosystem leading to environmental instability between 1895 and 1932.

iii. The destocking era was one of conflict between the theme of degradation on the one hand and conservation on the other between 1932 and 1945.

iv. Colonial economic and environmental policy and control between 1946 and 1963 led to further environmental degradation in Machakos County triggering political response from the Akamba.

v. Following independence, the people of Machakos County responded to government policy formulated in relation to international environmental
concerns between 1963 and 1999 to restore order in the relationship between the people of Machakos County and their environment with some degree of success.

1.7 Justification and Significance of the Study

The environmental problems that have continued to receive global attention for the last sixty years and whose importance has increased in the present century, show the need for environmental histories that will help in understanding ways that humans have in part caused them, reacted to them, and attempted to deal with them. The objective of this study was not to evaluate the overall environmental loss or an “environmental audit” as a result of imperialism (Beinart & Hughes, 2007:14). It was rather to analyse the relationship between the people of Machakos County and their environment. The attempts of the various government dispensations to regulate utilisation of the environment (land and its resources) up to 1999 was also investigated. Any study of African history in the twenty-first century must however, acknowledge the concept of postcolonialism, that is, the continual impact of colonialism on African societies.

The study begun around 1895 since this was roughly the beginning of environmental change due colonial rule in Machakos County. With the declaration of the East Africa Protectorate on 1st July 1895 the IBEAC was replaced by direct British colonial administration in Kenya. Machakos County was preferred as an area of study because it was there that the earliest European administration post was established giving it a unique colonial encounter. Machakos was preferred due to its diverse climatic conditions varying from wet highlands to the drier lowlands. It provided a varied coverage of the environmental history of Machakos County that can be replicated in
other areas in the country. Machakos County’s land degradation problems were frequently cited during the colonial period and after, showing the need for government intervention in environmental management. In addition, during the colonial period Machakos County seemed to provide ‘an authentic plan for the rehabilitation or reconditioning of degraded farm lands used both for pasture and cultivation’ (Anderson, 2002:5).

The findings of the study could provide policy makers with historical research-based findings that can be useful in policy formulation in connection to land use and environmental management. There is need to know where environmental degradation is occurring, what forces have caused it, and what steps must be taken to rehabilitate degraded areas. In addition, we need to know what policies work to promote good land husbandry in developing countries, where farmers mostly degrade land out of necessity, not greed. This would be useful to administrators in order to understand how best to legislate in ensuring environmental balance in Machakos County.

The study might be useful to the residents of Machakos County to help them understand the historical progression of colonial capitalism and land degradation as related to resource utilization. This will help them make better environmental and political decisions. Knowledge of the interaction between communities and their environments is necessary for proper understanding of the problems of development in post-colonial Africa. Reference to specific histories and particular places is therefore important in order to understand the broader political factors that bind local African ecologies, economies, communities and cultures into regional and global systems (Rocheleau, 1994:15).
Developments in environmental policy up to 1999 in the County were considered to capture change and continuity in land policing trends and effects over the *long duree*. That is, “man in his relationship to the environment, a history in which all change is slow, a history of constant repetition, ever-recurring cycles” as recommended by *Annalistes* and other environmental historians (Isenberg, 2014:4). The close of the century saw a realisation by the international community on the aspect of sustainable development through the United Nations General Assembly (Earth Summit II) of 1997. Moreover, the close of the century saw the promulgation of the Millennium Development Goals (MDGs) of 2000 and the Sustainable Development Goals of 2002 via the World Summit on Sustainable Development which became the reference point for world and Kenyan environmental policy in the twenty first century. These create ground for further research in the environmental history of the twenty first century of Machakos County.

**1.8 Scope of the Study**

This study was limited to Machakos County which bore different administrative names and territorial boundaries over time. It is colonialism that created administrative and political boundaries and identities in Africa. It is within these boundaries that important interactions between the people and their environment have taken place over time. In order to achieve a meaningful analysis of environmental change over time, Machakos County, bearing different administrative names and territorial boundaries as it existed up to 1999 shall be used as the area of study. As such, the area of study is per the attached map.

The knowledge scope of the work is a historical analysis of the relationship between the people of Machakos County, their environment from the onset of colonialism to
1999. A background to the environmental conditions prior to colonialism were also analysed in order to understand the backdrop upon which colonialism impacted the environmental history of Machakos County. The study demonstrates that nature and society in Machakos County have always been interdependent and interactive. This is in line with the predominant theme of environmental histories that deal with the reciprocity in the interaction of people and other rudiments in the natural world.

1.9 Limitations and Delimitations of the Study

One of the major limitations facing environmental historians is the fact that it is extremely difficult to compile thorough and comprehensive accounts of environmental conditions from historical documents. Measurements and quantities are hard to extract from historical narratives since history is in itself qualitative and descriptive in nature. This, at times, may lead to some unfounded or uncertain claims about relationships in social and environmental change. The solution is therefore to consider small-scale histories of the environment rather than the grand narratives often adopted by some historians. The study was one of those small-scale studies covering Machakos County from about 1895 to 1999. Quantitative data was obtained from scientific studies such as those of meteorologists and the various departments of agriculture, forestry and veterinary services of Machakos County and Kenya in general. The work examined regional and global processes and changes in relation to the Machakos County environment. While the forces that have shaped the County’s environmental history are local, they are increasingly conditioned indirectly by events and occurrences as well as policy at the global scale.
1.10 Literature Review

Several works exist on the environmental history and its relationship to colonial capitalism in Kenya and beyond. This chapter discusses some of the available works showing their relevance and contribution to the study. These reviewed works revolve around the background to the field of environmental history, colonial capitalism and its impact on the environment in Machakos County and change and continuity in environmental history within the political structure of independent Kenya.

1.10.1 Background to Environmental History

A common theme in African environmental history is the emphasis that environmental studies need not treat the natural environment simply as the background upon which historical action developed. The environment has not been taken seriously in these studies due to the fear of environmental and technological determinism (Zeleza, 1993:5). The natural environment is neither an irrelevant backdrop to, nor an unchanging determinant of, human activities. The work is useful since it places an emphasis on the importance of studying environmental history in Africa. The gap in this work was that consideration of political structures (that are part of the way people relate to their environment and basis of how decisions on the utilisation of environmental resources are made) did not come out clearly.

Ogot (1979) argues that African ecology viewed from a historical perspective should deal with the story of man’s efforts to adapt himself to his environment and his environment to himself. According to him, the physical environment is passive and cannot actively influence human activity. What is evident is that human behaviour is affected by environmental forces only insofar as the environment provides resource alternatives, given certain technologies and attitudes of the social group in question. It
offers a solid foundation to the understanding of ecology and history in East Africa. Yet the impact of colonialism on African environments is scarcely assessed.

Stock (2004) observes that African economies and societies depend fundamentally on the environment as a sustenance base. As such, environmental health is inevitably interwoven with economic and societal health. A significant majority of Africans are primary-producers, that is, farmers, herders, fishers and hunters who depend directly on environmental resources for their sustenance. African primary producers are conscious of the importance of environmental resources upon which they depend, as is evident in the traditional strategies of resource protection that are used in many communities. These indigenous knowledge strategies were also applied by the residents of Machakos County especially in the pre-colonial and early colonial period to ensure that the environment was able to sustain most of their needs without putting a strain on the environment.

The basis for an economic system as an ecological system (ecosystem) controlled by man is further elaborated by Kjekshus (1996). He dwells on much of the colonial misconceptions of African environments and how, in reality, Africans related to these environments. He defends Africans by saying that their inability to occupy large areas was due to tsetse fly but then Africans had mechanisms of ensuring that there was control of the fly guaranteeing a balance. He further argues that the colonial view that Africans could not provide enough food for themselves due to their wasteful farming practices was misguided. According to him, man has always altered the environment to meet changing needs. In summary, Kjekshus deals with colonial misguided views on African economies. This work, although quite useful in illuminating colonial capitalism, is limited to the colonial period. It does not take in to consideration the
place of politics and political processes in the relationship between the Africans, colonialism and the environment as an on-going process.

1.10.2 The Impact of Colonialism on the Environment

Colonial legacy has received great attention from scholars all over the world. Those that touch on colonial capitalism and the environment take diverse views. The common phenomenon in such scholarship is the appreciation of the negative impact of an extractive colonial economy on African environments. They also agree that colonialism had a misguided perception on African economies and their relationship with their environments. Rocheleau et al (1995) give an overview of such misconceptions surrounding perceived environmental crises in Ukambani for one hundred years since the formal establishment of colonial with a ‘politics of the environment’ perspective. These authors posit that since 1890 there was political naming by the colonial state of these ‘crises’ ranging from a public health crisis (1890 to 1914), through soil erosion (1920s and 1930s), and a crisis of underproduction (1940s and 1950s). Africans were blamed for all these problems and the colonial administration overlooked the fact the Akamba of Machakos County had lost access, through land alienation, to most of their formally controlled and utilised land which included the best agricultural land and crucial grazing areas. Rocheleau’s work is quite useful in analysing the various stages of the ‘crises’ in the environmental history of Machakos County.

In addition, the political ecology perspective adopted in his work explains that “each of the crises attributed to the Kenyan landscape and society” as “successive internal impacts of processes that have their origin – for the most part – outside the region.” These crises are therefore, linked with global process such as imperialism, global
conflict and the world wars, international trade and local and international development programs whose effects have been imported into Kenya. This is an essential perspective of the environmental history of Machakos County. Small scale environmental histories such as this study can only make meaningful deductions by considering global processes and their overflow impact. However, looking at the environment from a historical perspective of crisis might create an alarmist view that deters an objective analysis of environmental history. Not all happenings in the environment lead to negative consequences. In addition, Machakos County residents responded to environmental changes in various ways by their own prerogative in the face of constraining political policies and did not necessarily react to government actions.

Nhamo & Inyang (2011) argue that it may be wrong to assume that the current environmental problems in Africa stem from African origin, neglect or lack of civilisation. Much of the current African environmental problems are as a result of European colonialism and its accompanying policies. In Machakos County, for example, the most productive areas in terms of farming and livestock grazing were alienated for European occupation or were set aside as crown lands. Africans therefore lost their reserve grazing areas leading to overuse of the Machakos Reserve. This led to environmental degradation which was interpreted by the colonial administrators as a problem with Africans due to their lack of environmental intelligence. In reality, the Machakos Problem was a creation of the colonial government. Therefore, the present African environmental situation mirrors the past.

Odegi-Awuondo (1990) focuses on the Turkana pastoralists and their coping mechanisms to drought and famine. This work focused on the behavioural patterns
emerging in the process of adjustment to the negative effects of drought and consequent famine. This was done by looking at the impact of colonialism on traditional pastoral economies and adaptation. The author concludes that human beings will survive by depending on their mastery of social and economic environment by establishing a stable balance with nature and habitat. This depends on the environmental perception of any community. Such perceptions consequently determine how the people interact with their environment. This adaptation to the environment by a pastoral people whose economic, social and political life was interrupted by colonialism is important to the study of Machakos County. This is because the Machakos people were primarily livestock keepers whose economy and organisation of the economy was disrupted by colonialism. The impact of such disruption continued to the close of the twentieth century. This work is a sociological study that mildly conflicts with historical methodology.

Sindiga (1981) averred that many marginal areas in Kenya continued to suffer deterioration of their subsistence resource base as a result of man’s intervention in delicately balanced ecological systems. He agreed with underdevelopment and environmental history scholars who argue that land degradation could be traced back to European colonisation of the late nineteenth century. According to him, this ecological imbalance was still evident in these early independence years (especially in Machakos County) since the independent state had been unable to tackle environmental degradation in a way that would bring tangible change on people’s livelihoods. Therefore, populations could not support themselves sustainably without further deterioration.
Bryant & Bailey (1997) focus on the adverse social and environmental consequences of capitalistic natural-resource extraction such as logging, mining, fishing or cash-crop production on the Third World. Urbanisation and industrial pollution have also been contributors to this degradation. This work explores the political ecology approach in detail as applied in analysing the environmental problems of the Third World. According to this text, there is need for radical change if a solution of the Third World’s environmental crisis is to be effected. This work therefore, formed an important part of the theoretical framework formulation, that is, the application of political ecology in understanding Machakos County’s environmental history as well as an understanding of the role of the various actors in environmental degradation. It also guided the study in analysing the practicability of the concept of sustainable development in Machakos County.

This point is further emphasised by Amanor (1994) who analyses the frontier as the creation of the metropolis and the latter survives as an extractive economy. As colonial capitalism expanded, the new frontier becomes a ‘slave’ economy, that is, an area with one easily extractable resource which is highly exploited and determining the lives of the inhabitants of the locality. This incorporation of new areas into the world economy was not based on a balanced exploitation of resources. Colonialism did not have the intention of creating stable and balanced economies but rather to identify easily exploitable resources for the benefit of the metropolis. Thus colonial modes of exploitation led to severe land degradation. With an ever expanding creation of new frontiers, the present frontier is ruthlessly “exploited for today and tomorrow, the great waste of lost environmental and economic potential is left behind for posterity” (Amanor, 1994:226).
Amanor consequently blames colonial capitalism for environmental woes in Africa. This work sheds light on the dynamics of resource exploitation during and after the colonial period through a system of global capitalism that greatly impacted on African environments. However, since dependency scholars point out that there does not exist one centre and a single periphery, this study went further to show how urban areas in Kenya act as the metropolis that, in the process of ‘modernisation’, exploit the resources of the peripheries (local areas) and with what environmental consequences. The growth of cities and the redirected flows of natural resources, transfers of political authority and patterns of land use constitute a powerful force that is affecting Africa’s landscapes and environmental resources (McCann, 1999:7). One of the resources in Machakos County that has been exploited by the urban areas is sand for construction of most of the buildings in Nairobi city and its environs. The dynamics and impact of sand harvesting on Machakos County’s environmental history and how the people have responded to this economic activity were analysed.

Beinart & Hughes (2007) while agreeing that British imperialism negatively affected African environments through capitalist exploitation, argue that conservation and exploitation were contradicting themes during the colonial period. While there was the intensified exploitation of natural resources, there was also a rise of conservation efforts as part of colonialism. These authors posit that conservationist ideas did not in themselves end exploitation. The main theme of this work therefore, is to analyse “the material factors that shaped environmental change” (Beinart & Hughes; 2007:1) as a consequence of British imperialism. According to them, environmental change in Africa was hastened by imperialism. This work also takes into consideration political reassertions by colonised peoples in response to the policies of exploitation and conservation of their environment. It was therefore relevant to the discussion of
exploitation and conservation as contradicting themes in Machakos County’s environmental history during the colonial period. This work is however too broadly scattered in its geographical scope to offer an effective, comprehensive and informative environmental history of the areas covered. It builds on selected accounts in order to demonstrate common topics in the environmental history of the former British Empire.

The subject of conservation and exploitation is also pursued by Anderson (2002). In his work, Anderson argues that Baringo County was a ‘backwater’ of the colonial economy distant from larger markets and lacking the intensive cultivation of cash crops witnessed in other parts of the colony. However, from the mid-1920s to mid-1930s prolonged drought and localised famine drew colonial attention to the County. It was claimed that the lowlands were rapidly eroding, that Baringo was becoming a desert as a result of overcrowding and mismanagement. In response to the alarm, the state embarked upon a programme of ‘reconditioning’ of pastures in lowland Baringo. Here, like many other parts in Africa, Africans were blamed for land degradation. In reality however, the alienation of lands for European settlement adjacent to the Baringo plains led to pressure on the land. The higher and wetter margins of Baringo to the east and south were considered suitable for white settlement and this halted the expansion of the Tugen and the Il Chamus pastoralists into the uninhabited wilderness or reserve grazing areas. By around 1914 overcrowding had become acute in Baringo.

The Baringo narrative, just like the Machakos one, presents an apparent paradigm case of a ‘tragedy of commons’ which thereby justified a particular set of development interventions and which remained unquestioned until the 1980s (Anderson; 2002: 13). Anderson’s argument is to demonstrate the inaccuracy of this
narrative, to explain how the assumption first emerged and why it endured for so long. Since these are the same arguments advanced by the colonial administration in Machakos County, this work supported both the theoretical and analytical aspects and concepts of this study.

Matheka (1992) posits that during the colonial period, the people of Machakos were unable to produce sufficient food for themselves. This was as a result of colonial policy that greatly altered the organisation of agriculture. Although food shortage was not uncommon in pre-colonial Africa, people had developed mechanisms to insure themselves from the adverse effects of famine. For example, livestock was an insurance against crop failure. Trading activities among communities were also meant to supply the specific food requirements for each community. Therefore ‘the gradual incorporation of Kenyan societies into the capitalist system through the colonial state progressively led to a crisis in pre-existing systems of production and distribution’ (Matheka, 1992:2). This work offers a great understanding of colonial capitalism through the theory of articulation of modes of production. This work is only limited to the colonial period and thus does not offer as an understanding of famines in independent Kenya resulting from colonial capitalism inheritance. To understand environmental history, aspects of the environment in relation to people and politics need to be put into critical analysis. In addition, political ecology in relation to famine is implied throughout the text but does not come out clearly.

Morris (2016) analyses the land and the people of the Shire Highlands. This work attempts an environmental history of Southern Malawi from an anthropological standpoint. This work explores the growth of explicit political and social institutions such as the origin and growth of the colonial state and the plantation economy. It also
explores the appearance of the conservation of wildlife, forests and soil. It continues a discussion of African resistance to the colonial economy and conservation projects that were forcefully imposed upon Africans. The importance of these Highlands to this study is that it was at the centre of economic and political events as a result of the colonial state. It also emphasizes the complexity of relationships between colonial officials, the European settler farmers and indigenous African producers throughout the colonial period. The author acknowledges that the work is different from the works of other environmental historians since this work does not take a global perspective. The author narrows his analysis only to an environmental analysis over time of the Shire Highlands. This work was of importance to this study since it sought to focus on Machakos County with the central concern of the nature and changing relations of the County’s agricultural activities in relation to the ever-evolving dynamics between the colonial state, European settlers and African indigenous farmers and herders in respect to environmental history. This work however terminates with the end of colonialism whereas this study spans to the close of the century.

1.10.3 Independence and Environmental History

Timberlake (1994) sought to show that Africa’s crisis in the post-colonial period, especially those of food, health and education, were not due to unpredictable weather patterns but rather due to political and economic policies and systems. According to him, these policies have led to impoverishment of the complex but fragile African environments thus making development next to impossible since the livelihoods of most of the people in the African continent rely on environmental or natural resources such as land, trees, plants and water. This author makes a direct relationship between decentralising political power and decision-making with an improved environmental
management system in Africa. According to him therefore, the role of governments and international donors is to empower farmers to ensure food sufficiency in Africa. This is by merging new skills and technologies into existing indigenous knowledge and on environmental realities. However, this work misunderstands the cause of environmental problems by placing them squarely on the shoulders of the African poor. By claiming, for example, that the cause of environmental degradation is tree cutting for fuel by rural-area populations, the author ignores global processes that have led to global warming which has, in turn, affected Africa.

According to Leach & Mearns (1996), a perspective of environmental change that places the blame on the African rural population is part of what they call ‘received wisdom’. This view assigns to African cultivators, hunters and livestock keepers an exacting function as agents as well as victims of environmental modifications. However, the development policies and programmes that result from such ‘researches’ are destructive for those living in the rural areas and for the natural resource-bases on which their survival is dependent. For instance, tree-cutting for wood fuel and charcoal is often assumed (like in the case of Timberlake, 1994) to be a chief root for reducing tree cover in Africa. However, according to their work, “seen from a broader viewpoint, there is not just one big problem of energy provision, but numerous minute challenges of charge over trees and their products to provide for several basic needs, including food, shelter, revenue and savings” (Leach & Mearns, 1996:3).

Received wisdom on environmental change and even degradation obscures the possibility of other views, and often leads to misguided and flawed development policies in Africa. The better approach to understanding African environments and the
environmental challenges thereof, and thus Africa’s environmental history, is an examination of land-use practices by African cultivators and pastoralists, and their own environmental understanding and views of terrain change (Leach & Mearns, 1996:3). This reveals the rationale of indigenous knowledge and organisation in natural resource management. This is the approach adopted in this study. Such knowledge was obtained through oral interviews and observation studies in the County.

Such a view moves away from received wisdom’s blame for landscape transformation seen by ‘foreigners’ as environmental dilapidation as a result of local land-use practices commonly perceived as insufficiently adapted to modern-day socio-economic and population demands. In such accounts, “rural peoples’ ecological knowledge is notable mostly by its dearth, muted prior to its investigation” (Leach and Mearns, 1996:5). This work was relevant to this study in that it helped in the understanding of indigenous knowledge on the environmental history of Machakos County. It was also relevant in analysing colonial and independent governments’ misconceptions of the Machakos County environment. One of the major weaknesses of this work is the ‘activist’ (Africanist) perspective adopted throughout the work which is inescapable if one writes from the perspective of the historically exploited environments in mind.

This aspect of indigenous knowledge is further pursued by Anderson (2002) who states that under colonialism, the marginalisation of African interests was evident in terms of both power and knowledge. The solution to rural problems – the ‘gift’ of development – was defined solely in terms of western (colonial) science, with little or no sensitivity to indigenous African husbandry practices or prevailing systems of
social organisation. Indigenous knowledge systems were not recognised as having any validity or any relevance in relation to progress and modernisation under colonialism.

Colonial development programs therefore too often proved to be experiments that were doomed to fail because of errors, ignorance, misjudgements and simple misunderstandings on the part of developers. This should not be reason to dismiss colonial science, or to replace it with a romanticised presentation of an invariably superior indigenous knowledge system (Kjekshus, 1996:14). For this historical reconstruction, it is important to understand the interaction between these two sets of views, colonial and indigenous, and to see how the differences were made manifest in terms both of policy and implementation and the reaction to policy. This detailed analysis of the environmental history of Baringo County is very relevant in understanding the playoff between Africans and the colonial administration in ecological matters of Machakos County.

Aseka (1993) analysed the relationship between development and underdevelopment as relates with the African environment. In this work, Aseka questioned sustainable development by arguing that such development necessitates change that remains permanent on the physical environment. Such changes lead to underdevelopment through environmental pollution, destruction and disruption and thus “if development and underdevelopment are historical processes then environmental degradation equally is”, (Aseka; 1993:2). To him it is very important to historically investigate the relationship between nature (the inanimate) and human elements of the natural world and to appreciate how complex this relationship is. To him, it is impossible to understand African environmental history without consulting politics, environmental science, sociology and history itself. As such this gave strength to the study’s political
ecology approach in order to make an objective analysis of Machakos County’s environmental history. The main gap of this work is that it applies the underdevelopment theory that solely blames colonialism for all African environmental problems.

According to Beinart & Hughes (2007), decolonisation provided an opportunity for the colonised/indigenous peoples to gain national control over natural resources and as such environmental management. Although indigenous peoples have challenged (both at the local and global level) who has the right to regulate nature and asserting the value of community management of natural resources, the legacies of imperial land use and planning have remained powerful in Kenya. Hence, the end of formal British control did not lead to a significant change in the speed or dynamics of exploitation. Global tourism, for example, has pushed the Kenyan government to reinforce policies on the protection of nature such as wildlife. This has led to the exclusion of local people from land and other important but scarce natural resources such as water sources.

Robbins (2012) observes that such conservation policies, that are funded in most African countries, by international organisations, leads to the marginalisation of local people (Robbins, 2012:179). These international organisations serve the interests of the states and state control of natural resources, at the expense of the local communities. As such, the political principles of conservation have changed but the points of view for both international and local environmental regulation, whose origin is in the colonial period, linger. This work was quite useful to this study in the analysis of post-colonial environmental debates in Kenya as they are impacted by global politics and as they affect the Machakos County’s environmental history. The
The main weakness of this work, as observed earlier, is the wide and general nature of study it adopts.

Tiffen, Mortimore & Gichuki (1994) explored the relationship between increasing population density, land productivity and environmental degradation using a case study of Machakos County between 1963 and 1990. The authors sought to measure the changes that had taken place interpreting them in the context of a development theory. The work’s main findings were that population increase was compatible with environmental recovery from degradation. The work showed the need for government intervention in the flow of information in the development aimed to benefit farmers and rural entrepreneurs. This is through policy formulation and implementation. The authors were therefore, in support of government directed action to ensure sustainable development. The government plays a key role in the mitigation and probable restoration of the already degraded lands.

This work was in favour with colonial government compulsion of the residents of Machakos County towards conservation work. As such, the independent government is encouraged to take up the same coercion to put in check environmental degradation. The main weakness of the work is that, although it claims to look at Machakos County as a case study, the area to which the actual research was limited is quite small (an administrative division). Therefore, the conclusion that more population never led to soil erosion during the period under study is not based on empirical evidence. In fact, land degradation has continued to be part of Machakos County due to various factors that are backed by poor policy formulation and implementation in environmental management.
For instance, although sand harvesting is regarded as affecting the sustainability of water resources especially rivers, this practice has continued unabated in the County. It is widely acknowledged that forests are an important aspect to the achievement of a sustainable environment. Charcoal burning from trees in the reserved forests as well as indigenous trees in areas being cleared for human settlement and agriculture continues in the County despite government knowledge of such happenings. Government control has not worked due to a failure in the implementation of policy related to sand harvesting, tree cutting and charcoal burning in the County. If one sees charcoal in the cities such as Nairobi and other markets around the Machakos County, the question should be more of the source. But charcoal is displayed openly as an item of trade in various markets not only in the County but also the whole country.

Kiriro and Juma (1991) were concerned with environmental management as a problem of ecological governance. According to this work, the future of the world environment lies to a large extent on the ability of the dominant institutions, especially governments, to create space for social experiments carried out by these innovators. These institutions within the society, according to the authors, offer essential lessons for social learning. By analysing government institutions in Africa, then it is possible to understand the political and policy implications of environmental management. In Kenya, according to this work, the political decisions on environmental management are discernible because of the close link between environmental management, economic performance and political issues. More specifically, this work is concerned about the efforts of the local, national and international institutions in environmental management.
At the local level, the different authored chapters focus on the efforts of local institutions to work on the management of their own environment with little or no assistance from the national government. Although the work has endeavoured a historical perspective of the environment, it was not primarily concerned about environmental change and how politics played a role in land use. It was however, of great importance in understanding the environmental history of independent Kenya especially by showing what the government has been able to do in the years preceding independence in taming environmental degradation.

1.11 Theoretical Framework
Colonial capitalism adversely affected the interrelationship between African societies and their environments as well as altering African forms of production. The Theory of Articulation of Modes of Production explains the process of penetration, interaction and conflict between the capitalist mode of production and pre-colonial modes of production that were not capitalist in nature. It also explains the role of the colonial state in the process of interaction between these two modes of production during the colonial period. Thus this perspective is suited for analysing the impact of colonial capitalism on Machakos County’s environmental history during the colonial period. Articulation of modes of production, however, is useful only in analysing economic and political processes during the colonial period and its suitability thus, terminates at independence.

Cultural Ecology Theory recognizes that people and their cultures are an integral part of the environment. Cultural ecologists argued that human interaction with nature through different forms of subsistence labour provided a directing influence on the social order. Human activity affects the environment, which is then altered, in turn
affecting human activity. Humans are seen as part of a larger system, guided by universal forces such as nutrient flows, energy, calories and material struggle for means of subsistence (Robbins, 2012:36). Cultural ecologists assert that cultural groups should be studied as forces that both shape and are shaped by their environment. This represented a significant theoretical contribution for the environmental studies (Roberts, 2020:9). Environment’s shape and form is dependent upon its history, a history that is humanistic. Humans have a culture, in that they have self-awareness and use technology and this sets them apart from other components of the environment (Sutton & Anderson, 2010:3-4). As such, human interaction with the environment is different from the way animals interact with the same environment. It then follows that cultural ecology includes the ways in which culture is used by a people in the adaptation to the environment (Steward, 2005:6). This makes up indigenous knowledge, an important component in the understanding of environmental change in relation to administration, policy formulation and rural development. The question is, do policy makers, implementers of policy and development agencies consider how a certain people managed their environment in the period prior to colonial rule?

An analysis of relationships between cultures and the environment is essential since it offers an understanding and possible solutions to contemporary environmental issues. This relationship was clearly articulated by Julian Steward, among others, (in the 1950s-1970s) focusing on how cultural beliefs and practices help human populations adapt to their environments and live within the means of their ecosystem. Cultural ecology theory was useful majorly as an anthropological or archaeological theory in during this period. Its main shortcoming was inability to account for and understand environmental change in a complex modern political economy under capitalism. This
crisis of explanation that faced cultural ecology was the foundation on which political ecology rose to prominence (Robbins, 2012:36).

In environmental history, there is consensus on both the local and global nature of environmental issues. After the establishment of colonial rule in Kenya, the British formulated policy that in many respects was influenced by wider international environmental and natural science concerns. Policy guiding forestry, soil conservation, and rangeland management was based on this wider global discourse (a good example being the Dust Bowl phenomenon of the late 1920s and early 1930s and how it affected formulation and implementation of policy in colonial Africa). Colonial approaches to forestry and wildlife conservation were drawn from the scientific and commercial models of Europe and India that excluded local people (Beinart, 2009:223). Local and global political processes also impact on the environment. It was due to the shortcomings of the cultural ecology perspective that the more recent political ecology was coined which is valuable in that it provided the stimulus for further research and thought in environmental history.

Political Ecology theory (which includes the effects of power relations and conflicts on the household to a global scale) was adopted as the main theory for the analysis of the environmental history of Machakos County during and after colonialism. Political ecologists combine analytical and methodological traditions from cultural ecology, environmental politics, and political economy in an effort to examine concurrently local-scale changes in social and agricultural systems in relation to the dynamics of international political ecology (Rocheleau, 1994:4). Since societies exist in the environment, and their overall activities, structures and decisions affect the environment, the political ecology perspective was used in analysing the impact of
colonial capitalism on Machakos County’s environmental history. This perspective was fit in understanding the relationship between politics and nature.

According to Robbins (2012:3), political ecology is “a field that seeks to unravel the political forces at work in environmental access, management and transformation”. This is because politics are interwoven with ecology and ecology is inevitably political since politics and ecology mutually shape each other. The perspective of political ecology therefore, analyses the relationship between nature, politics and society and as such “the social and political conditions surrounding the causes, experiences and management of environmental problems” (Forsyth, 2003:2).

A theory of associated process is a tool that has ability to create a detailed analysis of how events occur and proceed over time (Leibhardt, 1988:24). Hence, the theory that was fit to analyse the associated processes of the relationship between people and the environment in the context of the politics and legacy of colonial capitalism is political ecology. Indeed, the structures of colonial rule – ideologies, systems and practices – cannot be ignored in the reconstruction of a history of colonial and postcolonial development.

The impact of political decisions on natural resource utilisation and environmental management in Machakos County is evident. This is mainly due to environmental management, economic performance and political organisation within Kenya since the inception of colonial rule (Korir-Koech, 1991:29). Political ecology strengthens our understanding of how political and economic authority is applied to determine the dynamics and make-up of environmental problems. Colonial rule led to political and administrative changes that altered the ways in which states managed their peoples and environments under their jurisdiction. It is also important to note that part of the
environmental problems in Machakos County areas a result of post-colonial political processes and it is through political means that a solution to those problems will be devised. Therefore, environmental policy is more effective when connections between science and politics are acknowledged. This is because neither politics nor the environment operates as a dependent or independent; they are interdependent (Bryant, 2015).

1.12 Methodology
This section describes the method and process of data collection and analysis. It also contains a map showing the geographical location of area covered by the study.

1.12.1 Research Design
This study was based on a qualitative historical research design using historical method of the environmental history of Machakos County from around 1895 to 1999. According to Walliman, “historical research is the systematic and objective location, evaluation and synthesis of evidence in order to establish facts and draw conclusions about past events” (2011:112). Such conclusions were drawn out of sourced primary and secondary data in order to achieve the objectives of the study. A qualitative research design is best suited for historical research. This is because it explores the meaning and relationship of events, and uses both primary and secondary historical data in the form of writings, artefacts and records. The value of qualitative historical research design is that it enables solutions to contemporary problems to be sought in the past.

1.12.2 Area of Study
The study area covers contemporary Machakos County, but the data, variables, analysis and findings may be generalised to include contemporary Makueni County.
This is because of historical factors that have marked the formation and naming of Machakos County. Colonial rule led to creation and constant change of boundaries and names of administrative units. Between 1895 and 1902 Akamba occupied Athi District, a poorly-defined area which coincided with Machakos, Makueni and Kitui. In 1902, the colonial government named the western Kamba District Ulu, then from 1920, Machakos District. Eastern Ukamba was named Kitui in the early twentieth century and the two districts were placed into Ukamba Province. In 1933, the administration merged Ukamba and Kikuyu provinces to make Central Province for ease of administration. In 1953, due to the Mau Mau, the province was split placing the Machakos District into the newly formed Southern Province with the Maasai. In 1992, the expansive district was divided into two forming Machakos District proper and Makueni. With the promulgation of the Kenya Constitution in 2010 with its emphasis on devolution, the districts were renamed counties retaining their administrative boundaries. The history of environmental change may, therefore, not necessarily follow these changing administrative units, but basically covers the greater historical Machakos District.

1.12.3 Target Population and Sample

The target population for the study was any resident of Machakos County and beyond who had knowledge relevant and useful to the study. These were the residents of the larger Machakos County (inclusive of Makueni County) as it existed since the inception of colonial rule. Knowledge of environmental history of Machakos County was not limited to the residents of the County, and as such, all other individuals and organisations that provided relevant data to the study were also considered.
Figure 1: Location of Machakos County in Kenya.
1.12.4 Sampling Techniques and Sample Size

Most people have an understanding of their relationship with the environment over time. The most knowledgeable of were identified through asking specific questions (as per the interview guide). The first respondent was identified on the basis of age (70 years) and snowballing was then used to identify other knowledgeable individuals. These also included professionals and chief officers (many of them retired) in government departments such as agriculture and forestry. The study consulted forty such informants. This number provided adequate data for the study. The researcher noted repetition in the responses given. To avoid redundancy, forty informants were interviewed.

1.12.5 Instruments of Data Collection

The study utilised both primary and secondary sources. Archival records at the Kenya National Archives, Nairobi were utilised as a major source of primary data in support of the study. Archival data was corroborated by data obtained from oral interviews. On oral interviews, face to face interviews were particularly important since the study sought qualitative data. The interviewer was in a good position to judge the quality of responses to subjects, to notice if a question had not been properly understood, and to reassure and to encouraged the respondents to be full in their answers (Creswell, 1998:79).

A semi-structured interview schedule was used since it is successful in achieving defined answers to defined questions leaving time and room for further development of those answers, and including more open-ended questions. The interviews were conducted in Kikamba, Kiswahili and English as was appropriate for the respondents. Due to the COVID-19 pandemic, individual interviews were accorded preference.
Secondary data was sought from both published and unpublished works on environmental history in Kenya in general and Machakos County in particular. These comprised of books, journal articles, newspapers, seminar papers and theses. These also contain the views of various people on important issues which were used in the analysis of change and continuity in the environmental history of Machakos County.

1.12.6 Data Collection Methods

Secondary data was sourced from books, journals and journal articles, theses, seminar papers, periodical reports and magazines touching on colonialism and the environment. Secondary data has provided background information on the discipline of environmental history as well as information on the impact of colonial capitalism on the environment in general and in Africa in particular. The importance of secondary data to any study cannot be over-emphasized. It is from secondary data that the researcher builds on the theoretical framework as well as supplement primary data that was obtained from interviews and other sources. This was important to the researcher in order to understand the various arguments and views of other scholars concerning environmental history in Machakos County and elsewhere in the world. Data from secondary sources was sought from various libraries as well as credible online sources. These supplemented primary data.

On the other hand, primary data was sought as oral data from informants in the selected sample size. Research instruments used include semi-structured interview guides administered orally by the researcher. Identified key informants were very useful in directing the researcher to other key informants through snowballing. The weakness of oral data was considered due to reliability, level of bias as well as
subjectivity. Such bias was removed not only through corroboration with archival and secondary data but also through comparing responses given by informants.

Primary data was also sought from the Kenya National Archives (Nairobi). These included the annual or quarterly Machakos County reports especially those by the County Commissioners summarising a myriad of issues in the County for any particular year. In addition, government and non-government organisations annual or quarterly reports on rainfall, agricultural production, forestry, sand harvesting, and river and dam levels were also be consulted. Such information was supplemented the oral data as well as secondary data. This information was important since environmental history must rely on other disciplines such as geography and environmental science to make logical conclusions on the dynamics of change in relationships between people, politics and the environment over time. These were supplemented by satellite maps, photos and images available to support arguments based on the objectives of the study.

1.12.7 Methods of Data Analysis and Interpretation

The data collected was mainly qualitative in nature. In order to draw conclusions and interpretations, qualitative methods of content analysis were used. Descriptive data analysis followed data collection. It was also necessary to sieve out data to determine their relevance and usefulness to the study. The researcher, therefore sieved through the raw data, both secondary and primary, and the relevant material grouped under various headings or themes related to the objectives of the study. This was followed by a careful examination and thorough revision of these notes so as to come up with the tentative chapters of the study that eventually formed the final thesis document.
Reliability and authenticity of data was sought from constant theoretical interweaving and the use of primary data to confirm or strengthen secondary data.

1.12.8 Ethical Considerations

The study sought permission from relevant authorities (Kenyatta University Graduate School, National Commission of Science and Technology and the Machakos County Commissioner’s Office) before undertaking fieldwork. While in the field, the respondents were clearly informed about the purpose of data collection. The researcher also informed respondents on the type of data that was being sought for the study. For purposes of being ethical in carrying out the study, the respondents were assured of strict confidentiality in dealing with the information given. They were also assured that there were no risks involved as a result of being part of the research. Where applicable, the researcher ensured anonymity and confidentiality of the respondents. No informant was coerced into giving information and thus all the informants granted their permission to the researcher before the interviews.
CHAPTER TWO

MOVEMENT, SETTLEMENT AND LAND USE BY THE AKAMBA OF
MACHAKOS COUNTY BEFORE c.1895

2.1 Introduction

Settlement and land use patterns in the pre-colonial Machakos County was predicated on the area’s peculiar geographical setting. The major issues considered in this chapter are the origins of the community, settlement patterns, condition of the land (that is, vegetative cover, rivers, and topography), economic activities and indigenous knowledge of the environment. In addition, the late nineteenth century ecological disasters played an important role in shaping the relations between the Akamba and their environment in the context of establishment of foreign rule. A background of the community’s history illuminates its relation to the environment in terms of ecological conditions and adaptation.

2.2 Machakos County’s Physical Environment

Machakos County extends approximately from 1° to 3° south of the equator. It lies between latitudes 0° 45’ and 1° 30’ south of the equator and longitude 36° 45’ and 37° 45’ east of the Greenwich Meridian. It borders Kitui County to the east and Kajiado County in the west. In the south it borders Makueni County while Nairobi and Kiambu Counties are to the northwest. Towards the northeast it borders Murang’a and Embu counties. The County has an approximate area of 5,818 square kilometres and is subdivided into eight sub-counties. These include Machakos Town, Mavoko, Kangundo, Matungulu, Yatta, Masinga, Kathiiani and Mwala.
Land in the county rises from slightly below 600 metres above sea level in the extreme south to 1,100 metres in the northeast and 1,600 metres in the northwest. In the centre of the county are hills and small massifs such as Kangundo, Iveti, Mbooni, Mua and Kilungu which are abrupt and well featured (KNA/DC/MKS/4/1:12). These massifs rise to a height of 1,800 – 2,000 metres. They are surrounded by a large plateau, which is elevated to about 1,700 metres in the west and slopes down to 700 metres in the southeast (Kenya, 1993:2). The hillsides consist for the most part of a series of relatively narrow ridges with very steep, occasionally precipitous sides and reach elevations of 1,800-2,000 metres, they rise generally about 600-750 metres above the surrounding country.

Both the hills and the surrounding plateau are of ancient basement rock, mainly schist, grey gneiss, quartzite and marble. However, the basement system is broken in the northwest by the volcanic Ol Donyo Sabuk and in the southwest by the volcanic Chyulu Hills. Donyo Sabuk is a single mountain rising to a height of 2,144 metres and the Chyulu rises to 2,392 metres (Tiffen; 1994:18). Similarly, the basement system is overlain by the volcanic outflow of the Yatta plateau which forms an escarpment on the east side of the Athi River backed by a gently inclined eastward-sloping surface. The Athi-Kapiti plains in the western and north-western parts of the County are also of volcanic origin (Matheka; 1992:30). The rock formation of the county is divided into several groups. The major ones are the Precambrian rocks of the basement system which covers the greater part of the county. There are also the tertiary sediments and the volcanic with Miocene phonolites which are the oldest volcanic rocks and are found in Kapiti plains in the north western part of the county and in the Yatta plateau.
In general, the hill zone may be regarded as marking the transition in this county between the hot and arid lowland plains to the east and the relatively temperate highlands to the west (KNA/DC/MKS/26/1/1:1-2). These highlands are in many ways a continuation of what is known as Kenya highlands. The geological movements that produced the Kenya highlands added their effects to Machakos and produced summits such as the Mua Hills (Simiyu; 1974:102). The topography has had some impact on the development of the county. The hill massifs of Iveti, Kangundo, Mua and Kangundo not only act as catchment areas for numerous springs and streams, but are relatively high potential areas for agricultural production. This is because they receive considerably high rainfall in comparison with the low lying areas. Coffee is the major cash crop and is grown along the hills. Horticultural crops such as tomatoes are also grown under irrigation in the county. Oranges and mangoes have in recent years become important crops in the county. The low lying areas which include the Kapiti plains and the Yatta plateau are suitable for ranching.

Patterns of precipitation are of critical importance for agricultural and pastoral economies, and for a continual regeneration of groundwater and river systems. These two factors are in turn influenced by altitude such that rainfall increases with rise in altitude and also declines, from the central hills outwards, from 1200mm at nearly 2000m altitude in the Mbooni and Iveti Hills to less than 600mm in the lowlands of the south-east and the dry plains of the extreme north-west. These including the Yatta plateau and some parts of Mwala sub-county which are also in the rain shadow of the hills (Tiffen; 1994:18). Consequently, the hill masses are cooler and wetter than the surrounding lowlands. However, crops mature faster and with less rain in the warmer climate of the lowlands than they do on the hills. The rainfall regime is bimodal with the short rains starting in October and most of the time continues through December.
while the long rains begin in March ending in May. Two agricultural seasons therefore occur, both of short duration. The months of January, February, August and September are therefore hot and dry, while June and July are cool and cloudy (Matheka; 1992:31-32). Rainfall in the county is not always reliable. Statistics show that in four out of ten years there is a major drought in the county (Kenya, 1993:2).

The soils are varied just as the topographical and climatic zones of the county vary. Generally, red friable clay-loams are predominant in the hills while sandy clay loams are common in the lower slopes of the hills and on the lowlands. The topography of the county is a major factor in soil erosion just as the nature of the soils. Soil erosion has been a concern for the longest time in the county. It was a major area of debate and political contest during the colonial period. From the 1970s, the independent government was faced by a need to curb soil erosion in the county, hence the many government and non-governmental interventions.

The major impediment to agricultural development has always been shortage of water. Limited availability of perennial domestic and livestock water has influenced settlement patterns. The better watered areas are more densely populated. The overall drainage pattern is from west to east. The principal rivers draining the County are the Kalala, Thwake, Kaite and Mukuyu all of which flow into the Athi River which is also permanent. Most of the others are seasonal in their flow, virtually ceasing in the dry weather and becoming raging turbid outbursts in the rains. These rivers and streams have sand deposits along their beds. Sand harvesting is an important subject in the county with both economic and socio-political implications which are discussed in chapter five of this study.
Under undisturbed conditions (quite rare at the time of the study) the vegetation of the greater part of the county consists of thorny woodland dominated by acacia and commiphora. The woodland contains thickets and develops into gallery forest along streams. On higher sites bush willows woodland takes over and on the tops of the hills evergreen forest is present. On black clay soil areas grassland occurs adapted to poor drainage. This vegetation has been removed (for cultivation) or modified for grazing in most areas. Wood-cutting for the establishment of settlements, agricultural land and charcoal burning has also led to a great transformation in the general outlook of the county. Most of the forest areas in the county, apart from the indigenous reserves, are at present are manmade.

The hills were covered with bush-type forest. There was thick grass within the bush. The top soil was rich and readily absorbed rainfall. The grass and bush protected against runoff since even the gullies were covered by vegetation. The flatter country surrounding the hills was uninhabited and was covered by bush trees and dense tall grass. In the past, this area was abundant in big game including rhino and elephant. Many of the larger streams and rivers were perennial with abundance of fish in the pools of these waterways. Forest trees were not common except clumps of forest trees like podocarpus patches that were quite frequent but not dense. There is possibility that the true forest might have been cut down and burned during earlier settlement in the area by earlier inhabitants (KNA/DC/MKS/4/10:80). However, there is no historical or archaeological evidence in support of such a speculation. It could be that, since this is part of tropical Africa, it was always covered by the typical savannah grassland vegetation. This vegetation began to change due to population increase, sedentary settlement and variations in economic activities.
Geography is the crucible within which history is made (Matheka, 1992:29). Thus evolution of cultures should be seen as a response to environmental or climatic conditions (Ogot, 1979:2). Greater attention should be paid to man’s cultural inheritance rather than to the mere environment. This refutes ideas in support of environmental determinism (the belief that the physical environment by itself shapes humans, their actions, and their thoughts). A historian venturing in environmental studies needs to understand that the cultural variations that occur around the world are not determined by a society’s physical surroundings. Human action and the natural environment have continually interacted in complex ways, altering in the process both society and the environment. The human past can indeed be defined as a record of the constant interaction between history and geography, humans and habitat, society and nature, time and space.

The human past can be regarded as a record of the continuous interaction between history and geography, humans and habitat, society and nature and time and space (Zeleza; 1993:25). This study demonstrates that a complex interrelationship between the physical environment and human activity existed in pre-colonial Machakos County. The history of the Akamba shows a society whose development was closely linked to the environment. The community endeavoured to conquer nature in context and that struggle constituted a definite and conscious progress that formed the history of the Akamba (Simiyu, 1974:104). The natural environment in turn, influenced the choices available to the Akamba in one way or the other. As such, organisational features of production and consumption are, in several ways, influenced by the environment (Kjekshus, 1996:184). While historians believe that contexts shape people, events and interpretations, contexts do not determine history (Leibhardt,
Human beings have capacity to transcend their contexts and exercise a decisive agency and thus influence historical change (Zeleza; 1993:25).

This relationship between society and the natural environment is dialectical in that environments shape human actions and human action in turn shapes the environment (Leibhardt, 1988:30). The Akamba in the pre-colonial period evolved economic and political systems that were adapted to the natural environment in which they lived. The physical environment of Machakos County is central to understanding the environmental history of the county. As such environmental history seeks to understand the environment in a historical context while at the same time understanding human history in an environmental context (Isenberg, 2014:6).

2.3 Migration, Settlement and the Emergence of the Akamba Community

In African scholarship, it is agreed that the creation of ethnicity in sub-Saharan Africa was a work of colonialism (Hobsbawm & Ranger, 1983:2). Just like many other African communities, the people of Ukambani did not think of themselves as “Kamba” before the 1940s (Osborne, 2014:3). According to Osborne, being Kamba was defined by each individual on the basis of their conception of “what virtues, values, and practices constituted ‘proper’ behaviour in their communities, and by extension, constituted the basis of “Kamba culture.” Ambler (1988) further contends that the commencement of colonial rule led to the promulgation of ethnic boundaries and removed the flexibility that previously existed among communities in Kenya. People called the “Kamba” could conveniently drop that identity by moving into other communities and dwelling among them, which was a common practice fuelled by existing bonds of trade and intermarriage. However, the advent of colonial rule made people acutely aware of their ethnic identity since such an identity was critical to
colonial administration on the basis of the policy of “divide and rule”, the creation of reserves and other administrative units and for purposes of labour recruitment and tax collection. It is important to note that pre-colonial African societies were not stagnant and unchanging, waiting passively for colonialism to usher them into ‘civilisation’. To the contrary, African societies experienced significant change during the many generations preceding European incursion at the end of the nineteenth century.

Akamba did not always occupy historical Machakos, Makueni or Kitui Counties. There are several postulations as to the origins of the community referred to as the Akamba/Kamba in this study. There is the Lambert proposition that the Kamba, together with the Kikuyu and Embu, were originally inhabitants of Shugwaya near the Kenya-Somali border before they were driven out by the Galla in the sixteenth and early seventeenth century. None of the coastal traditions, however, contain a Kamba or Kikuyu presence at Shungwaya nor do Kamba and Kikuyu traditions record the name (Munro, 1975:8). It does not therefore, sound plausible. Some Akamba accounts suggest an original homeland to the north or north-east in ‘Misri’ followed by migration due to Pharaonic persecution (Ndonye, O.I.:2020). A Biblical influence on the myth or a Shungwaya contest that forced the Akamba out of the area before the sixteenth century is a possible explanation of this account.

Another theory suggests that all people of pre-colonial Kenya were dropped by Ngai (God) or Mumbi (Creator) from heaven and they were set atop a rock on a hill in Kinany’e in Athi River. From there, the different communities including the Mbeere, Kikuyu, Maasai and Embu were scattered over different settlement areas (Thande, O.I.:2020). According to this theory, the Mbeere were the first community to ever inhabit eastern Kenya. It is probable that the Akamba did not move into Kenya from
Shungwaya but from some other area south-eastern Kenya or north-eastern Tanzania. Whether the Akamba came to the highlands of Machakos from Shugwaya or from some other area, most Kamba traditions point to their migration into Machakos from the south or south-east explained as emanating from around Kilimanjaro.

Akamba occupation of present day central Tanzania, in the vicinity of Mount Kilimanjaro is the most reliable account (Lambert, 1947; Ambler, 1988; Matheka, 1992). This tradition also places the Akamba nearer the Nyamwezi of Central Tanzania. They later separated from each other with the Nyamwezi moving towards Lake Victoria, and the Akamba, following the Tsavo River to Chyulu area sometime before 1600 AD. In fact, Kamba is said to be a geographical location in the area occupied by the Nyamwezi in the pre-colonial period (Lambert, 1947:130).

Munro (1975) contends that a Kamba family certainly established itself as one of the ruling dynasties of Unyamwezi, possibly in the seventeenth century. This, according to Munro, should be regarded as a part of the numerous offshoots scattered throughout southern Kenya and northern Tanzania rather than evidence of an original homeland of the Kamba in the area of the Nyamwezi. The perspective stresses an actual blood relationship between the Akamba and the Nyamwezi. Evidence in support of such a blood relationship is that the Akamba maintained a peer relationship (utani) with the Nyamwezi, a relationship that did not exist between them and any other community (KNA/DC/MKS/7/1, 1939:22). Similarity in the culture of teeth-filling or chipping is further evidence of a closer relationship. The explanation of this close relationship is that there was a man (Mkamba) in the Tanganyika Basin who had two children, that is Kamba and Nyamwezi, long before the Kamba migrated to the Kilimanjaro region (Lambert, 1947:2). The Akamba and the Nyamwezi were in constant contact with
each other through the long distance trade that sourced goods for the interior and transported them to the East African Coast (Kimwatu, O.I.:2019). Such a relationship was likely stretched further through oral history to include a theory of an actual blood relationship.

Towards the end of the sixteenth the Akamba moved out of the Kilimanjaro region possibly due to competition for resources with the Maasai and other communities (Ambler, 1988:9). A northward movement following the Tsavo River led them to Chyulu Hills. The area was inhabitable since it was rocky and poor in water supply. It was impossible for them to reach high parts of the hills making it hard to utilise the available resources at the site especially wild game. They then moved onto the Kibwezi plains, but long seasonal droughts in the area forced them to move north until they reached Mbooni hills in the mid-seventeenth century. The Mbooni Hills, with thick forests, high rainfall, numerous streams and fertile soils offered the Akamba the kind of environment they had long sought. Indeed, the Akamba of Machakos and some groups of Kitui Akamba look upon Mbooni as their original ‘home’ (KNA/DC/MKS/4/10:80). Over time the Akamba began to spread out from this central point due to several factors among them economic pressure.

Initial migrations from this central area were over short distances and largely restricted to the hills in and around Mbooni, areas that were suitable for cultivation. The plains below Mbooni hills were occupied by the Maasai and thus the Akamba preferred the hills of Iveti, Maputi, Kaumoni, Kisau, Nzaui, Kilungu and Kalama which were more secure and better suited for crop production (KNA/DC/MKS/4/10:81). The hills served to avoid direct confrontation with the Maasai. By the mid-eighteenth century pioneers dispersed from these hills in all
directions, settling in central Kitui, and in the nineteenth century made their final migrations into the drier northern Kitui as well as Matungulu and Kangundo in northern Machakos. Akamba expansion was a continuing process taking place in slow protracted advances over a long period of time. The Akamba were still moving and settling over new areas within the county when colonial rule disrupted and halted such movements.

2.4 Land Tenure Systems

According to Lambert (1947:133) the Akamba first settled on the southern and eastern fringes of the Mbooni massif. They were confined to the hills for a considerable period of time due to the threat by the Maasai who roamed the plains below. The settled area was uninhabited but with plentiful game and enough water supplies. As such, the Akamba altered their economic practices to adapt to these conditions. Lambert contends that the Akamba were primarily hunters and only resorted to cultivation due to Maasai threats in the lower areas. As such the Akamba began to depend more on agriculture. Land and its resources was a major factor influencing the development of Kamba society. The main dynamic was slow population increase accompanied by relative abundance of land for cultivation, grazing and hunting as well as an abundance of trees to hung beehives (Munro, 1975:12). Political and social institutions adopted were suited to the constant migration and settlement patterns of individuals and small groups.

Land tenure is a series of relationships among individuals with regard to the ways in which land may be used. The Akamba of Machakos were divided into a number of genealogical sections known as mbai (clan or clans). Each section believed to be based on one common male ancestor who occupied a particular geographical area.
Many of these parent clans were scattered over most of the county while others were found in Kitui. This scattering meant that a clan in a particular area was composed of descendants going back only three or so generations. This was the beginning of kinship land ownership or utilisation as far as the Akamba were concerned (Lambert, 1947:133). Parent clan names were mostly tied to an original actual area in the Mbooni Hills and its vicinity. For example, the *Atangwa* clan is formed by a people from Utangwa, *Eombe* from Kiombe, *Akitondo* from Kitondo, *Anzauni* from Kisau, *Ethanga* from Ithanga and so on (Muthoka, O.I.:2019). This has a similarity with the Kikuyu assert that there were nine flats of land at Mukurwe wa Gathaga which were the land originally owned by the founders of the nine Kikuyu main clans. An important argument advanced by Lambert (1947) is that some of the Akamba clans were not necessarily of Kamba origin. This shows the fluid nature of pre-colonial Kenyan communities as some of these clans were of Embu, Meru, Tharaka or even Kikuyu origin.

With economic pressures and security threats in the original settlement, it was usual for a man to go out to hunt to supplement household subsistence. During a hunting expedition, an individual noted a piece of bush that seemed fertile. In an opportune time, he went back to put a sort of boundary to the area to mark it as his portion of cultivatable land (*ng’undu*). *Ng’undu* (unit of cultivation and homestead) was the closest definition of private land tenure in pre-colonial Machakos County. Claims of such a kind were honoured. Over time, the search for usable land intensified and the *ngu’ndu* included sections of pastureland for home use since they would be nearer the residence. Plentiful land permitted the abandonment of such land units when the soil had been exhausted. This influenced the custom whereby elder sons left their father’s
homes to set up their own homesteads (misyi, singular musyi) in other areas (Nthei, O.I.:2020).

A high degree of individual mobility and a continually expanding frontier of settlement resulted. Individual pioneers moved into the bush or wasteland (weu) to establish their own misyi. These misyi were divided into two distinct portions of land based on their usage. There was the cultivated land (ngundu) and the kisesi (grazing land. Although all grazing was communal, the original meaning and use of the kisesi was of a cattle pen rather than a strict grazing area (Nzomo, O.I.:2020). Demarcation of land that was already claimed and of the grazing and cultivated lands was done by branches in a way that was recognisable to the rest of the settlement. This was to ensure the protection of planted crops. If the livestock numbers increased so that it was not convenient to graze them on the uncultivated kisesi, they were taken to a common grazing area (weu). This weu also meant open unclaimed land where individuals to mark out portions for themselves (Musembi, O.I:2019).

In the weu an individual established a kyengo (plural syengo - livestock post) for his livestock. It was the men or their relatives who went out to take care of the cattle in the syengo. The kyengo served as a reserve grazing area when pasture begun to diminish or when it was dangerous to graze in the broad open country due to Maasai raiding threats. As cattle gained greater economic significance, heads of families preferred to construct their misyi on the isese, with women going to the ng’undu to carry out farm work daily going back to the misyi in the evenings (Wambua, O.I.:2019). Greater importance was attached to the ng’undu more than the isese. The ng’undu was seen as a requirement for production in order to subsist and thus a primary right for every Akamba. Indeed, the title of the ng’undu was almost perpetual.
(unless the owner decided to move to the weu to establish another ng’undu) while that of the kisesi depended on who utilised it at any particular time. The attitude towards grazing was that the weu was open for use by an individual of the community (Kimwatu, O.I.:2019). Land that had never been in use for cultivation was always available for any member of the community to utilise until colonial rule set limits on where people could graze.

Generally, the ng’undu was held in high esteem since it had spiritual connotations. It was on the ng’undu that the owner sacrificed to the aimu (spirits of the departed members of his kinship). This portion of land was rarely sold and in most cases was divided among the sons who then carried on with the same tradition. If the owner of the ng’undu decided to move out of the land, then he would bequeath it to whomever he wished or “sold” it or got a token for it. If the owner decided to keep allegiance to his ng’undu even after moving out, a member of the family constantly visited the place to make sure that the rest of the settlement understood that it was not abandoned (Kyambi, O.I.:2019).

Over-fragmentation of land was guarded against by a principle of land acquisition based on the birth order of sons. The eldest son (ikithathi) moved out first to establish his musyi in the weu followed by the other sons. Only the youngest son (ilumaita) remained to safeguard the interests of his mother (in case of a polygamous family). If the man had only one wife, then when all the sons left, his position was taken up by one man, his youngest son. This organisation and flexibility of land tenure was halted and disrupted by colonialism as demonstrated in the next chapter.
2.5 Socio-political Organisation of the Akamba

In the new settlements the pioneers grouped themselves in *motui* (singular *utui*). This was a group of homesteads composing a compact territorial entity strong enough to defend itself against any security threat. These settlements were of diverse *mbai* origins. The settlers retained loyalty to their parent clans. In the settlements social relations were based on mutual assistance and joint defence rather than on kinship (Thitu, O.I.:2019).

Practicability of daily living was managed by the kinship group. The village rarely had need for contact with outsiders other than to respond to or initiate assault in defence of livestock or to add to them. Each *utui* had its own men’s club (kisuka) in which the young married men (*nthele*) and the elders (*atumia*) met to discuss general affairs. Each settlement also had a recreation ground (*kituto*), its government comprising the general council of elders (*nzama*) and a judicial/tribunal body (*asili*), a warrior group (*athiani*) and its own sacred ground (*kitonyeo kya ng’ondu* or *ithembo*).

It was in the sacred ground that the famous *kilumi* (indigenous and ritualistic) dance events took place (Ndonye, O.I.:2020).

It is important to note that the Akamba did not develop a centralised political system. The fluid nature of the society, with its constant migration and settlement, coupled by the shifting system of land use, did not favour such a centralised system (Lambert, 1947:134). Kamba society was generally fragmented into shallow lineages and small territorial organisations, lacking in centralising institutions. The possibility of such a development cannot be utterly dismissed. At the advent of colonialism, there were all indications that the conditions of centralisation of administrative authority had been planted (Lambert, 1947:135). The *kivalo* (a grouping of *motui* among whom social
interaction such as intermarriage is complex enough to produce common interest) was an example of steps towards centralisation. The kivalo however operated at special times when tasks considered too great for one utui were performed. These included fighting and raiding bands which were organised on the basis of the kivalo.

Central operations of the kivalo were entrenched in a representative group of elders (king’ole) which met to discuss and sanction actions to be taken by the inhabitants of an entire kivalo. The punishment of sorcerers and persistent offenders (criminals) were chief functions of the king’ole (Kivai, O.I.:2020). Recreation activities of the kivalo such as dancing could at times be carried out in a common kituto. Dances were of various types. The most common was that of the unmarried youth who danced under the watch of custodian elders (both men and women). Social and sexual education for the youth was carried out in such dances (Ndonye, O.I:2020).

Raiding the Maasai, which required minimal organisation, was carried out by the anake (young unmarried men) and the nthele of a kivalo. These raids and counter-raids made relations between the Kamba and the Maasai discordant even during colonial rule. A member of the kivalo known as a muthiani (an advisor or general) provided leadership. This muthiani was not a leader of the community but rather an elder who used his knowledge of seasonal movement of game and the Maasai on the plains to initiate both hunting and raiding expeditions (Kitonga, O.I.:2020). Raiding therefore gave an opportunity for individuals to accrue authority and command over the community. A man’s status in society was measured by his wealth and capabilities rather than his birth or social connections (Tignor, 1976:14). This opportunity was nonetheless, diminished by the fact that the knowledge and skill possessed by the muthiani did not extended to the nzama or even kivalo to give then distinguished
honour. The muthiani acquired wealth (he got a large share of the spoils though he did not actively fight) and prestige from the success of the expeditions they led successfully (Nthei, O.I.:2020).

2.6 Ecological Change and Human Response

Relationship between the Kamba and other communities were not always estranged. Interaction between them and the Kikuyu were less abrasive. The Kamba economy was one which relied on the family farm to produce the bulk of subsistence while livestock grazed on isese (home pastures). These failed in times of rainfall shortage and droughts leading to famines. Famine was a recurrent phenomenon in Machakos County. Unreliable rainfall was a feature of most of the areas settled by the Akamba. Most Kamba-Kikuyu trade and intermarriage occurred in times of famine when desperation drove the Akamba across the Maasai-controlled plains to seek food, kuthuua, among the Kikuyu, Mbeere and Embu who occupied the more agriculturally productive central Kenya highlands (Mbole, O.I.:2019). A number of men as well as women participated in this endeavour at one time or another. In exchange of their livestock, livestock products and sometimes labour the Akamba regularly obtained foodstuffs from the Kikuyu, Mbeere and Embu (Ambler, 1985:212, Ngila, O.I.:2019).

Famines among the Akamba generated a phenomena of constant mobility. These movements also served as impetus in the development of trade connected to the survival of the community. Commercial links developed between the East African Coast and the eastern highlands initiated and controlled by the Akamba. By mid-nineteenth century the Akamba regularly supplied ivory to the Arabs in Mombasa. Ivory was the item of greatest demand as well as the most lucrative whose centre of trade lay in Kitui (Ambler, 1985:210). The Machakos Akamba did not involve
themselves extensively in the trade. They only took small quantities of ivory, honey and livestock products to the coast. Ivory was obtained from hunting or more commonly by trade with the Kikuyu (who received in return livestock, gourds, arrow-poison, and metal-work). The Akamba however, travelled to the coast more often to sell cattle, a trade largely based on the southern areas (Muthoka, O.I.:2019). These trade networks were instrumental in the rising of wealthy individuals among the Kamba. These individuals not only represented the abundance of food supplies but also the ability of an individual to lead a group of people making the kuthuua system successful (Maingi, O.I.:2019)

The Machakos Kamba felt the full impact of external trade only later in the century, when Swahili and Arab traders ventured into the Machakos highlands. During the 1870s and 1880s trading Arab and Swahili trading caravans entered Machakos to purchase local supplies of cattle and ivory and to find guides to Kikuyuland. This also coincided with some of the hardest times in the history of the community in particular and eastern Africa in general (Ambler, 1988:3). In the 1880s and 1890s, central-eastern Kenya was one of the many regions in sub-Saharan Africa assaulted by extraordinary confluence of disease and famine, in the wake of which colonialism followed (Osborne, 2014:32). People saw a connection between the disaster of drought, famine, and disease on the one hand, and the advance of European economic and political power on the other (Ambler, 1988:2). These ecological crises greatly weakened the economic, social and political base of the Kamba. They also led to social disintegration of the community with many of the residents opting to migrate out of the crises zones to secure their survival. Many migrated towards Kikuyuland in central Kenya through Yatta where they were assimilated while others migrated into Kangundo and Matungulu as far as Ol Donyo Sabuk. These areas were initially
utilised by the Maasai as evidenced by the various place names such as Manyatta (a place of Maasai homesteads), Mbilini (pastureland) and Ol Donyo Sabuk (large mountain) (Thande, O.I.:2020). As the Maasai economy shrank due to the late nineteenth century ecological disasters, the Akamba migrated to these vacated regions (Ndonye, O.I.:2020).

Rinderpest was one of these major ecological disasters since it affected the heart of the Akamba pastoral economy. This was a viral disease that led to the death of up to 95 percent of the cattle population in some areas (Maxon, 2009:144). This disease occurred in Ukambani in 1891 and 1895 as well as in 1897 and 1898. Locust swarms also swept through Machakos in 1894 and 1895 followed by influenza in 1895. Drought and famine accompanied these diseases. The diseases were spread over large areas by hunting and trading caravans that traversed the region over long distances in search of a livelihood. Famine was the most devastating of these ecological disasters.

The 1870s, 1880s and 1890s produced arguably the most severe famines ever known (Ambler, 1988:124). The Muvunga (variously known as Njaa Kuu, Ngomanisye, Great Famine and Magunia) famine was the most serious since it coincided with the loss of cattle and people due to disease (Mwanthi, O.I.:2020). The cattle that remained were the only hope standing between life and death for families in Ukambani. Muvunga came at a time when other environmental factors had already put pressure upon crop production (Matheka, 1992:62-63).

While the rinderpest and locust epidemics were still raging, smallpox broke out in 1895. This disease was associated with caravan trade and was known in East Africa as early as 1892. However, in the 1890s the otherwise childhood disease affected adults as well as children. Smallpox led to the death of between a quarter and third of the
human population in Machakos (Munro, 1975:48). Triple tragedy befell the Akamba who were already affected by famine and rinderpest. These ecological disasters were especially severe in Eastern Kenya where the production systems, which were interdependent, of the Taita, Maasai, Akamba and Kikuyu were greatly affected (Matheka, 1992:66).

The Kamba community was faced by the deterioration of agricultural resources, sudden decline of surrounding pastoralist populations, and the advance of European economic and political power (Ambler, 1988:8). Locust swarms and the death of family members from disease, meant that families did not grow enough food reserves to enable them survive through the famine. British regulation of trade coupled with livestock quarantine conditions due to rinderpest also meant that the community could not procure food from other areas (Osborne, 2014:12). Livestock became an important part of the Kamba economy with the decline of Maasai influence on the grazing lands in south-western Machakos in the 1880s (Muthoka, O.I.:2019). By the 1890s the Maasai had abandoned much of eastern Kajiado. This was due to a decline in their population following a pleura-pneumonia outbreak between 1883 and 1887 and a rinderpest outbreak in 1891.

These diseases led to a decline in the Maasai economy and source of subsistence leading to famine. Therefore, the constant threat to livestock ownership among the Akamba was eliminated. Accordingly, individuals in the community began to own large numbers of stock that became an integral part of the community's social, political and economic life in the 1880s and 1890s (Thande, O.I.:2020). Cattle permitted people to survive during famine for several reasons. The milk, blood and meat were a source of subsistence after the end of drought as it would take at least one
season to grow food crops (Osborne, 2014:46). The Great Famine was too severe since the interdependent ecological systems of Eastern Kenya were all affected. Ecological interdependence had previously prevented the occurrence of regional famines. These disasters led to a decline in the capacity of the Akamba people to deal with ecological changes in their environment and left them too weak to effectively resist colonial rule (Rocheleau, et al; 1995:12).

Regional economy breakdown in eastern Kenya in the late nineteenth century was, however, not entirely due to ecological disasters. Food procurements by trade caravans and the nascent colonial administration, as well as the ‘pacifying’ activities of the latter were important in the deterioration of the economic conditions of the Kamba. The community did not only forcefully provide food to the many and large caravans that were traversing it on their way to and from Uganda in the 1890s but also provided food for imperial activities (Mutisya, O.I:2019). Besides food procurement there was also the looting and destruction of local economies that had begun with Swahili caravans and carried on by the expeditions of the colonial administration (Ambler, 1988:9). One such expedition in Machakos in December 1895 for example, led to the burning of many villages and over 500 cattle and 1,000 goats were confiscated (Munro, 1975:35).

2.7 Summary

This chapter has analysed of the pre-colonial history of the Akamba. It examined the origin of the community, the socio-political organisation and land tenure systems to the end of the nineteenth century. It also discussed pervasive ecological and economic changes of the late nineteenth century that impacted on pre-colonial Akamba society equilibrium. These led to changes in the societal organisation and adaptation to the
changes environmental conditions through acceleration of trade, migration and of raiding activities. As the community was still adapting, colonial rule halted the process of re-organisation of the community’s socio-political and economic systems. The theoretical perspective of political ecology was applied in the understanding of the relationship between the Machakos Akamba and their environment in the pre-colonial period. Political institutions developed by the Akamba were patterned according to land use systems. This community remained in contact with other communities especially the Maasai and Kikuyu and later with the Swahili and Arab traders. Entry of colonial rule altered these relations. The next chapter takes up from the early twentieth century to examine the establishment of colonial rule in Machakos and its impact on environmental change and adaptation up to the beginning of the Second World War.
CHAPTER THREE
COLONIAL LAND POLICY, LAND DEGRADATION AND AKAMBA RESPONSE, 1895-1932

3.1 Introduction
Establishment of colonial rule led to considerable transformation in the environmental conditions of Machakos County. Human activities have always changed the physical environment but the scale and impact grew enormously during the colonial period. In order to survive, the Akamba responded to the altered environmental conditions under the demands and restraints of colonial policies. This change and resultant response of the Akamba up to the resolutions of the Kenya Land Commission is the subject of this chapter. Land alienation and land-use policies up to 1932 are discussed from the political ecology theoretical framework. This chapter therefore, examines how the establishment of colonial rule impacted on the indigenous populations’ patterns of land use with what consequences and responses.

3.2 Establishment of Colonial Rule in Machakos County
In the course of the second half of the nineteenth century trade and warfare led to an enlargement of the social and economic institutions of the Kamba community. Emerging centralising figures were a common feature in the Kenya highlands in the late nineteenth century. In the central highlands, for example, priestly office holders such as the Maasai Laibon and the Nandi Orkoiyot assumed a degree of secular leadership. Among the Akamba personal wealth in the form of livestock or trade goods enabled these leading figures to overcome the limitations of the small territorial organisation of utui and kivalo and consolidate power around them. These men took advantage of new networks of loyalty transcending those of the immediate kin and
neighbourhood thus promoting action on a wider scale than ever before (Ndonye, O.I.:2020).

External factors of social change such as waning Maasai influence and expanding Swahili commerce played a role in changing the society’s socio-political outlook at the advent of colonial rule. When representatives of British colonial rule entered Machakos in 1889, the society was in competition for status and leadership. This competition was between the athiani and the brokers in trade (who were also members of the athiani or nthel/young atumia group). Though these two had divergent interests, the different operating areas put them in competitive interest-groups that is, military and commercial. These groups became an important factor in the process of colonial encroachment in Machakos County. It was in this context that the British encountered a society undergoing rapid social change in the midst of ecological difficulty (Anderson, 2002:23).

Initial Kamba-British relations were cordial since both parties had coinciding interests. For instance, the Company was in need of food supply, an engagement the young men were willing to undertake since it boosted their trade and political interests. Unlike the Swahili traders however, the British set a permanent base at Machakos with the intention of becoming a strong political entity. The aim of IBEAC was to exploit the centuries-old long distance trade that had linked the African interior to the coast. It sought to replace the Swahili, Mijikenda and Akamba ivory traders, who by the 1860s had trodden routes that ran from the coast via Kitui, through Mount Kenya, into the Tugen and Cherengany hills all the way to Mount Elgon and Turkana. Indeed, African knowledge of these routes was harnessed and used in the building of the Company’s fortunes (Atieno-Adhiambo, 2000:17).
It was in such a process that Ukambani was taken over on behalf of the Company by Fredrick Jackson. Jackson made a treaty with Mbole wa Mathambyo, a trade broker living in Kaani at the south-eastern end of Iveti massif. In the treaty of 4 August 1889, Mbole claimed to place himself and all his territories, countries, peoples and subjects under the protection, rule, and government of the IBEAC. Mbole allegedly ceded all his rights and privileges of government over all his territories, countries, peoples and subjects to the protection of the Company whose flag was a sign of such protection (KNA/DC/MKS/4/1, 1911:4). It is doubtful if Mbole appreciated the significance of the treaty which he willingly signed. He probably believed he was undertaking a ceremony of instituting brokerage with the visitors (Munro; 1975:35). Mbole was certainly in no position to cede rights neither did he command authority over any countries and peoples so as to place them under British protection. The treaty, however, provided the IBEAC with a legal basis to claim sovereignty over an undefined area of Machakos hills.

The first fort at Machakos was constructed by Latrobe Bateman assisted by his Akamba neighbours. George Leith succeeded Bateman after a period of less than a year. Open resentment to permanent alien presence was precipitated by the incompetence and inefficiency of these two officials both known to be drunkards by the Akamba (Munro; 1975: 35). Interference in trading activities was a further source of dissatisfaction among the Akamba in Machakos. Ever-present troops (Sudanese and Swahili) clearly demonstrated the Company’s military strength and to the Akamba, a sign of imminent conflict.

Leith’s administration was marked by conflict with the Kamba. In 1891 for example, he sent his Swahili assistants to get a long pole from the Ithembo (a place of worship
or sacred place designated for offerings and sacrifices) at Matetani, Kasinga kivalo which to the indigenous people was sacrilege. When the young men protested against Leith’s action by attacking the fort, Leith scattered them with rifle fire. This was followed by a three-week period of hostilities when Leith’s troops went into the Iveti area burning houses in an attempt to bring the Iveti people under control (KNA/DC/MKS/4/1, 1911:2). Peace only returned in January 1892 when John Ainsworth replaced Leith. Ainsworth, who before his appointment had experience dealing with Africans, tasked himself first to restore peace between the British and the Iveti people. He restored normal trading modalities including present-giving and endeavoured to lay strong foundations of British rule in the county. It was during Ainsworth’s time (1892-1899) that the most of Ukambani were brought under British control. Therefore, the period 1892-1910 was characterised by geographical survey, building of fortresses and martial invasion in the entire prospect Kenyan country (Lonsdale, 1991:67).

In what was named the East African Protectorate from 1895, the manner of relations soon changed into a military frontier and battles of conquest became the custom from that time going forward. This led to the loss of African lives and destruction of their property. Many of the communities chose to flee the incoming intruders moving farther inward away from the railway and other colonial establishments rather than endure violence (Elkins, 2005:2-5). Several punitive military expeditions were carried out before the Kamba could be brought under control. The most noteworthy of these expeditions were those to Kilungu, Mukaa, Mbooni and Kangundo between 1894 and 1896 (KNA/DC/MKS/4/1, 1911:4). In some cases very severe punishment was inflicted. In other cases the Akamba fled from these expeditions with their stock the only real loss suffered being the burning of houses and destruction of entire
settled (Ibid). These events set the stage for the decades-long environmental change in Machakos County.

Established in 1889, Machakos was the first British upcountry station and was the capital of the inland territories of the Imperial British East Africa Company (IBEAC). Its primary use was that of a general store and forwarding station (Muendo, 2016:37). When the colonial government took over the administration of the Protectorate from the IBEAC in 1895, Machakos was the capital of that administration and remained so up to the time the Uganda Railway first reached Nairobi in 1899. Machakos was bypassed by the railway which was still under construction. By then, the station had already served its purpose as a strategic centre for the consolidation of colonial conquest in Kenya (Munro, 1975:53).

The name “Machakos” has a history that goes back to the second half of the nineteenth century. It is traceable to a prominent Kamba prophet and medicine man (mwathani and mundu mue) Masaku wa Musya (Mbole, O.I.:2019). He distinguished himself as a seer at Kiima Kimwe which is the present area of Machakos town, by giving accurate prophecies or forecasts of rain patterns. He also gained prominence as a result of being able to tell the location of elephants which were central to the flourishing ivory trade. He was also able to assist the Akamba in locating and raiding Maasai cattle (Nguu, O.I.:2019). Masaku grew into a valuable partner in the chain of trade between the East African coast, through the Kamba country and into the Mount Kenya region. He became a broker in this Swahili and Arab caravan trade. It was the Swahili-Arab traders who first used the term Masaku for Kiima Kimwe, in recognition of the prominence and dominance of Masaku in the area. Later the British picked and used the term. Since they were unable to pronounce Masaku they
pronounced and wrote it as Machako and Kiima Kimwe as Machako’s. With time the area became known as Machakos. It came to cover not only the area of Masaku’s operation but an expansive territory occupied by the Akamba which became Machakos District (KNA/DC/MKS/4/1, 1911:4).

3.3 Land Alienation in Machakos County

The imposition of colonial rule in Africa led to land alienation especially in Sub-Saharan Africa. For any colonial economic goal to succeed, land, which was the major means of production, was alienated. The disruption of the pre-colonial cultural arrangements and physical boundaries, contributed immensely to the environmental degradation experienced in the continent. Populations were moved to infertile and fragile ecological zones across the continent, resulting in the collapse of ecosystems and the emergence of a cycle of poverty due to environmental degradation. Fertile soils and healthy ecological zones were reserved for the Europeans (Nhamo & Inyang, 2011:16).

African land was alienated for various purposes such as the creation of game reserves (national parks as well as conservancies), for creation of mining zones and for infrastructural development. The main reason for the acquisition of African land was the creation of large settler agricultural and ranching estates. This was the case in the British South African colonies as well as in East Africa. Identification of economic capacities of different areas was the first step which guided the process of land alienation (Amanor, 1994:3). Those areas that did not promise economic capacity were marginalised in economic and administrative development (Hobley, 1910:10). Settler agriculture was supported through land alienation and impoverishment of African economies to ensure a continuous flow of labour to the European enterprise. The
partitioning of the continent and its resources among European powers with little regard to African rights and needs led to much of the environmental degradation experienced in Africa in twentieth century.

In order to justify land alienation, colonial writings on Africa pursued a theme of African wastefulness due to their ‘irresponsible’ and ‘wasteful’ production techniques such as pastoralism and shifting cultivation. According to this colonial history, Africans occupied delicate lands and their “poor land use systems” had led to creation and enlargement of deserts such as the Sahel (McCann, 1999:6). Machakos’s story is entwined within a development narrative par excellence, the narrative of overstocking, which told the tale of a pre-colonial Eldorado of environmental stability ruined by the excesses of herders who exploited the common pasture beyond its capacity to endure and whose actions therefore needed to be controlled to prevent a once rich land turning into a desert (Anderson, 2002:23). By blaming African farmers and pastoralists, international agents sanctioned colonial rule’s centralised organisation and control of rural environmental resources chiefly agricultural land (Amanor, 1994:3). Much of colonial literature, portraying Africans as lacking environmental wisdom, sought to justify control of African indigenous land tenure through land alienation and natural resource utilization (Kivai, O.I.:2020). For example, the Kamba understood the relationship between tsetse flies, wild animals and bush and the survival of their cattle. In fact, the African pastoralist economy resulted from the successful imposition of a man-controlled ecological system (Kjekshus, 1996:13).

The myth of African destructiveness of the environment was not only perpetuated by the French in the Maghreb but also by the British in East Africa. In Kenya, the
Akamba were often referred to as the ‘lazy natives’ with an unnecessary attachment to cattle which made them unable to fully utilise land available to them to produce enough food for themselves (Ambler; 1988:1, Kjekshus; 1996:6). This argument by the British was followed by intensified land alienation which affected the way in which the Machakos residents interacted with the environment. The most productive areas in terms of farming and livestock grazing were alienated for European occupation or were set aside as crown lands. Africans therefore, lost their reserve grazing areas leading to the overuse of the Machakos Reserve (Thande, O.I.:2020). This led to environmental degradation which was interpreted by the colonial administrators as a problem with all Africans who were regarded as wasteful cultivators and as having an inordinate attachment to livestock.

On the contrary, environmental problems in Machakos County were not the result of Africans being wasteful farmers and herders who could not have any meaningful impact on their physical surroundings. Policies formed on the basis of single perspectives have repeatedly distorted resource use and allocation in a complex, multi-faceted landscape with a diversity of actors (Rocheleau, Benjamin & Diang’a; 1995:1038). The lack of understanding of African land tenure and economic activities led the British to conclude that the Akamba were wasteful farmers and herders. Colonialism therefore, exacerbated environmental problems that negatively affected the residents of Machakos County (Musembi, O.I.:2019).

The persistent impact of colonialism is a subject that generates conflicting debates. While some believe that the impact of colonialism was an episode that came to an end in Africa in the 1960s (Ibadan School), others believe that the impact colonialism is an ongoing process (Dar es Salaam School and postcolonial theories). It is from the
understanding of the continuous impact of colonialism that land alienation is Machakos County can be interpreted. The patterns of settlement and land use in Machakos during the colonial period represented a radical transformation from the circumstances of the nineteenth century. European colonialists were intruding into a landscape crowded with pre-existing local uses and claims. Conflicts over land between Africans and Europeans during colonial rule revolved around African attempts to recreate nineteenth century models of land use on the one hand and European determination to prevent them from doing so (Anderson, 2002:23). Therefore, Europeans made their goals and rationales of subordinating those claims (Beinart, 1989:145).

In Machakos, alienated crown land lay between the banks of the Thika and Athi Rivers. The reserve was gazetted in 1906 and was surrounded by European farms on the north-west and south, crown land on the north-east, and uninhabited tsetse-infested bush on the southeast (KNA/DC/MKS/10A/7/1, 1954:101). The Akamba were encircled and lost access to large areas which were especially important during dry seasons (Wambua, O.I:2019). In 1913, the Akamba were banned from grazing their livestock on unoccupied European farms bordering the reserve. In 1924 grazing on the Yatta plateau crown land was stopped (Tiffen & Mortimore, 1994:5). British colonial policies in Machakos County sought to control indigenous people and delegitimize their modes of land use on behalf of imperial agricultural interests. A major aim of colonialism was the economic exploitation of the resources of colonised areas (Aseka, 1993:3). Land alienation for European utilisation was carried out from a point of misinterpretation of African land tenure.
The Kamba not only lost political power but also control over their water and range resources which were vital to the proper management of their environment. Colonial governments and subsequent independent states destroyed the basic rationale for traditional pastoral lifestyles. Policies and laws controlling migration routes, watering points, rates of movement and areas permitted for livestock grazing disrupted and interfered with African pastoral organisation. Thus, livestock keepers were forced to use limited resources continuously. Consequently, soil erosion set in and thickets and bushes grew in areas that were not in use. Intricate social and ecological systems collapsed as Akamba activity, adaptation, choice and initiative were not taken into account by the colonial administration (Sindiga, 1981:6, Odegi-Awuondo, 1990:17).

Alienated lands included prime Akamba cultivation and grazing lands such as the Yatta, Mua Hills, Koma Rock, Simba and Machakos town. By 1915 about 737,000 acres of Kamba land had been alienated much of which remained unutilised crown land. The area reserved for African was only forty percent (5,711km²) of the total land area of Machakos County (Simiyu, 1974:112). The areas alienated in Machakos were the most agriculturally productive and thus essential for the community’s survival (Moore, 1979:422). Creation of British administration and settlement created new conditions for Africans that in turn changed the landscape beginning the long transformation of soils and vegetation (McCann, 1999:47).

Although British administration saw the need to have control over land in Kenya, there was a problem with the legality of land alienation. In 1896 the British government extended the Indian Land Acquisition Act to East Africa to enable it to acquire land for public purposes. In the following year, the first Land Regulations gave the administration authority to recognise title to land by means of a certificate of
occupancy with a validity of twenty one years renewable for a further twenty one if occupation and improvement conditions were improved. These terms did not prove attractive to prospective settlers and in 1897 they were changed to 99 year certificates.

The 1901 East African (Land Acquisition) Order in Council authorised the Commissioner of East Africa to ‘sell, grant, lease or otherwise dispose of ‘unoccupied land’ in the Protectorate’ (Dilley, 1966:250-251). This Order defined Crown Land as public lands which were assumed to be all waste lands, that is, all not used by the indigenous communities for occupation, grazing and cultivation and all vacated by them. As a result, the Crown Lands Ordinance was declared in 1902 which made it possible for the Protectorate’s administration to appropriate land and lease or grant it on easy terms to Europeans. Under the Crown Lands Ordinance of 1915 those Europeans holding land under the 1897 and 1902 ordinances could exchange grants for leases. This Ordinance redefined Crown Lands as including all lands occupied by indigenous communities of the protectorate and all lands reserved for the use of any members of any indigenous community. Two lease types existed: 99 years for town parcels and 999 years for agricultural lands. It was under these ordinances that Africans in Kenya were disposed of their lands in the early years of colonial rule (Mbithi & Barnes, 1973:9-10).

European settlement in Kenya, however, did not necessarily follow these legal arrangements. This was so especially in central Kenya where some Europeans acquired occupier rights from the Kikuyu on a ‘willing-seller-willing-buyer’ basis. Between 1897 and 1906 more than 60,000 acres of land in the Kiambu-Limuru area for example, were acquired for European settlement mainly through trickery (Coray, 1978:179). These European settlers preferred land already cultivated by the Kikuyu
which did not involve much land preparation. Eventually members of the community were pushed into the less productive virgin lands that required labour input to clear and ground-break. Some became tenants at will or squatters on their own land. A lot of land occupied and utilised by the Maasai just as the Nandi, was arbitrarily alienated for European occupation. Land alienation was first recorded in Machakos in 1893 when William Mackinnon, the head of the IBEAC, gave the East African Scottish Industrial Mission a free grant of 100 square miles of land in Kibwezi. This land was already occupied by Akamba people and the IBEAC did not have any right to appropriate it for the Mission (Tignor, 1979:22-23).

Alienation of land turned many African communities into squatters and introduced poverty and land degradation through a disruption and destruction hitherto vibrant economies (Mbithi & Barnes, 1973:18). In setting aside land for European settlement the colonial government ignored basic indigenous land claims and rights. In the eyes of the African, all land in Kenya had always been occupied. This was in accordance to conditions such as the elastic boundaries between communities, temporary evacuation from a region due to warfare, drought or livestock or human diseases, and temporary abandonment of areas due to land use systems such as shifting cultivation, disease control patterns or nomadic pastoralism (Ndonye, O.I.:2020). African communities on the hand responded to such economic and environmental disturbances in various ways. Squatting was one of Kenyan African responses to land alienation. It provided Africans with not only money in return for the labour but also land to graze and cultivate (Kathitu, O.I.:2020).

The impact of a policy of land alienation on the indigenous population was not evaluated and neither was it of paramount importance to the colonial administration.
Colonial administrators for example, considered Kamba reserves as being too large for their requirements and could thus be reduced without any injustice to the community (KNA/DC/MKS/10A/8/1, 1908:3). Europeans were driven by capital exploitation and accumulation. On the other hand, Akamba land tenure and economic systems were built on the ability of the community to relocate, expand, supplement or intensify their livestock production and farming economies to align them with changing ecological and economic conditions on small and large scale basis as appropriate (Rocheleau, 1995:1040). This became impossible in the face of land alienation which led to loss of approximately one third of the land the community formally controlled as well as their freedom to migrate like ‘nomads’ to no particular place that had good land (Kimwatu, O.I.:2019). Only one fifth of the alienated lands were put under European cultivation before the First World War. Land-deprived African farmers and pastoralists frequently pointed this out to the European administration (Tignor; 1976:25). Reserve boundaries significantly altered the ecological balance between man, animals and land (Mbithi et al, 1977:12).

Such lands which were critical to the community’s survival included Mua Hills, Donyo Sabuk and the Yatta. Akamba always permanently occupied parts of Yatta for grazing purposes till they were forced out by the Muvunga famine (Matheka, 1992:63, Muola, O.I.:2019). The Kamba state that they had utilised the Yatta since the earliest times for the purposes of grazing, hunting as well as hanging beehives and harvesting honey (Kimwatu, Thukuli, O.I.:2019). As a result, the land was unoccupied in 1906 and was declared Crown Land. Henceforth, the Yatta Plateau could not be utilised without government consent. The Yatta was alienated as crown land of approximately 1,595 square kilometres and divided into three land units.
The Yatta Plateau is a lengthy strip of table-land which runs approximately 322 kilometres along the Eastern bank of the Athi River. It begins from where the Athi and the Thika Rivers make their nearest approach to one another and runs in a general south-eastern direction for the distance stated above. It is bounded by the Athi River on the west and south, by the Thika and Tana Rivers on the north and with Kitui County acting as the boundary on the East (KNA/DC/MKS/26/4/1, 1924:1-2). As such the Yatta Plateau is situated between Machakos and Kitui Counties. It lies at an average height of 1,219 metres, has a rainfall average of twenty inches and is suitable for cattle ranching (Kiereini, 2019:14). During the pre-colonial and colonial period, the northern parts of the Yatta presented magnificent grazing grounds. The area was highly contested between the Maasai and the Kamba as evidenced by the naming of some locations after raid and battle encounters such as Mwakini (‘the place of fire’ where a fire was lit by the Akamba as a warning on the approach of the Maasai raiders) or Mwita Syano (literally ‘pour out arrows’ in preparation for battle) (Parker, 2020:2, Kimwatu, O.I.:2019, Mulei, O.I:2020).

Contestation over the Yatta was based on Akamba’s desire to occupy the area due to exhaustion of grazing in both Kitui and Machakos reserves from 1912. Between 1912 and 1915 some Akamba were allowed to graze in the Yatta on temporary terms the length of which varied from three months to six months. The government thereafter placed stringent measures on the Yatta use claiming that “very valuable grazing will shortly be lying useless” (KNA/DC/MKS/26/4/1, 1924:1). Settler and official views were based on the need to protect all land outside the demarcated reserves from the evils of Kamba land use (KNA/DC/MKS/4/10, 1932-33:17). Colonial argument was that the Kamba were seeking to expand because they were running their land by primitive and wasteful agrarian methods and above all by gross overstocking. As
such, “any addition to the reserve would be at best palliative and at worst folly because it would merely open up more land to agrarian degeneration” (KNA/DC/MKS/26/4/1, 1924:3). Throughout the colonial period therefore, the Yatta was only accessible to the community for grazing purposes on European government terms which included payment of grazing fees and reconditioning of the reserve (Thitu, O.I.:2019).

An important feature of the Yatta is the furrow which is a man-made river that carries water across the plateau from the Thika River and spills it into Mwita Syano and Mathangauta rivers. The furrow provided almost a permanent water supply for domestic, pastoral and agricultural needs of the inhabitants. Building of the Yatta Furrow commenced in 1953 though it had been mapped in 1935. It took almost a decade to complete at a cost of £300,000 and was inaugurated in 1959. The major source of labour for this project was Mau Mau detainees (Kiereini; 2019:16). This furrow was slightly above three metres wide, between five and five and half metres deep and sixty kilometres long. The long-term objective of this project was to supply water to the Yatta grazing lands. This permitted rotational grazing and irrigation development. Rotational grazing in the Yatta was a recommendation of the 1932 Land Commission on the basis of strict conservation conditions and a scheme of utilization which had as its principal object the reconditioning of the Machakos reserve. Using the righteous language of conservationism and the European doctrine of trusteeship, the Commission refused to sanction any land redistribution according to Akamba requests, permitting only slight modifications to reserve boundaries (KNA/DC/MKS/1/1/25, 1932:14-15).
According to Amanor (1994:225) an area with one easily extractable resource was identified by the colonial state. This was followed by intensive exploitation which determined the lives of the inhabitants of the locality. For example, about three fifths of Kikumbulyu area was alienated by the British government between 1906 and 1909 for the extraction and growing of Sanseveria fibre. This was despite the fact that the area was already occupied by about 300 Kamba (Simiyu, 1974:108). Since Machakos possessed no major mineral potential, agricultural land was the major resource acquired and exploited by the Europeans in Machakos County to the detriment of the African population (Secretary of State for Colonies, 1956:16). This was the exploitative nature of the colonial policy of capitalism that led to environmental degradation. European administrators recognised that the reserve was overstocked and degraded. The administration however, used a carrot and stick policy to force the Kamba to give up some of their land in exchange for more land elsewhere. This was in reference to parts of Iveti hills that were already settled by the Akamba in exchange of the Yatta (Maingi, O.I.:2019). It was due to fear of African resistance and the protests of Missionary Societies, Labour Party and other human rights organisations in Europe that resisted colonial exploitation of tropical African resources in disregard of native rights that probably prevented further alienation of African land (KNA/DC/MKS/4/6, 1920:2, Osborne, 2014:64).

Alienated areas were increased according to the desires of the Europeans (KNA/DC/MKS/10A/8/1:1908:4). Mua Hills was one of those areas acquired by the Europeans in 1908. From the point of ‘no man’s land’ the Europeans justified alienation by asserting that African title to land could only be determined through occupier rights. The administration claimed that the Akamba never settled on the hills before the establishment of colonial rule. As such 2,315 Akamba together with their
5,605 herds of cattle were removed from the Mua Hills to Matungulu (Matheka, 1992:75). This was to create land for European ranchers who had established farms at the foot of the hills and who continued to pile pressure on the government to evict the Akamba since they were not putting the land to economically meaningful uses (Muthoka, O.I.:2019).

Britain’s colonial land policy in Kenya revolved around the Crown Lands Ordinance of 1902 which explained how land in East Africa was acquired for European settlement. Through this Ordinance it was assumed that Africans could not lay legal claim on unoccupied or uncultivated land. Right to African land was interpreted as direct physical occupation or customary land use. This was the argument used in Machakos County to alienate lands that were of core importance to the Akamba generating a problem of land degradation (Maingi, O.I.:2019). These lands, although viewed as ‘no man’s land’ by the Europeans, were important as relief grazing areas and sources of food in terms of game. Though not densely populated, it was through them that the Akamba were able to maintain a healthy environment prior to colonialism.

Ulu Reserve (Machakos) included the Mua Hills according to a 1908 government gazette notice. In 1910 however, new boundaries were gazetted which excluded Mua Hills south of the neck above Kamuthanga and west of the Muvongoni River. The area of the land between the Machakos Athi River road and the Machakos Kapiti road as far as the Moruba River was excluded from the reserve (Official Gazette; 1 March 1910:86). As compromise, the 3,000 acre Kyulu triangle was left out of the European settlement and given as commonage to the Machakos Township. Homesteads and families were removed from this piece of land. This generated a long lasting boundary
dispute as the Akamba interpreted these boundary changes as wanton breach of faith (KNA/DC/MKS/4/1, 1910:20; Mwai, O.I.:2019). It sowed seeds of mistrust and suspicion over government-initiated agricultural reforms (KNA/DC/MKS/1/1/10, 1918:2).

With the establishment of colonial rule, land alienation was a strategy to weaken African economies. From the onset, the British set out to impoverish the economic power of the Akamba (Muasa, O.I.:2019). The punitive expeditions of the early colonial period are evidence of this. Burning of houses and confiscation of livestock were part of pacification efforts by early administrators to bring the community under imperial control (Tignor, 1976:6). Colonial argument that African land was too large for their needs was a fallacy to rob Africans of their economic power. It was the transformation of Kamba seasonal grazing land into crown lands, however, that immensely destabilised Kamba economy leading to environmental degradation.

European settlement pattern was distinctly set up in Kenya by 1925 through definitive boundaries of areas to be inhabited by Africans as reserves. Within a few years it became clear that these African areas were too small to accommodate the expanding populations. European farmers whose lands were bordering the Machakos reserve were largely cognisant of such congestion, as they saw dilapidation proceed across the farm periphery (Simiyu, 1974:110). Government identification of pressure to population increase was implied in the objectives of the Kenya Land Commission. Any proposition for additional land to be released for African usage was, however, met with rigid resistance from the settlers. Settler power rested at the rear of the final resolution of the Commission to end the distribution of lands permanently (Anderson, 1984:323). Though this was in accordance to European settler wishes, it was in
contradiction to the evidence that Africans were faced by serious land shortage. It was a general conclusion of the Commission that the problem was not one of land shortage in the Machakos reserve but that of land use among the Akamba (KNA/DC/MKS/1/1/25, 1934:11).

Land inadequacy was a colonial orchestration to ensure a steady supply of labour on European farms in Machakos County and beyond (Fibaek & Green, 2019:73). The environmental degradation in the county was directly related to the politics and governance of the colonial state. Colonial administrators in Machakos argued that provision of additional land very roughly proportional to the rate of population increase would maintain the population increase but fail to induce ‘civilisation’ since the people would be relieved of the necessity to increase their industry and skill. It was also argued, by the capitalist mind, that if land large enough to cater for increase in population was made available, then Africans would become pastoralist since their chief ambition was to be stock owners since pastoralism seemed to require less effort and skill than the cultivation of crops (KNA/DC/MKS/4/10, 1932:1-3).

Colonial administrators perceived the Maasai as the ultimate example of how pastoralism was an impediment to progress. To the colonialists, the community demonstrated that if large areas of land were provided to any African community then the result would be the same since pastoralists had contempt for any kind of work (KNA/DC/MKS/1/1/25, 1932:6). The colonial state in Kenya rejected the idea that nomadic and transhumant pastoralist communities required a right to roam over more land than they were perceived to need or use. As such, pressure was put on them to settle down, cultivate, take up wage labour and pay taxes (Beinart & Hughes, 2007:73). Though the Akamba admitted they had gained a lot of land in Kangundo
and Matungulu in the 1910s and 1920s, with the support of the Iveti cattle owners, they continued to pressure the government for more land in the 1930s (Kyambi, O.I.:2019). Land strain created by population increase was pushed further by an increase in the number of livestock held by sedentary cultivators who had also increased their cultivated areas. The purchases acted as insurance against the uncertainty of cultivation in Machakos County. Money to buy livestock came from a form of commercial farming. Ironically, pastureland shrunk as farms were increased resulting in more livestock with less land to graze. It was under such circumstances that overcrowding arose (Anderson, 2002:93).

African population increase begun in the mid-1920s after a period of what was considered a decline as a consequence of initial colonial occupation due to warfare, disease and famine (Ambler, 1988:7-8). This increase continued to rise steadily and by 1932 the rate of population growth in the Machakos reserve stood at 3.7%. If the rate of 3.7% increase in population per annum was maintained, increase of Kamba land allocations would be impossible since “the whole Colony would be required for the progeny of the Akamba alone one hundred and twenty years from 1932” (KNA/DC/MKS/1/1/25, 1933:6). Explaining the relationship between population increase and land, the D.O. Storm Fox in 1932 reiterated that it was undesirable to add the Akamba land proportional to the expected population increase. According to him, a certain degree of congestion was beneficial, since it supplied the urge of necessity to compel the people to apply a greater degree of industry and skill in the use of the land available, in order that a given area would be made to support a larger population upon it (KNA/DC/MKS/4/10, 1932:3).
Racist remarks were added that “the eradication of all difficulty by an enlightened race is not always in the best interest of Africans, but may cause stagnation and degeneration. Assistance is beneficial when given wisely but harmful when applied indiscriminately” (KNA/DC/MKS/4/10, 1933:5). The problems facing the Kamba on land use leading to degradation were an engineered plot by the British to cause difficulty to the Akamba. This was with the intention of making it hard for them to endure unless they conformed to the standards set by European so-called civilisation through wage labour and choice of cultivation over livestock farming. According to the Europeans, the arrival of “civilisation” meant that life for the African had ceased to be a struggle, part of the colonial plot was therefore to maintain “struggle for existence” in Akamba health and programs (KNA/DC/MKS/4/10, 1932:3). Land alienation and the denial of the right of Africans to more land worked to maintain this struggle and push the community to intensively utilise land through cultivation (Musembi, O.I.:2019).

In British imperial thought, intensive utilisation of land was often perceived as improvement and progress for it had both an economic and moral purpose. Indeed, the British Empire rummaged through the globe for anything beneficial to them yet unconcerned about the needs of other people. The British also established systems of production that led to degradation of environments, reduction or even extinction of biodiversity and widespread pollution of all forms (Beinart & Hughes, 2007:13). Though land was referred to as under-utilised, an interrogation of the ecological impact of improvement proves otherwise. Economic gains led to environmental degradation. This is as evidenced by unending conflict between the Akamba and the British over land and an indifference of the colonial government to the problems of the community.
3.4 African Grievance and the Kenya Land Commission

It was under these circumstances of land alienation, shortage, degradation and African impoverishment that the Kenya Land Commission, headed by Morris Carter, was set up in 1932 to undertake an inquiry into the land question in Kenya. The Land Commission illuminated the extent to which the colonial administration did not understand or was not willing to understand African grievances and this unwillingness was more pronounced in the official policy of land alienation. Africans in the Kenya Colony saw themselves as victims of colonial land alienation because rights which they viewed as customary were trampled upon (Coray, 1978; 179).

During the tenure of this Commission land in Machakos County and the conflict surrounding its distribution became more vocal as a political question (KNA/DC/MKS/4/10, 1932:1-3). Indeed, in Machakos County the Commission dismissed about all Akamba grievances which were presented by community elders claiming that “too much latitude was given ... and many wild and noisy statements were made, grossly overestimating the losses due to European settlement” (KNA/DC/MKS/1/1/25, 1933:4). The elders attacked the whole concept of reserve boundaries, concentrating especially on the northern (concerning the Yatta) and western areas (Mua Hills and the surrounding plains). They voiced a desire to return to the old boundaries with the Maasai and Kikuyu, that they were poor because the land was too small, and that the Europeans were winning the struggle over land. They demanded a reduction in the size of European farms, since many were underutilised, with nothing on them but wildlife (Nthei, O.I.:2020).

This Commission, however, was already compromised by its composition and the fact that no Africans were appointed to it. The Commission was faulted that it could not
enjoy African confidence unless it was altered to include African representatives. African land losses as brought before the Commission by the Akamba were considered a great exaggeration. Some of the commissioners had interests in the same land they were arbitrating. For instance, Frank O’Brien Wilson owned a parcel of land alienated by the government from the Akamba community which was also a subject of litigation before the very same commission (Coray, 1978:182). Objectivity could therefore, hardly be attained. Long before the Commission began its work, serious questions were raised about its composition with some of the members cited to be overzealous about the establishment of an exclusive European state governed by settlers. Indeed, the aim of the Commission was to make a full authoritative inquiry into land questions in Kenya and silence “nervousness among the native population” (Bennet, 1963:54). The Commission’s underlying idea was to reinforce that ample considerations had been made for the African population land needs (Anderson, 1984:322).

Disapproval of indigenous ways of land utilisation and methods of agriculture became prominent in the inquiry. Such matters were brought to the fore because the settlers waged a biased war to bar the extension of land held by Africans by reducing land alienated for settler use. Kamba land use was stigmatised as a destructive and uneconomical. Settler views before the Commission voiced common concerns on the possibility of soil erosion evident in the Kamba reserve spreading to the European farms (Munro, 1975:213). Although many parts of the settler farms were already experiencing decline in productivity due to cereal over-cultivation, to the settlers, this was not adequate explanation of the problem. The settlers blamed the large number of African squatters on European farms as well as their unchecked movement into those farms left unoccupied due to the Depression. The causes of land degradation were less
important as compared to the politicisation of the entire subject of African land utilisation (Anderson, 1984:324).

In the midst of the debate lay the question to what extent Africans could be trusted to take care of the land they owned. Settlers before the Commission testified of African recklessness (KNA/DC/MKS/4/10, 1932:2). The most absurd was a statement by Francis Scott, Chair of the Elected Members’ Organisation that degradation of African lands in Kenya was cut short only by the arrival of organised European administration (Mackenzie, 2000:698). In Central Kenya Commission sittings, Edward Grogan called Africans ‘parasites’, referring to them as ‘mentally rigid’ and inefficient thus in favour of trusteeship of African land. According to him, the patrimony given to the settlers by the colonial administration needed solidification to avert a disaster of the environment and environmental degradation (Anderson, 1984, 324). Europeans saw themselves as the rightful custodians of the land possessing wisdom to not only to profitably exploit it but also safeguard it against deterioration. The voice contrary to such views was suppressed and the Report of the Commission adopted a picture of Africans as irresponsible and untutored in regard to land. An important observation by this Commission on the question of overstocking was that the Akamba did not own more livestock than necessary for their ordinary requirements although much of the stock was of inferior quality and economically useless (Colony and Protectorate of Kenya, 1934:206-209). The evidence given by the Akamba to the Land Commission explains their disappointment with land alienation, leading to loss of misiyi, ng’undu and isesi lands (Matolo Kimwatu, O.I.:2019).

Whatever the Commission found out, nothing changed in the case of Akamba land needs. The three major grievances raised by the Akamba related to a restoration of the
Yatta, Ngelani fruit farm and the Kyulu triangle to them. The Ngelani fruit farm was dismissed by the commission as lying outside its mandate. The Ngelani farm was an area of approximately one hundred acres in the central part of the reserve. It was given to Mr. and Mrs. Stuart Watt as a freehold grant at the onset of IBEAC rule for the establishment of a mission station. It operated as so for a number of years but was later converted into a fruit farm. This was the source of grievance for the Akamba who contended that since the original mandate of the farm was not being fulfilled it ought to have reverted back to the reserve.

The Commission recommended that the government release part of the Yatta for grazing purposes to the Machakos Reserve. The Yatta was required by the Akamba on economic grounds since the historical claims of pre-colonial occupation and utilisation of the area were shallow. This is not to mean that the Akamba of Amchakos and Kitui did not seasonally use the Yatta for grazing purposes. The Europeans were keen on silencing such claims (Kitonga, O.I.:2020). The condition for utilisation of the Yatta was that the Akamba destock and recondition degraded parts of the reserve (Thande, O.I.:2020). If land was granted unconditionally, the Commission forecast that it would soon be filled with stock due to natural increase, leading to overstocking thus the problem aggravated rather than alleviated (Colony and Protectorate of Kenya, 1934:208). There was also a recommendation to include Emali trading centre to the reserve for the sake of the future economic development of the centre. By releasing an area of approximately 7.7km$^2$ to the reserve, the Akamba enjoyed direct access to the railway enhancing economic growth. Muani Hill (an area of about 700 acres) was restored to the reserve on religious grounds. Before the Commission the Akamba asserted that the hill was important for custom and religious rituals. There was however a recommendation for the removal of 3,194 residents of
Chyulu location (Kikumbulyu Reserve) which was reverted to crown land. This was on the basis of limited water sources with residents depending on the railway pipeline for their needs. These people were expected to settle in Chyale sub-location (about 1,326km$^2$ in area) which was sparsely inhabited. When this recommendation was effected, most of the residents however moved to Kilimanjaro rather than to Chyale (KNA/DC/MKS/14/3/2, 1958:13).

Soil conservation measures continued to occupy the County’s administration after the Land Commission. Behind the numerous soil conservation policies and measures, however, lay the sensitive matter of the inviolability of the White Highlands. Thus, settler concerns were not purely environmental. Theirs was a question of control of resources (land and labour) using available political machinery. The settlers felt threatened by the increasing African production of cash crops such as maize, cotton and sisal in the 1930s. When the settler was faced by difficult of capital and the lack of market for his farm produce, the Africans applied the little capital available to them and maximised or bridged the gap and the difficulties posed by the Depression by maximising on local markets. Therefore, the settlers felt that, with an increase in African production that was resilient through the years of the Depression, settler production was under a threat. Settlers therefore felt that their ownership and utilisation of the most productive land in Kenya was threatened. Thus, soil conservation, land use and destocking became the ideal distracters to check African economic competition (Osborne, 2014:107-108).

### 3.5 Summary

The evolution of a conservationist policy in Kenya was greatly influenced by politics due to the control of the administrative affairs of the colony by the settler community.
Political factors therefore, played a major role in the policies adopted to deal with environmental degradation in Kenya in general and Machakos in particular up to 1932. European settler demands swayed the colonial administration leading to better coordination of government effort which quickly attained a broad outlook covering several parts of the colony. European direct involvement into Kamba farming practices was identified the Report of the Kenya Land Commission. Department of Agriculture pamphlets distributed in the early 1930s as well as the visit to the Colonial Office Agricultural Advisor Frank Stockdale were also important. Kenyan agricultural officers who visited South Africa and South America brought their observations to contribute conservation methods in Machakos. The next chapter examines the bearing of this background of settler control to the colonial land and environmental policies in Machakos from 1932 to 1945.
CHAPTER FOUR
ENVIRONMENTAL DEGRADATION, CONSERVATION AND THE DESTOCKING QUESTION, 1932-1945

4.1 Introduction
This chapter discusses the impact of colonial land alienation on Kamba pastoral systems. It examines the conflict between the Akamba and the British over land due to varying perceptions of environmental degradation. This was especially so on the basis of settler control of the political and economic affairs of the colony. The environmental conflict of destocking as related to environmental history is the main theme of the chapter. Colonial policies and Akamba reactions during the Second World War the environmental history of the county is also examined. This is from a political perspective of the intersection of people and their environment in the face of constraining colonial land and environmental policies.

4.2 Background of the Destocking Question: Myth and Reality
Colonial land alienation from 1893 disrupted the Kamba system of land tenure that was to a certain extent optimally adapted to the vicissitudes of the material environment. The Kamba had developed interdependent crop-livestock systems, investing in varying geographical areas and communal reciprocity arrangements over varied climatic regions which served to reduce loss and to offer mechanisms for dealing with drought and famine (Rocheleau, 1995:12). When colonialism closed the frontier, took over existing settled lands, controlled the livestock economy by limiting the Akamba to the Machakos reserve, land degradation set in. The reserve became overstocked almost immediately after its creation (Matheka, 1992:79). Frequent and at times continuous quarantine conditions made the environmental situation dire.
During the pre-colonial period, there were certain natural checks and balances in the use of natural resources in Machakos. The number of Akamba livestock increased and declined through natural cycles of drought and disease. When water supplies failed, grazing areas became limited, pushing the people to more fertile and wetter areas. This then gave an opportunity to eroded areas to recover naturally. Such areas would be reoccupied in better times when seasons changed. Measures like this ensured that pressure on land was always checked to avoid environmental stress. It does not mean in any way that if colonisation had not come there would have been no soil erosion and land degradation at all in Machakos. It simply means that British colonial land use policy accelerated such degradation. Even the Europeans themselves admitted that the environmental degradation of Machakos County and of other areas within the Kenya Colony, were in one way or another, as a result of colonial policies. European administrators observed that land degradation was proceeding faster under colonial rule. Within a few years (especially between 1895 and 1911) soil erosion was noticeable in many parts of Machakos County. The vegetation of the county had changed drastically by 1917 when soil erosion was officially reported in the county (KNA/DC/MKS/26/1/1, 1948:2).

Unfortunately, much of colonial interpretation of environmental degradation in Machakos County became fixated on Kamba livestock. From 1911 Africans were forced to deal with the mortality of cattle for lack of grazing and the permanent destruction of the soil due to erosion (Munro, 1975:78). Soil erosion was officially reported in the reserve in 1917. According to the European agricultural officer R.O Barnes, ‘since 1917 the reserve has become desiccated and denuded out of all knowledge. Large areas which were then good pasture land and in some cases thick bush, are now only tracts of bare soil’ (KNA/MKS/DC/10A/29/1,1937:32)
general failure of rains from 1909 led to official realisation of significant ecological disturbances in Machakos County (KNA/DC/MKS/14/3/2, 1958:4).

Coupled with the failure of crops in some areas for around five years, communal interdependency was no longer a solution, and moving into other areas which were considered reserve by Africans was not an option (Matheka, 1992:73). In this way, a natural phenomenon was met by human-created conditions and government policies that led to serious environmental implications for decades to come. Indeed, up to 1917 grass within the African areas decreased due to lack of rainfall, over-cultivation and overgrazing. European government reports, seeking to blame the Akamba, insisted on an increase in livestock numbers (Munguti, O.I.: 2019). It was in 1917 that the so-called Machakos Problem of land degradation, severe soil erosion and overstocking was first documented (KNA/DC/MKS/1/5/11, 1917:10).

The solution at such a time, in the absence of European policy and limitations, was for the people to take their stock or even a sizeable part of the human population and move to better areas returning only when conditions improved within the Machakos reserve. The other was the death of stock but not as a great catastrophe as was from 1911 since some of the cattle would have survived in the areas migrated into (Thande, O.I.: 2020). Only a few people managed to move out of the reserve to the slopes of Kilimanjaro, especially those in the lower southern areas in Kikumbulyu who had faced drought for a longer time (KNA/DC/MKS/1/5/11, 1917:4).

The introduction of the plough from 1910 as part of colonial agricultural modernisation effort had a flipside of contributing to soil erosion. Cultivation was carried out on steep slopes and flat land without protective hedges and furrows (KNA/DC/MKS/10A/29/1:4). Such practice was spreading from the flatter tops of the
hill massifs to the steeper hillsides and into more marginal soils further increasing
chances of erosion (Munro; 1975:207). Perbody, a government gazetteer, gave a
description of the problem in 1958, though exaggerated, which illustrates European
understanding of environmental conditions in Machakos in the period 1909-1912. He stated:

During these early years the population was growing rapidly. Most of this
expansion took place in the hills, where there was more rainfall and where
custom said that it was safer to live because the hills could be defended from
the Masai. The majority of the trees had to be felled, for many shambas were
being opened up to feed the expanding population. When the grazing on the
hills had been finished the cattle were taken down to the flat land, daily, to
graze and brought back to their bomas at night. By August 1909, one can
imagine very heavily grazed hillsides with heavily grazed land on the flat,
gradually becoming less bare as it receded from the hill masses
(KNA/DC/MKS/14/3/2:5).

Consequently, there was declining food yields, especially in the hilly areas that were
expected to produce better yields due to their climatic orientation even when rainfall
was relatively lower. Decrease in soil fertility due to over-cropping, since the people
could no longer practice shifting cultivation in the face of land scarcity, was the major
cause of decreasing yields. In addition, from the early colonial period, administrators
such as Ainsworth distributed maize seeds to farmers who abandoned the cultivation
of indigenous crops for maize (KNA/DC/MKS/1/5/10, 1911-1914:12). Since maize
required greater soil fertility, after a few seasons, the soil could no longer support high
yields leading to food shortages (Mackenzie, 2000:702). In addition, maize was less
resistant to drought compared to sorghum, millet or cassava.

Contrary to European belief that Akamba request for extra grazing land was a
consequence of increasing stock numbers, a Veterinary Department census in 1917
proved the contrary (KNA/DC/MKS/14/3/2, 1958:6). The community did not own
livestock beyond the dictates of their needs. Indeed, the heads of livestock available to
the individual Kamba had begun to decrease in 1911. The problem was therefore of land alienation rather than of overstocking. With a further consciousness of the importance of land for both livestock and crop production, residents of the more densely populated areas such as Maputi begun to fence out portions of land by planting hedges in order to lay private ownership claims to certain places (KNA/VQ1/29/5:35). This practice that was discouraged by the colonial administration through chiefs who threatened to take away all the land from such individuals (KNA/DC/MKS/1/1/2:47). The administration was wary of the emergence of a landless class. The fencing out of private portions of land would have had the advantage of allowing individuals to determine the carrying capacity of their own portions controlling soil erosion and general land degradation (Matheka, 1992:79).

Africans provided labour for agricultural work in the European farms, in addition to road work and portage (considered as part of the civic duty of the Akamba) at no pay, which increased grievance against colonial rule (Muia, O.I.:2019). While agrarian problems persisted and became acute, no technical advice was provided by the government. A ‘restless and discontent spirit’ in the context of Harry Thuku and Kikuyu Central Association’s (KCA) political activities manifested itself in the 1920s. The Akamba harboured resentment following their removal from the Yatta leading to loss of cattle. A series of indignation meetings were held in the reserve. Had it not been for the fact that the Akamba were aware of the impending visit of the Ormsby-Gore Parliamentary Commission to which they felt they would be able to put up their grievances it is difficult to say what form their resistance would have taken to make their voice heard (KNA/DC/MKS/1/1/15, 1924:4). The Ormsby-Gore Commission was set up in June 1924 to investigate various concepts of administration and development in the British colonies of East and Southern Africa.
One of the reference points for the 1924-25 Commission was to look into ways of improving the social conditions of Africans in these British colonies. The Commission observed that overstocking was the greatest threat to such improvement in Machakos County. The Commission reported that the government was obliged to add unalienated crown land to African reserves to make adequate provisions for their land needs (which were paramount). It however, cautioned the government from giving pastoralists more land, which, without new attitudes and techniques of livestock control, would quickly be worn out (Ormsby-Gore, Church & Linfield, 1925:150). It thus did not ameliorate Kamba attitudes towards the government and the unrest, distrust and discontent continued (KNA/DC/MKS/1/1/15, 1924:5). The government, aware of the possibility of violence withdrew prohibitions allowing Kamba herders to graze their stock not only in the Yatta but also in other unoccupied lands in the proximity of the reserve.

The whole question of grazing for Kamba livestock required a longstanding, sympathetic and scientific solution acceptable to the community (Tignor, 1976:133). Indeed, Akamba attitudes could not change since Europeans and Africans operated from separate worldviews with the Europeans, turning a blind eye to the economic difficulties of the people whom they claimed to govern but whom they exploited through land alienation and unpopular policies, a major the point of political ecology (McCann, 1999:29). Moreover, veterinary services were not available for Africans till the late 1920s even in the face of purported increasing stock numbers (Munro; 1975:227).

Throughout the 1920s the Kamba economy remained unarticulated to the colonial economy. There was minimum effort on the part of the central government to change
or ‘develop’ the Kamba economy (Munro, 1975:81). The government failed to force the Akamba into squatter labour or any other menial form of employment. The Akamba earned themselves the title of ‘lazy native’ for their unwillingness to venture into paid labour (Mackenzie, 2000:700). They worked as squatters only to obtain grazing for their cattle (Mbithi & Barnes, 1977:53). Preferred employment was in areas of mechanics or clerks or any other task that required an exercise of the intellect not for the money but for prestige (KNA/DC/MKS/1/5/11, 1917: 6). War employment was undesirable due to forced proscription and difficulties such as disease associated with the war (Munro, 1975:90). Europeans concluded that the Akamba were slow in responding to civilising influences and “behind other tribes in brain power” (KNA/DC/MKS/1/1/10, 1917-18:35). Economic independence was interpreted as backwardness (Muthoka, O.I.:2019).

A Colonial Office agricultural advisor R.O. Barnes reiterated this statement the same year noting that Machakos County’s ecological conditions at the beginning of the twentieth century were quite different. To him, the reports of both the Akamba and the Europeans that dated between 1900 and 1910 stated that the reserve was well covered with grass and trees. This vegetation was sufficient to keep a number of rivers flowing, yet by 1937 these were dry. The situation had been summed up by Daniel Hall’s Report of 1929 that “It is not too much to say that a desert has already been created where grazing was formerly good, and where even cultivation existed, and that the same desert conditions are steadily approaching the land at present carrying stock and cultivation” (KNA/DC/MKS/10A/29/1). European views summed up a “paradise lost of a once untamed wilderness turned into a ravaged wasteland by the activities of the residents” (Rocheleau; 1995:10).
In an effort to blame the Akamba, Barnes contended that with the advent of settled conditions cultivation steadily increased while the population, both human and stock multiplied fast. Large areas were cleared for planting and trees were felled for building and firewood. Shifting cultivation was no longer viable due to population increase and the privatisation of land ownership. He, just like the other Europeans (settlers and administrators) blamed the over-cultivation of pieces of land as well as the increasing number of livestock for soil erosion. Accordingly, the state of affairs which had continued for a number of years from 1911 had caused the state of the land in 1937 (KNA/DC/MKS/10A/29/1, 1937:3). The causes of such degradation were listed as overstocking, cultivation of slopes, over-cultivation, deforestation, increases in cultivated areas, ploughing, livestock damage and road drainage (Musembi, O.I.:2019). Following these reports and in preparation for forced destocking, the Governor Robert Brooke-Popham visited Machakos County in July 1937 and harshly addressed the Akamba in a baraza stressing the dangers of soil erosion and overstocking (KNA/DC/MKS/1/1/27:1937:1-3).

4.3 Forced Destocking and the Akamba Resistance

Limitation of stock was a common idea within European circles, but devising a practicable scheme for such limitation remained a difficult task. The government was faced not merely with the problem of disposal of stock, but the “unwavering conservatism of the Akamba and the fact that cattle still take the place of currency” (KNA/DC/MKS/1/1/15, 1925:5-6, Tignor; 1976:337). Moreover, the administration was aware that it was no more reasonable to expect the Kamba to limit his stock as it was for the European to limit his bank balance (KNA/DC/MKS/14/3/2, 1958:10). The so-called ‘cattle complex’ was an understanding of the importance of cattle to the sustenance of the family and the community at large. In an ecologically unstable
economy, livestock was insurance against the uncertainties of crop cultivation. A man would die of hunger but he would never slaughter all his animals as they would be left as a means on which the younger generation would survive famine (Osborne, 2014:46). As such, money was not substitute for cattle and any money acquired in squatter or other form of labour was converted to cattle or goats at the earliest opportunity (Maingi, O.I.:2019). As such, livestock gained increased significance in a uniquely insecure environment. In contrast, the administration interpreted the Akamba as unreasonable, living off their capital, land, which they were “ruining by running about four times more livestock to it than it ought to hold” (KNA/DC/MKS/1/1/15, 1925:5-6). The colonial administration concluded that the Akamba could not continue as a stock keeping people since they “were initially mere hunters and they had to become mixed farmers with a bias towards cultivation of crops” (KNA/DC/MKS/10A/29/1, 1937:4).

In an attempt to tackle the problem of overstocking, the Crop Production and Livestock Ordinance was passed in 1926 by the Legislative Council. The content of the Ordinance was three-fold: education of the people to realise the facts of environmental degradation, drastic dealing with the goats (elimination) and the limitation of cattle to the carrying capacity of the land (Newman, 1974:9). Persuasion of community elders was the first method applied by the government in the effort to reduce Kamba livestock. Despite participating in barazas in which information on limitation of stock in relation to the environment was conveyed by the administration, these elders seldom implemented any of the suggestions (Mbole, O.I.:2019). The administration was already aware that destocking rules required cautionary application to avoid controversy and possible resistance.
Across British colonial possessions in Africa, African opposition to state intervention in environmental matters was a common aspect of anti-colonial struggles. A classic example is South Africa where the 1932 report of the Native Economic Commission recognized overstocking by small-scale livestock keepers in the African areas as the greatest threat to the environment and warned that desertification was imminent. This was in reference to the Dust Bowl phenomenon in the plains of the United States of America (Anderson, 1984:327-328). Colonial policy that was drawn recommended a total reorganisation of the communities in the rural areas as well as their economic systems. This included concentrating settlements into villages and the reduction of livestock. More land for African settlement was catered for in the 1936 Native Trust and Land Act so as to make way for the implementation apartheid policies. Environmental reconditioning and the 1936 Act quickly elicited resistance in Transvaal among the resident labourers on European farms (Beinart, 1989:147). This is what awaited the British conservationists in the Machakos reserve. Due to intellectual sharing and common settler expectations and experiences, it was from South Africa that policies of soil conservation were applied to East Africa and to Machakos County in particular.

Following the passing of the 1926 Ordinance, a livestock census was carried out in 1929 and the cattle population was an amplified figure of 190,000 head (KNA/DC/MKS/14/3/2, 1958:10). As a consequence of drought over 60,000 head of cattle were either sold or died in 1926 alone. In the midst of drought and famine, the government offered no famine relief as a tactic to force the option of livestock sales on the Kamba. The Chief Veterinary Officer differed with the views of the DC that the reserve was carrying a large number of livestock commenting that “it was possible to travel over quite large areas of Mbooni Hills, Iveti Hills and Kilungu Hills without
seeing many cattle” (KNA/DC/MKS/1/1/15, 1926:7). Though conflict of opinion
equalled its abundance in European circles, evidence pointed to a steady decrease
rather than an increase in the number of cattle owned by the community (Matheka,

A Commission of Inquiry was set up in 1929 to make recommendations as pertaining
to general agricultural progress in Kenya. The Hall Commission (named after the
chair Daniel Hall) raised soil erosion in Machakos to the status of a serious
environmental threat as compared to the rest of the country. The visibility of
degradation increased with a locust invasion and drought between 1926 and 1931
(Colony and Protectorate of Kenya, 1929:25). The poor condition of the reserves and
settler political fears coalesced with in 1935 with the global anti-erosion movement
and the reaction to the Dust Bowl phenomenon of the early 1930s. The concern over a
crisis of soil erosion was further propelled by the new professionalism of the colonial
agricultural officers whose conservationist concerns were based on the Dust Bowl.
The policy response to solve this environmental hazard in Machakos was that of
reconditioning and destocking (Rocheleau, 1994:12).

Colin Maher, a committed conservationist, supported a strong operation between 1932
and 1938 to make public the impending soil degradation threat through erosion in the
country. Several periodicals of the time contained his contribution on the subject of
soil conservation. Further, he compiled several reports for the government and for
circulation among his contemporaries. He was in support of destocking and
reconditioning as the ideal measures to deal with deterioration in Machakos
(KNA/DC/MKS/14/3/2, 1953:25). In February 1937 Colin Maher, a colonial
ecologist, visited Machakos County and gave a picture of deterioration in his description of the County’s landscape.

In support of drastic conservation measures, his description reflected a well-developed colonial narrative of African agency in degradation. The Machakos County was described as “appalling example of a large area of land which has been subjected to uncoordinated and practically uncontrolled development by natives”. The chief cause of such degradation was the increase of livestock stock under “benevolent British rule”. Thus the degradation was affecting the reserve which was descending into a state of hopeless poverty because their land was turned into a desert of rocks, sand stones (McCann, 1999:59).

The more pressure was exerted by the government by way of propaganda over the matter of stock-limitation, the more the LNC became adamant and was determined to prevent any legislation to control their livestock economy (Mwai, O.I.:2019). Any pressure in that direction could only emanate from the colonial administration (KNA/DC/MKS/10A/29/1; 1934:10). For instance, the Council turned down stock tax or cess on goats, and even lowered the cost of grazing in the Yatta in 1932 in favour of African herders (KNA/DC/MKS/1/1/25; 1932:6). In 1934 however, following constant pressure on the LNC by the Provincial Commissioner C.R.W. Lane, a resolution was passed that “this Council, in order to check and remedy the severe soil erosion which has taken place in the Machakos Native Reserve, directs that the chiefs of Masii and Kiteta be empowered to control or forbid the use of pastures by any form of stock in their locations, which locations this Council have now set apart for the purpose of reconditioning for the planting of fodder producing plants and grasses” (KNA/DC/MKS/14/3/2, 1958:13). Although this did not bear much in terms of
tangible results, the ground for destocking and reconditioning was laid and European administration’s determination emboldened. This was in adoption of the ‘firm hand’ preferred in mitigating soil erosion borrowed from South Africa and which was part of the 1932 Land Commission recommendations (Anderson, 1984:327). In reality however, the stock held in 1932 was actually far less than what the Akamba owned in 1910 or 1915 (Munro, 1975:214).

Since earlier ordinances had proven unable to achieve the desired effect, stringent legislations were passed to deal with the Machakos Problem once and for all. These included The Yatta (Grazing Control) Rules under the Crop Production and Livestock Ordinance Gazette Notice number 705 of 3rd September 1937 and “Crop Production and Livestock Ordinance (Amendment) Rules” which applied the original 1926 destocking law to the Yatta. These two enactments provided the legal backing required for the Yatta destocking but were superseded by the consolidated, the Crop Production and Livestock Rules of December 1937. These rules applied equally to reserve residents and squatters on European farms (Tignor, 1976:339-342).

In preparation for forceful destocking, several steps were taken by the administration. The Machakos Reconditioning Committee was established in 1935 whose objective was coordination of reconditioning work throughout the reserve. The committee divided the land into three categories that is, badly eroded, semi-eroded and other (Rocheleau, 1994:14). The first class of lands were found in the central and eastern plains (falling mostly in Makueni County). These lands were closed to livestock while trenching, bench terracing, and grass and sisal planting were carried out in earnest. In the second category found in the southwest regions (including Ngelani, Iveti and other populous location), grazing rotations and grass planting were seen as the best
measures to prevent the land from deteriorating further. For the third category, grass planting was encouraged under the guidance of colonial officials (KNA/DC/MKS/1/1/25, 1936:3).

The cost of regenerating the reserve was estimated at £120,000 with £34,000 being obtained from the Colonial Development Fund by the end of 1937. From this amount £10,000 was the only money granted to the County with the remaining to be repaid by the LNC as a ‘sinking fund’ of development (KNA/DC/MKS/1/1/27, 1937:9). In addition, the Yatta was opened up for settlement, livestock inoculated, the area organised in a rotational grazing system, and only 12,000 head of cattle was accepted that were inoculated and branded with a distinct branding (KNA/DC/MKS/14/3/2, 1958:15). The Makueni fly area was cleared to experiment as a relief area for the more eroded locations that would require more grazing that would be available in the reserve under reconditioning conditions but was however not popular for there was no assurance that livestock taken there would not contract trypanosomiasis (KNA/DC/MKS/8/2, 1937:12).

After this was achieved in the Yatta, the next step was to find ways and means to carry out in the reserve some similar process of relating the number of cattle to the land and getting rid of the excess. The Crop Production and Livestock Rules of 1937 provided the legal backing for the exercise. Thereafter, early in 1938 an attempt was made to apply the same system generally in the reserve as had been carried out in the Yatta that is, calling on stock owners to register their cattle, fixing a quota for each location and of allocating this quota pro rata to the number of stock possessed by each individual. This policy was then carried through with some difficulty in Kangundo and Matungulu and the cattle branded (Newman, 1974:15-16). This resulted to a
count of 27,000 head against a quota of 4,500 in Matungulu Location which was all that the land was considered capable of maintaining. In March 1937, the Akamba stated the fact that they were not ready to comply with the activities of reducing their cattle before the Chief Native Commissioner. In order to avoid a confrontation with the community, the government involved community leaders by carrying out a village to village survey for the purpose of assessing the number of cattle the land would carry (Musembi, O.I.:2019). The village elders worked under an oath to make distribution as fair as possible. The accepted cattle would then be branded while the seemingly unbeneﬁcial cattle would be put for sale by auction. This would be followed by an encouragement of the community to plant fodder crops which would enable an increased number of livestock to be branded at a later date (KNA/DC/MKS/8/2, 1937:14).

This was done in the all other locations except Mbooni, Nzaui and Kaumoni. About 21,000 cattle were sold to Liebig realising £15,000 (KNA/DC/MKS/1/1/27, 1938:3). Difficulties for this process became intense when it was time for Iveti sub-location and very definite resistance was encountered to the carrying out of the accepted policy, a resistance that was inspired by outside political organisations and individuals. Towards the end of June, the people of the area were called upon to produce elders to allocate the quota that would be branded with the last date to comply being 7th of July. These deadlines were met with open defiance (Muola, O.I:2019). On the 8th, the administration moved on the basis of the Crop Improvement and Livestock Rules conducting a raid through the area resulting in the removal of 2,500 cattle from an area of about 11,000 acres with a carrying capacity of about 500 head of cattle. It was anticipated that this would induce the Akamba to claim their cattle and get them back reduced by the apparent culls and with the quota branded.
Resistance was so well organised that the expected result was not attained. The administration tried taking up cases with the known owners of the cattle but these cases proved ineffective since the owners did not identify their cattle. It then became apparent that the only solution was to strengthen the rules to allow for the impounding and sale of cattle in the event of absolute refusal to cooperate with government requests. This provision was allowed in September 1938 (Tignor, 1976:349).

As this was going on, a party of about 3,000 Akamba men, women and children proceeded to Nairobi on the night of 27th of July and morning of 28th July and took up a position near the Race Course where they remained for four weeks (Newman, 1974:19). Their stated objective was to gain an interview with the Governor. They were well organised as to relief and food supplies and it was more of a quiet rebellion (Ibid.). Although the Governor refused to meet and address them in Nairobi, their point of concern had been communicated effectively. The Governor addressed the Akamba on the 25th August 1938 in Machakos, stating the government position on destocking. Government’s resolve had changed the Governor stating “there had been expression of dissatisfaction over the auctioning of their cattle” (KNA/DC/MKS/1/1/27, 1938:7).

These protests were organised by the Ukamba Members Association (UMA). The confiscation of livestock in March set African politics in Machakos on a path of political militancy and organisation absent in the area up to this time. Sergent-Major Ndumba Mwatu of the Kenya Police was the first person to challenge destocking. His home was at Ngeli and when he returned home on leave at the end of April 1938 he discovered that two of his cattle had been taken by the government in the first attempt to force destocking on the location. Ndumba directed his protest to the chief while
spurring his neighbours and friends into a more basic attack on the destocking programme. After holding several meetings of elders in the area, on 3 May 1938 three men (Isaac Mwalonzi, Elijah Kavulu and Samuel Muindi) from Ngelani sent a telegram and a petition to the Secretary of State to the Colonies. These meetings of these elders led to the formation and strengthening of the UMA attracting membership from the wealthy cattle owners in most locations. They criticized the low prices paid for auctioned cattle, a ploy to impoverish the Akamba to enrich the Liebig’s factory. This factory, constructed in 1937, was assured by the government of a steady supply of livestock (Newman, 1974:20). The self-servicing political and economic interests of the Europeans were laid bare in the Machakos reserve situation.

Part of the intention of destocking was to mobilise Kamba resources for transfer to the European-managed economy. The rise of government guided conservation led to the criminalisation of land use and resource utilisation in the local areas. Livestock owners were viewed as enemies of the environment (Beinart & Hughes, 2007:69). It was this ploy that the Akamba were rising against, when after months of intense propaganda and organisation, they marched to Nairobi demanding nothing less than audience with the Governor. For a short time, the Akamba marshalled all their political experience and connections under the auspices of the UMA to confront colonial policy.

KCA links became critical and the leaders of the UMA (Samuel Muindi, Isaac Mwalonzi, Kavula Muli, Shem Muthoka, Zakaria Musia, Joseph Mwaka, Elijah Kavula and Jacob Mutiso) used their education, urban exposure and wealth status to influence the society and organise a revolt. Their efforts bore fruit when the government backed down on forceful destocking resorting to subtle destocking
measures. This was through weekly cattle sales in designated cattle markets organised by the government. The Governor consented to an experiment of three months where the Akamba would voluntarily sell their cattle on prescribed days without the placement of any other conditions or restrictions. Although the Akamba presented a memorandum of compliance, the response to the proposal were by all intents and purposes non-existent (KNA/DC/MKS/1/1/27, 1938:17).

This was well demonstrated through the 2,500 head of cattle confiscated from them on the 8th of July. They were returned to the location six times with the hope that the owners would claim them to no success a clear sign that the colonial administration had underestimated Akamba resistance and treated the administration as unwanted ally (Osborne, 2008:76). The government was stuck with cattle it could neither return to the owners successfully nor auction since it would be against the law. Further, the arrest of the prominent members of the association brought the active political protest to a halt (Tignor, 1976:337). In Ngelani, Iveti Location however, active resistance which was the stronghold of the Association and a police force was stationed there to deal with the agitation.

The European administration severally observed that degradation was proceeding at a much faster rate than reconditioning. Forced destocking through compulsory sales was a very unfortunate mistake as the colonial administration, in their zeal, had overestimated their control over the people (Ngila, O.I.:2019). The Akamba were uncooperative and this “Red Letter Order” had far-reaching effects on future reconditioning. Eventually, the 2,500 cattle impounded were returned unconditionally to their owners and intensive reconditioning campaign under the joint auspices of the
DC and the Senior Agricultural Officer were instituted almost immediately (Matheka, 1992:81).

In Machakos County, the marketing of African livestock was hindered by quarantine regulations. The situation was made worse by colonial alienation of vital dry season pasturelands for European settlement had negatively affected the productivity of the Kamba pastoral economy (Anderson, 1984:334). Destocking was viewed as the plain answer to overgrazing and productivity decline of Machakos lands. The Kamba were unwilling to sell their livestock at the values given by European buyers. This gave strength to the view that of forceful action by the government to reduce Kamba livestock, by obligatory sales or livestock levy. Grazing land capacities were calculated with those identified as exceeding these capacities marked for destocking (Tiffen et al, 1994:43). In short, compulsory destocking was not an easy policy to implement in Machakos County (Nthei, O.I.:2020).

At the same time, the Soil Conservation Service financed by the Colonial Development Fund commenced soil conservation measures in Kilungu and Mbooni in 1937. Using terracing and implements drawn by oxen and tractors, thirteen areas, with a total of 304 acres, were planted and terraced in these locations, ample supervision being made for the trench ways. A few demonstration bench terraces were made and great efforts were made to induce the people to lay all waste vegetation and trash from their shambas in contour lines. Poor rainfall hampered conservation activities. Moreover, cooperation of the people was almost non-existent as any reconditioning effort was associated with destocking and by the end of the year, the mechanical unit ceased to function. This was due to political agitation on the part of the UMA which continued into 1939 and mid-1940 (KNA/DC/MKS/1/1/27, 1940:6).
The inhabitants of these locations remained “stubbornly unruly” with regard to the regulations governing soil conservation and the instructions given to them by the local authorities (KNA/DC/MKS/1/1/28, 1942:3). Contour pegs placed in their *shambas* by the Agricultural staff were pulled out by the people time after time in the early 1940s. Residents of Ngelani and Iveti locations declined to carry out necessary soil control measures. The highest stage of this agitation was evident when about 500 women protected by their men commenced to riot which was quickly quelled by the police force. Under distress then the inhabitants carried out extensive soil control necessary in a very thorough manner. Some 4,000 acres in the Ngelani and Iveti areas were properly controlled with contour ridges with grassed drainage ways where necessary in the big blocks of cultivation. Drought conditions in the eroded areas made large scale grass planting difficult leading to the adoption of closing these areas to all grazing and the appointment of grazing guards in all the locations working under Native Agricultural Instructors (KNA/DC/MKS/14/3/2, 1958, 22).

Colonial administrators might have been accurate in the setting of guidelines, and astute to choose forceful destocking. However they failed to show the Kamba cultivator and livestock keeper what concrete profit the conservation endeavour would convey to the land, and rarely could it provide sufficient inducement for such work. During the 1930s, colonial administration in Kenya adopted an active concern in agricultural systems, to address challenges resulting from the Depression. The colonial administrators were fixated with the perceptible risk threatening the African land productivity due to over crowding, land overuse and soil erosion (Thurston, 1987:15). During the 1930s conservation of resources became a central concern of the colonial government. Various factors worked to promote the shift in the direction of policy involving Africans in the agricultural development of the reserve. These were
the economic reconsiderations brought about by the Great Depression of the early 1930s, the international panic generated by the disastrous effect of the Dust Bowl at its height in 1935, the acknowledgment at the time that pressure on land in the reserves had been created by an increase in both livestock and human numbers and finally, the fear that the droughts experienced in Eastern Africa between 1925 and 1935 were an indication that a desert was being created (Anderson, 1984:312).

The Depression greatly exposed the weakness of the settler economy in Kenya. In response to the Depression settlers in Kenya adopted a defensive attitude by actively campaigning to solidify their position in the long-term affairs of the colony. The disquiet of the settlers throughout the Depression was over the legality of European land tenure. The 1932-33 Kenya Land Commission challenged settlers to validate their elevated status in the colony, while also presenting the opportunity to cement their claims to irrevocable title to land (Munro, 1975:245).

4.4 Counter-Soil Erosion Measures in Machakos, 1938-1945

The Second World War (1939-1945) had a great impact on how colonial territories were administered. Kenya was no exception. In Machakos County, the ecological challenges experienced since the inception of colonial rule peaked during the Second World War. The conscription of many young people into the war, frequent famines due to drought and poor soils and declining livestock numbers meant that the community’s economic fortunes declined further (Rocheleau et al, 1995:26).

After the 1938 destocking experience, the colonial administration’s tone towards the Machakos Problem of environmental degradation and reconditioning mellowed. The British assumed a more interventionist approach in the County, initiating many large projects meant to benefit the African (Kivai, O.I:2020). Here, in the 1940s, colonial
policy was undergoing enormous reworking, with profound consequences. Administration voices in Britain raised the idea of ‘local government’ to imply a new approach to colonial administration. In Machakos a policy to ‘purchase’ or buy back the co-operation of the Akamba whose trust had been lost in the activities of March to July 1938 was mooted (Osborne, 2014:183). Through the Colonial Development and Welfare Act of 1945, a grant of £ 120 million over ten years for the colonies was set up which funded integrated plans for projects significant in the political ecology of Machakos in the emergency years (Thurston, 1987:19). Since the inception of colonial rule, Europeans had remained aloof, serving Africans from a supervisory position. This new approach was more inclusive of African affairs especially in Machakos County (Thande, O.I.:2020).

The economic and administrative adjustments of the 1930s laid the foundation on which policy formulation in the 1940s was built and executed. During the Depression, settler agriculture received unprecedented financial support from the Kenyan government. The colonial government also began to take interest in African production during the Depression. In the administrative field, the policy of strict indirect rule changed to a more interventionist strategy with policies of African land use and reconditioning being reinforced (Green, 2009:249). Environmental policies that had developed by 1938 were a result of a combination of local and international circumstances including the Great Depression and the Dust Bowl phenomenon. The Second World War added parts to this structure (Anderson, 1984:343). In Machakos, the problems that attained international concern were those of soil erosion and rapid land degradation due to destructive Kamba agricultural practices (Rocheleau, 1994:8). Consequently, soil conservation acquired an integral position because it rested at the core of African development strategy (Makau, O.I:2020).
In 1937, the Colonial Office drew a larger budget for soil conservation for Machakos County in 1937 (KNA/DC/MKS/1/1/27, 1937:22). Direct action by the British government was deemed as a necessity. In February 1938, all the colonies were required vide a Colonial Office circular, to submit annual reports of soil conservation activities undertaken by various departments in any particular year (Anderson, 1984:341). Suggestions for mechanical construction of conservation works in Machakos began in 1937 under Frank Stockdale, the Agricultural Advisor to the Colonial Office (KNA/DC/MKS/1/1/27, 1937:2-4).

As soil erosion became a recurrent theme in Colonial Office’s deliberations on agricultural production, Stockdale gave ‘professional’ judgment and drew proposals on policy. He guided the administration on what strategies to apply and which ones to dismiss and prepared propaganda material to enlighten European officials on the weight of environmental degradation. Stockdale pushed the view that soil erosion had commonalities in all British colonial possessions (Thurston, 1987:22). He opined that it was uneconomical to employ heavy machinery in soil conservation. According to him, most African lands could not sustain the cost of maintaining mechanical anti-erosion works since they had low productive capacities (Rocheleau, 1994:12). Mechanisation however, played a central function in the execution of development plans throughout Machakos County after 1945. Even though the costs of mechanisation were high, the government believed that the inferences of solving land use crises through labour-intensive ways superseded the advantages in applying better farming methods (Anderson, 2002:205). Voluntary communal conservation was a very heavy burden on the farmer, who opposed colonial conservation even when it was meant to benefit the Kamba agricultural and pastoralist economy (Makau, O.I.:2020).
Increasingly convinced of its own authority and of the urgent need of reform after 1945, the colonial state in East Africa advocated scientific agriculture in tandem with an ambitious programme of social engineering (KNA/DC/MKS/14/3/2, 1959:22). Land-tenure was the central element of this push for modernisation leading to an end to communal rangelands, the consolidation of plots of land and introduction of individual title deed to land in agricultural areas such as Machakos County (Fazan, 2015:89). This transformation is seen as part of a wider application of the new colonialism or the second colonial occupation (Lonsdale, 1991:173). The 1940s saw the emergence a new kind of colonial rule. The state was reinforced by an army of officials and technicians who imposed this new order leading to new forms of African resistance to this invasion. The actions of the colonial state after 1945 were not always popular with Africans and in many places the emergence of the politics of African nationalism was fuelled in the rural areas by opposition to colonial development and conservation policies (Osborne, 2014:189). The dynamics of colonial land policy and African response after 1945 is discussed in chapter four.

Nevertheless, the administration was convinced that the Akamba were prepared to cooperate with the government in the measures of saving their ‘unfortunate’ country. ‘The activities of a few local semi-educated men who, together with their colleagues in the KCA, found political agitation an occupation of easy money’ acted as an impediment (KNA/DC/MKS/1/1/27, 1938:9). The sanction for £34,000 obtained in 1937 from the Colonial Development Fund was divided into a free grant of £10,000 wherewith to get soil conservation methods (terra cing, tree and grass planting) started in the Matungulu-Kangundo area and a sum of £24,000 secured and repaid as a sinking fund by the LNC, for expenditure on the rest of the County. Soil conservation
headmen were appointed as well at the rate of one or two per location to work under area supervisors (KNA/DC/MKS/1/1/27, 1938:8).

A new system of destocking based on mixed farming was adopted which received a better response from the Akamba. This system encouraged planting of sisal hedges around individual holdings, the use of manure and closing up cattle shades at night in order to help in the formation of such manure. From 1939 this reconditioning work was carried out through Kamba chiefs, elders and asili (judges) with the supervision of two Europeans. The Akamba took long to accept limitation of stock and reconditioning since they were not involved in the formulation of policy. Rather, European-formulated policy was forced on the people through the LNC with the agency of the DC (Munro, 1975:230).

The Colonial Development Fund purse allocated to the County was exhausted in 1941. This change meant a reduction in staff especially of untrained labour. Staff for reconditioning was divided into soil conservation works, reconditioning grassland (closing and grass planting) and dam construction and maintenance (Thurston, 1987:17). From 1942 therefore, reconditioning work was carried out with the aid of funds provided by the government and the LNC. The fact that this money was considerably less than that which was available the previous years was a blessing in disguise hence avoiding African resistance. While the money was sufficient for all reasonable requirements, it was a strictly limited amount, and this ensured that reconditioning measures were not pushed so vigorously as to engender opposition (KNA/DC/MKS/1/1/28, 1942:3). European attention on the Machakos Problem was thus reduced due to lack of finances. The Akamba continued to critique theories, policies and practices of economic development and environmental conservation.
taken on the basis of colonial intentions and judgment to the detriment of the Kamba (Rocheleau et al; 1994:4).

Soil conservation measures imposed forcefully on hungry people only made them angry with government policies. Tangible positive change in reconditioning work was not widespread. Though the administration kept looking at the Akamba as lazy towards conservation work, it was not laziness but lack of a sense of ownership towards conservation efforts because Machakos reserve had become less productive areas over time despite all exertion to improve environmental conditions (Green, 2009:263). Where European supervision lacked, there was also an absence of rigour towards environmental work (KNA/DC/MKS/1/1/28, 1943:3). Africans did not develop a sense of ownership towards environmental reconditioning activities nor did they view such activities to be of direct benefit. Africans harboured feelings of political exploitation through their environment and never reaping benefits from economic and political prosperity in the colonial order of things and the numerous labour-intensive conservation works (Anderson, 2002:195). Indeed, political ecology highlights the nature and complexity of the relationship between the natural environment and its human elements (Aseka, 1993:1).

Closely connected to the environmental history of Machakos County were famines due to drought and human factors. Rainfall failure and famine occurred on varying high scales between 1933 and 1950. The political nexus of these famines in the colonial period is well discussed by Matheka (1992). The County suffered severe food shortage in 1941 which was the culmination of two years of poor and badly distributed rain. It was hard to find any food reserves at all in the villages and thus the inhabitants relied on imported maize. Moreover, grazing was practically non-existent
and food supplies were obtained from Kikuyuland (areas of Nyeri and Karatina), Kitui or relief food sold by the government (Ndaa, O.I.:2019). Grazing was scarce as grass suffered greatly from the long droughts. Much of the livestock was slaughtered for food. The government reported that “it is difficult to understand how the Akamba continued to carry on without appealing to Government for assistance and I know of no other tribe, except perhaps the Turkana, which could have survived the lack of food so successfully and so cheerfully” (KNA/DC/MKS/1/1/28, 1941:2). The gradual incorporation of Kenyan communities into the capitalist system through the colonial state progressively led to a crisis in pre-existing systems of production and distribution (Matheka, 1992:33).

In most areas of the reserve, people were induced to sell their surplus food by high war-time prices. Continuous drought conditions, coupled with the fact that many of the young men had joined the war leaving inadequate labour in the reserves, plunged the reserve into famine conditions that lasted up to 1947 (Matheka, 1992:139). There was an insufficiency of food supplies for the people to buy. That is, although money was abundant in the reserve, the general shortage of food stuff in the colony meant that it was difficult to find food to buy (KNA/DC/MKS/1/1/28, 1943:1-2). War income was beneficial to the Akamba at this time of drought and famine for subsistence. They relied on wartime remittances from their kin in the war to buy food from the Kikuyu at inflated prices (Parsons, 1999:684). The administration realised that the environmental conditions in Machakos County had deteriorated to such an extent that demobilisation was difficult in such circumstances. According to the DC J.G. Hopkins, the situation could not be ignored since “nothing of importance can happen in a native reserve without its having administrative repercussions sooner or
later …” (KNA/DC/MKS/8/3, 1944:1). This line of thought was pursued in the next chapter.

4.5 Summary
This chapter examined the impact of land alienation on the Kamba pastoral economy. Such land policy led to tensions between the Akamba and the British over land and livestock. It assessed the colonial policies of destocking and conservation and how they conflicted with Akamba perceptions of their land and livestock. Forced destocking failed in Machakos. The Kamba, while in agreement on the need to reduce their stock, were in favour of voluntary livestock sales on stated days of the week adhered to with difficulty. Therefore, the government placed no further restrictions or conditions on the community regarding destocking. This chapter has demonstrated that political considerations were made in regard to the environment. Political ecology, as applied in environmental studies in the intersection between colonialism, resource utilisation and local as well as international politics, falls in the context of environmental history. The next chapter discussed post-Second World War developments, the Mau Mau War and nationalism towards independence in relation to Machakos County’s environmental history.
CHAPTER FIVE

COLONIAL ENVIRONMENTAL POLICY IN THE POST-SECOND WORLD WAR PERIOD, 1946-1963

5.1 Introduction

Towards the end of the Second World War, the government was not only concerned about the demobilisation of soldiers but the socio-economic development of the Kenya Colony, including Machakos. While demobilisation guidelines were drawn up, a ten year post-war development plan to guide African progress was followed. Following on the heels of the War was the Mau Mau nationalist revolt and the rise of a kind of nationalism that demanded independence all over the country. In these years, the government followed a reconditioning policy that sought to appease the Akamba due to the strategic position they occupied in the police forces and in the army. This chapter discusses the intersection of the following variables: colonial rule in the post-Second World War period, soldier demobilisation, African nationalism, the Mau Mau war and eventual independence in relation to Machakos County. The chapter describes how these were brought to bias on the environmental history of Machakos County from a political ecology perspective.

5.2 Environmental Policy and Conflict in the Post-War Era

A few years before 1945, the European administration had come to believe that a livestock economy was deeply ingrained in Akamba life. The DC pointed out this revised view by stating that “scratch a Kikuyu you find land, scratch a Mkamba you find cattle” (KNA/DC/MKS/1/1/29, 1945:1-2). This is to say the land was the chief source of grievance among the Kikuyu while livestock was the major source of discontent among the Kamba. What the colonial administration in Machakos was not willing to acknowledge is that the livestock question had a firm connection to the land
shortage and its productivity from the onset of colonial rule (Kyambi, O.I.:2019). Akamba interest in the land question was steadily rising in the 1940s with particular reference to the unutilised crown lands within the reserve’s vicinity. The administration was aware that “we shall be forced to face the necessity of finding the necessary land much nearer home” (KNA/DC/MKS/1/1/29, 1946:4). It was however, unwilling to part with lands nearer the reserve for Kamba use but only the drier lands between Machakos and the coast which required a great work of rehabilitation (Nzomo, O.I.:2020).

Environmental crises in Machakos were a historical product of a system of primitive accumulation which appropriated the fortunes of the new frontier for maximum immediate gain (Amanor, 1994:6). Consequently, the end of the War marked a beginning of deeper ecological problems for the people of Machakos County (Matheka, 1992:140). There were about 15,000 Kamba in the military in 1945. Most of their demobilisation was undertaken between 1945 and 1946. The soldiers had come back to the reserve only to be faced with food shortage, recurrent bad weather and a deteriorating environment. The initial celebration on arrival home from the war was soon overtaken by the gloom of hopelessness. Many of the released soldiers departed from the reserve to Nairobi in search of work (Shiroya, 1992:70). Most of them however, could not find meaningful employment in the towns since the training they received in the barracks was not applicable to the ideal working situation. Many of them ended up in menial employment as watchmen and drivers mostly in Nairobi and Mombasa (Osborne, 2014:135).

Those who remained in the reserve were fundamentally dissatisfied and openly expressed their anger (Shiroya, 1992:24-25). In 1945 and 1946 they organised and
encouraged people to resist government reconditioning measures in the reserve. Oaths were taken to bond themselves together in pulling out terracing markers. They organised people to lie down in front of tractors sent by the government to work on their farms for free. The Machakos Works Company, for example, was to perform reconditioning works that the people could not carry out themselves. It was stopped from beginning work at Kalama. In addition, there was a proposal to begin an agricultural betterment area in Matungulu location which was halted due to political incitement and opposition. These ex-soldiers also contested reserve boundaries which they argued were set to the benefit of the European settlers (KNA/DC/MKS/1/1/30, 1946:7).

When World War II began in 1939, colonial officials abandoned the pursuit of environmental conservation in support of drives to conscript the Akamba young men, both voluntarily and forcefully, into the ranks of the armed forces. Moreover, these officials sought to increase wartime production especially of grain crops (Rocheleau, 1994:14). Colonial officials endeavoured to transform Machakos’ landscape to make it an area rich in the production of grains in the course of war and cash crops thereafter (Matheka, 1992:83). Food shortages, famine and soil fertility depletion were the direct consequences of the intensification of cultivation in the reserve. The War required a large amount of livestock to feed troops in East Africa (Wambua, O.I.:2019). To ensure continuous supply, the government imposed a stock levy not only in Machakos but in the whole colony. It was organised in such a way that even though a certain number of livestock was required per year, livestock owners were able to compete for a fair price with other communities in common markets. The livestock quota required from the Machakos Kamba in 1946 was quite low but the prolonged famine as well ex-soldier concerns hindered effective imposition of the
compulsory levy. In addition, rumours in circulation stated that Europeans would alienate parts the Machakos and Makueni to be Europeans farms and the Akamba would be squatters (KNA/DC/MKS/1/1/30, 1946:8).

In such a post-war atmosphere most efforts made by the administration towards reconditioning were rejected. The Kamba believed that reconditioning works were in preparation for land alienation. According to the DC, since demobilisation, there was a good deal of substantive grievance which he called ‘inflammable material’ lying around the reserve with a possibility of active resistance or riots (KNA/DC/MKS/10B/17/1, 1947:3). Resistance found expression in the form of a battle of hard words in the LNC in which the major agenda was food, that is, colonial flour and meat levy in a time of economic difficulty. In addition, dissatisfaction was expressed in a memorandum by the LNC and some of the ex-soldiers to Creech Jones, Secretary of State for Colonies, who had visited the reserve in August 1946. Creech Jones suggested an immediate, imaginative and forceful plan to be evolved to revive the reserve’s outlook which was to him “a very depressing sight” (KNA/DC/MKS/1/1/30, 1946:12).

Further, application of the 1937 Resident Native Labourers’ Ordinance (which begun to be on effect in 1939) stock rules in the county threatened to offload a large number of squatter livestock on the already over-populated and over-grazed reserve (Anderson, 2006:89). According to this ordinance, squatters on European farms lost all tenancy rights and suffered a limitation of the number of livestock that they could keep on the farms and restricting the amount of land available to them. It also gave the settlers a leeway to pursue squatter cases in courts of law where magistrates had the mandate to authorize evictions (Anderson, 2000:436). The squatter system
suffered difficulty following changes in settler production during the Second World War. The War led to an expansion and profitability of settler agriculture. It raised prices for Kenya Colony’s agricultural produce bringing the settlers substantial profits. Settlers now had capital with which to develop their land (Maxon, 2009:247). This was used as an excuse for the settlers to change the terms of squatting contracts to implement the rules of the 1937 ordinance. The settlers limited the amount of land available to each squatter family to only one or two acres.

All squatting livestock were removed from the settler farms and many of their contracts were not renewed. This Ordinance greatly affected Kikuyu squatters in the Rift Valley who had moved there in the early 1900s after their removal from central Kenya areas through land alienation. As such, the income of many of the squatters was severely affected and many of them begun their journeys back to central Kenya. Indeed, “European prosperity triggered African misery” (Anderson, 2006:23-28). Some Kamba squatters together with their livestock returned from Thika and Nairobi and settled in Ngelani and Iveti (Kivai, O.I.:2020). Removal of squatters from European farms was enforced on one farm in Kiu. This was because enforcement of squatter removal led to a crisis with all the squatters in all European farms in Machakos threatening to leave (KNA/DC/MKS/1/1/30, 1948:1-2). This would mean loss of labour for the settler farmers. Land shortage amid economic problems caused genuine uncertainty over the repercussions of the release of extra livestock into the reserve.

5.3 Success of Re-organised Reconditioning Work

As part of the process of enhanced colonial environmental policy and control, *utui* (village) councils aimed at undertaking reconditioning work were established between 1947 and 1948 (KNA/DC/MKS/8/5, 1947:10). These worked in conjunction with
government-employed agricultural instructors and line levellers. *Utui* councils functioned on a framework of interdependence. For example, individual *kisesi* (private grazing land) holders within the area covered by a reconditioning programme were not penalised where their own property was not well managed unless it could be shown that they themselves had failed to cooperate in the combined reconditioning efforts within that *utui*. Where people were unwilling to turn out for reconditioning work it was the *nzama ya motui* (council of villages) to deal with them in the first place and only to report them to the chief if they persistently declined to obey the directions of their own *nzama* (council). The chief thereafter could arraign them before the local tribunal under the the Local Native Authority Ordinance, the Soil Conservation Ordinance, or even the Standing Resolutions of the LNC. The administration monitored chiefs to establish if they were actually taking action against persistent offenders. The aim of the *utui* system was communal work on blocks of land but private holdings could only be safeguarded by their owners through personal and family conservation effort (KNA/DC/MKS/1/1/30, 1948:23).

This village system of soil conservation adopted in Machakos was a replication of the *Ngwatio* (in Machakos *mwethya*) system adopted by Hughes Rice, Assistant Agricultural Officer, Fort Hall (Murang’a County). The basis for the development of the soil conservation campaign in Murang’a was the organisation of the existing indigenous communal groups, and the welding of them into a land authority responsible not only for the administration of communal customs in marriage and litigation, but also for maintaining and restoring of fertility to their lands. Thus, the commencement of the plan was the formation of the elders in a locality into a body responsible for directed communal work on land. This was the *itura* and in the larger locations there were as many as forty eight *itura* groups all of which were working as
independent units on activities connected to land, and who were responsible under their sub-location headmen to the chief for turning out for communal work (KNA/DC/MKS/8/5, 1947-1948:1-3).

The people of Murang’a County were generally receptive of instructions and advice and that they cooperated in soil conservation efforts despite constant food shortages. They were conscious of the deterioration of their lands and were keen to do something about it especially if they perceived the work to be of immediate benefit on their own farms. The itura scheme was organised in such a way that no family went far from their homes for work and the community area in such a size that communal terracing work could be done on every farm within two or three weeks (KNA/DC/MKS/8/5, 1947-1948:1-3). Terracing maintenance was encouraged in that the initial terracing on the land was carried out communally but the maintenance of the same before each rain season was tasked with the individual land owner. In Machakos, attempts by the colonial administration to use indigenous Kamba institutions such as mwethya workgroups and utui councils of elders in distorted contexts were not successful (KNA/DC/MKS/1/1/30, 1949:8). Indeed, nzama ya motui were non-existent in the more sophisticated locations such as Kangundo and Matungulu as well as Iveti and Ngelani locations where the voice of the elders was drowned in the clamours of the educated youth (Matheka, 1992:161)

Mechanical reconditioning (using tractors in dam and terrace construction) achieved a certain level of success in Machakos County. Mechanical reconditioning continued to get immense support after a brief period in the early 1940s when the program was opposed ‘tooth and nail’ (KNA/DC/MKS/1/1/30, 1951:1). Dams were the greatest achievement of the mechanical unit (Mbate, O.I.:2020). Dam construction was part of
the unique of large infrastructural colonial development carried out in Ukambani. Vast amount of funding was pumped into the County probably as a way of the colonial government endeavour to prove its worth and continued stay in the country after the Second World War (Osborne, 2014:185). Indeed, the purpose of rural development in the period after 1945 was not just to foster economic growth but also to bring about an accelerated transformation of African society, with new patterns of land tenure, new ideas of property, of labour and of social organisation. These policies were the product of nearly fifty years of colonial rule, the product of the accumulated wisdom of the colonial mind to tackling the ‘ills’ of rural Africa (Beinart, 1989:153).

5.4 The Makueni Settlement Scheme

As part of this reconditioning reorganisation, resettlement areas outside the reserve were opened up by the government. Of greatest importance was the Makueni Scheme. Work in Makueni was carried out through the Colonial Development and Welfare Act of 1945 which granted £120 million over ten years for the colonies. Kenya received £15.5 million of funding from the Act. Of this £11 million was directed to the development of land, livestock and water. This was part of the colonial government effort to alleviate land degradation in the County as well as to ‘purchase’ the loyalty of the Akamba. Between 1946 and 1955 the Akamba received 38.9 percent of the entire colony’s funding for land development. This was quite unusual since it would never produce anything approaching financial benefits for the colonial economy (Osborne, 2014:206).

Makueni Scheme was a direct result of the Kenya Land Commission of 1932. It was an area of 400,000 acres but in practice the land was of little use due to extensive bush, tsetse fly and wildlife. In 1946, the government approved funds to allow initial
settlement in the area. European administrators believed that if their new techniques made a dry uninhabitable land suitable for settlement and agriculture, then these techniques could work anywhere (KNA/DC/MKS/8/2, 1949:16). Officials carefully planned how they would establish the new Kamba settlers in Makueni.

Strict regulations called “the Makueni Rules” were drawn up that any Kamba settler would be required to physically sign. Part of the rules stipulated that only seven head of cattle, with the option of five sheep or goats as a substitute for one cow would be allowed. Failure to adhere to rules of branding, dipping and inoculation as well as strict maintenance of the number of livestock would result in confiscation of livestock or an altogether removal from the settlement. Due to the strict nature of these rules, they were opposed by chiefs and by the LNC (Mutisya, O.I.:2019). Even with the amendment of the rules, few people were willing to settle in Makueni and by 1950 only 100 families were settled there (KNA/DC/MKS/1/1/30, 1950:3) at a cost of £1,249 per family. There were, however, doubts of the productivity of both the people and the land with a capping being put of 1,000 families over five years. The Makueni Scheme was eventually successful and the reclamation methods followed there later replicated in the settlement areas of Kako and Simba-Emali settlement schemes. The Makueni area was very popular in the 1950s for it presented Machakos residents with grazing lands unavailable in the reserve (Thitu, O.I:2019). Possibly, the earlier settlers gave good reports concerning the area so as to heighten interest. The dam construction and bush clearing were important developments that made the area more attractive to settlers. However, the long rains of 1951 presented the Kamba with the threat of trypanasomiasis due to bush regeneration that could not be cleared the whole year on account of heavy rains. At the end of the year however, there were 2,974 settlers with their families and livestock whose numbers were controlled under the Makueni Rules.
The colonial government was keen on appeasing the residents of Machakos after the Second World War using the approach of colonial development as the political means in environmental management (Osborne, 2014:169).

Machakos received great attention during the post-Second World War period due to two major reasons. First, the county was one of the most eroded in the colony and had received significant attention from colonial experts over the previous fifteen years or so. It was one that encompassed all the major difficulties faced by other regions and if Machakos could be fixed, then any other place could. Machakos was therefore constantly in the limelight which also made it a centre of all manner of pilot schemes and experiments. Secondly, the county was home for big numbers of demobilised soldiers. These veterans exhibited resistance to the government after 1945, and there was therefore a need to appease them with all manner of development projects to avoid potential conflict (Shiroya, 1992:37). The Makueni Scheme was one of such appeasing endeavours. Development and welfare became the official approach to British rule in Kenya in general and Machakos County in particular (Osborne, 2014:191). This was especially so in the 1950s with the emergency conditions in the colony.

5.5 The Akamba, Mau Mau and Conservation Effort

After many years of reconditioning work in Machakos County, there was little definite improvement in the state of the reserve in general in the 1950s. The land was still eroded and scarcely productive. General drought conditions coupled with veterinary quarantine measures due to a rinderpest outbreak in the 1950s as well as the emergency prevented livestock sales, causing further deterioration of land and making it seem as if nothing towards reconditioning had ever been done.
Indeed, colonial policy in itself was contrary to reconditioning. It was not strategic to pass quarantine restrictions in a county that was already suffering soil erosion, general land degradation and scarcity of grazing. The quarantine precluded movement even between one location and another causing a serious bottling up of stock when it was very necessary to export from both famine and soil erosion points of view (East Africa Royal Commission, 1955:305).

Due to these successive years of drought, the colonial administration observed in desperation: “it is doubtful if Machakos will ever be able to feed herself…although it is not to say that she could not do a lot more towards better farming and growing more suitable crops” and that “any year no doubt the tide may turn but in Machakos the fourth season in succession without adequate rain must make one wonder whether it will ever turn in this generation” (KNA/DC/MKS/1/1/30, 1950:3). Meanwhile, capital accumulation had been set in motion by previous, successive hard times in Machakos with widespread adoption of individual land ownership. Isese begun to be held on permanent basis with a diminishing weu from which individuals could out for themselves ngu'undu and isese. Movement into unoccupied weu was thus halted by land shortage. Conservation efforts peaked in these private holdings in the 1950s despite minimal government support (Rocheleau, 1994:17). Individuals were increasingly aware of the need to protect their grazing and cultivation lands to maintain and even increase productivity (Thukuli, O.I.:2019). Little grass and tree planting could be carried out by the administration during these dry years of famine (KNA/DC/MKS/8/4, 1945:2-3).

Further, the government was aware that the difficult environmental conditions in Machakos County were not an isolated case but relatable to cycles of rapid
desiccation in the world, the retreat of the glaciers in the Alps and on East African mountains and the drying up of the Kenya springs and rivers unconnected to human habitation (KNA/DC/MKS/1/1/30, 1950:5). Writing in 1945, Hopkins (D.C. Machakos) observed that although the average rainfall of the county had not decreased between the period 1895 and 1945, there was conclusive evidence that during this same period springs and swamps had dried up and rivers had ceased to flow. According to him since 1922, there were phenomenal climatic changes. The Masongaleni River ceased to flow, the Kambu stream had dried up or disappeared underground and the Noka water hole had dried up. This was the beginning of an understanding of greater forces of climate change beyond the perceived Kamba wastefulness and lack of environmental wisdom. Some of the difficulties experienced by the Machakos Akamba such as drought and drying of rivers, swamps and streams were not of their own making (Muia, O.I.:2019).

The Machakos District Five Year Betterment Scheme was drawn in 1951 which addressed some of the difficulties experienced by the colonial government in reconditioning Machakos over the years. The scheme made provisions for development and reconstruction funds aimed at general agrarian betterment throughout the county. It combined a great appeal to communal and individual effort with the extensive use of machinery in environmental reconditioning. In its broad sense, the scheme aimed at an attempt to recondition the land and to achieve in five-years a degree of all-round agrarian betterment which would take otherwise fifty years to achieve (Rocheleau, 1994:16).

This scheme was financed by the Development and Reconstruction Authority (DRA) and from much financial aid of the African District Council (ADC) Agricultural
Betterment Fund. It recorded its first success in 1952 in the areas of terracing (4,282 kilometres), dam construction (thirty nine completed with an estimated total of 275 dams in the whole reserve) through various methods such as use of machines and ox-unit dams, grass planting (14,890 acres), forest planting (700 acres of new forest), silage making and digging of banana trenches (KNA/DC/MKS/1/1/31, 1952:2-3). This was possible because communal work was pushed through field officers living in the locations where such machinery was at work. Reconditioning was carried out with fervour during the Mau Mau years. Although there was extensive adoption of terraces in the 1950s it was not a sign of acceptance of European conservation policies, nor did resistance mean total rejection of reconditioning as such (Makau, O.I.:2020). Rather, “farmers evaluated the risks of specific programs and responded to them on the basis of the benefit they had to their own production systems from a political context” (Rocheleau, 1994:19).

There was an environmental angle in the conflicts that preceded the political transition to independence (Beinart & Hughes, 2007:281). In Kenya, the struggle for independence was centred on land. In 1952, the Mau Mau captured the attention of the world due to acts of violence and murder, especially that of Chief Waruhiu on 7 October (Anderson, 2006:55). Kamba leaders comprised a small proportion of the Mau Mau hierarchy who were relating with their Kikuyu peers long before the violence that characterised the middle months of 1952. These Kamba leaders took the oath of allegiance from as early as 1950 which was one of the most important components of the movement. Oathing was controlled by the radicals in the executive committee of the Kenya African Union (KAU) after 1951. Paul Ngei was one such member of the committee who invited some Kamba to his office in Nairobi to take the oath (Thande, O.I.:2020). Those so oathed then made efforts to recruit more Kamba
into the movement in the Machakos reserve (Osborne, 2014:196). Paul Ngei, Jomo Kenyatta and Fred Kubai toured the county giving speeches on behalf of the KAU while Ngei represented Mau Mau interests. The object of the Kamba Mau Mau was to fight to the end, administer Mau Mau oaths on all the Akamba as well as collecting money to further Mau Mau aims in Ukambani (Kivai, O.I.:2020). The main objective of the Mau Mau was a struggle against land alienation as well as fight for independence from Britain.

It was during the emergency that the movement became widespread in Ukambani. Oathing activities continued in 1951 but in 1952 the government was highly successful in creating a degree of isolation in Ukambani. This was by restricting movement between Machakos, Nairobi and Kikuyuland and by banning night travel between Machakos and Nairobi from 1952 onwards. For further separation of the Kamba from the Kikuyu, Central Province was split in 1953 placing Machakos District into the newly formed Southern Province with the Maasai. Thus, not many Kamba living in the central areas of the reserve actually took the oath or participated directly in Mau Mau activities. Speaking of Kangundo, high levels of secrecy were maintained that even their close family members would only suspect. This was because Mau Mau operations were actualised away from Machakos (Ndonye, O.I.:2020). The movement was more entrenched among the Kamba living in Nairobi in these early years. Some Kamba were part of the forest fighting groups in Central Kenya attaining leadership roles in the ranks (Osborne, 2010:66). As time passed the government did not achieve its anticipated victory as more and more Kamba became involved in the Mau Mau in one way or another. The railway was instrumental in the way the Mau Mau took root in Ukambani with the areas through which the line passed such as Kilungu and Makueni producing several high ranking officials. The
final months of 1954 and the early months of 1955 however saw a resurgent colonial military that finally ended Mau Mau’s success (Fazan, 2015:78).

The colonial government was aware of the negative consequences of the Kamba joining the Mau Mau in large numbers. There were two possible outcomes in the colonial imagination: either the community would join the Mau Mau, causing untold repercussions for security in the colony, or Kamba serving in the army and police would provide the backbone of efforts to defeat the movement. This was of importance since the Kamba made the highest percentage of the army and police throughout the colonial period. The administration’s anxiety was related chiefly to the potential difficulties that would follow if a portion of the Kamba serving in the police and army changed sides. Machakos was also inhabited by approximately 20,000 ex-servicemen many of whom had actively served in various capacities in the Second World War (Shiroya, 1992:7). Colonial officials became progressively concerned as the conflict persisted into 1954. Though the Mau Mau had not critically penetrated into Machakos County, it was very necessary that “nothing is done to upset the Kamba” (KNA/DC/MKS/1/1/30, 1954:6).

Thus the government took on an all-round strategy of development to reduce the possibilities of the Kamba joining Mau Mau as the conflict intensified (Ndonye, O.I.:2020). Development funding that had first appeared after the Second World War occurred again on a greater scale. The British undertook numerous propaganda programs designed to reinforce Kamba loyalty to the government (Osborne, 2014:204). This was the strategy that worked against Mau Mau propagandists in Machakos since they criticised the very government development projects that the Kamba had embraced. The initial resistance to government projects in Machakos in
the 1940s had died out by 1949 (Osborne, 2010:67). The development projects and funding of the 1950s were chiefly meant to benefit the loyal communities. These programs played an important role in easing the sorts of social and economic tensions that drove the people in Kikuyuland into the movement. This was because as central Kenya descended deeper into conflict, British officials believed that the Kamba had a pivotal role to play in defeating the Mau Mau.

Such development included heightened mechanical soil conservation that was accompanied by adoption of bench terracing and advances in the penning of cattle in conjunction with the preparation and use of manure and the planting of bananas in trenches. In order to improve pastures, paddocking and bush clearing as well as planting of napier in gullies and river banks that acted not only to hold the soil to prevent erosion but also as fodder for the livestock. Unless the livestock keeper was able to see a direct impact of these efforts to his stock however, such as improvement of yields, or a greater cash return on sale, then these efforts could not help solve the livestock problem permanently. Survey and demarcation of boundaries to identify and allocate individual farms was carried out. Makueni had 4,200 people living there with 2,000 on the waiting list with a hope of settling a total population of 10,000 (KNA/DC/MKS/14/3/2, 1958:24). Reconditioning measures could however, bore minimal fruit in the reserve since land, the major means of production, was limited. The simplistic notion of Kamba wastefulness worked against the very efforts of conservation and reconditioning.

5.6 The Swynnerton Plan and Environmental Conservation Efforts

Due to the deteriorating political situation in the country, the British exchequer released funds in 1954 as part of a grand strategy against Mau Mau. In Kenya, the
money arrived in the form of the Swynnerton Plan. A report, *A Plan to Intensify the Development of African Agriculture in Kenya*, was prepared in 1954 by the then Director of Agriculture, Roger Swynnerton (Leys, 1975:52). This report became known as the Swynnerton Plan. It was clear to the colonial government that the policy of maintaining the reserves as providers of subsistence food-stuffs for low-paid wage-workers’ families had overreached itself, and that unless steps were taken, the conditions which gave rise to the emergency would become chronic. It aimed at addressing African land problems by adopting British-style land tenure through adjudication and consolidation of land as well as giving titles to land. Intensification of African agriculture would then be possible (Thurston, 1987:20). The report consisted of three phases land adjudication, land consolidation land registration (Leys, 1975:52). Each of the phases was of particular benefit. Adjudication was aimed at introducing private title to land and demolishing pre-colonial land tenure systems. Consolidation ensured joint parcels other than small parcels scattered throughout an area. This was aimed at increasing production though better farm management ensuring soil erosion control concentrated on single holdings. Registration was aimed at eliminating alienation suspicions Africans held about land. Title to land enabled farmers to access credit facilities to improve farming especially the adoption of cash crop farming (KNA/DC/MKS/14/3/2, 1958:28).

In essence, was to increase general agricultural production ad well as employment in the agricultural sector leading to a growth of rural economies through agricultural income. The plan was premised on the assumption that some of the economically better off and hardworking African farmers would accumulate more land. This would create a landless class that would provide not only labour in the farms but would be
forced to adopt business strategies thus pushing the capitalist economy to maturity (KNA/DC/MKS/1/1/33, 1955:1-2).

Upon implementation however, the simultaneous creation of landless and landed classes in the more productive regions did not produce the economic impact aimed at by the Swynnerton Plan. It led to environmental problems hitherto not encountered. Those people alienated of good and productive lands within their rural areas did not all end up working on the other people’s farms or establish businesses (Anderson, 2002:230). The implementation of the plan served the political expedience of the colonial government at the time. In Machakos, the Swynnerton Plan was as a response to increased political activity in Kenya through improving the level of production of land across the colony by implementing new agricultural techniques and programs. The paternalistic and derogatory objective of the colonial administration was to:

“carry the Kamba from their primitive poverty, to a way of life, social behaviour and moral standards, based on those set by the immigrant European community; and to effect this necessarily painful and difficult process without imposing intolerable strains on the social fabric of the tribe, with resulting violence and sorrow” (KNA/DC/MKS/1/1/32, 1954:2).

The colonial administration hoped to break the cycle of land deterioration and rural poverty by moving the greatest possible proportion of the society from subsistence to commercial-oriented farming as a base for future development (Thurston, 1987:77). Designed to be in operation for five years, the Plan intended to be only the first of a series of development plans for intensifying land use in African areas. African land survey and consolidation with the aim of issuing private titles to land was a strategy
of the plan. If African farmers were to embark on any permanent development, then they required security of tenure (Rocheleau, 1994:21).

Of the money available for Betterment, Settlement and Ranching Schemes under the Swynnerton Plan totalling £2,740,770, Machakos was allocated £940,000 for schemes to benefit the County directly (Osborne, 2014:207). This is a confirmation of the direct relationship between the funding of environmental programs and political control. While it was evident that the British, with their superior firepower, were winning the war against the freedom fighters on the ground, it was also clear that the land issue was not going to be wished away (Kimwatu, O.I.:2019). Efforts to insulate the people of Machakos County from Mau Mau influence went as far as removing all Kikuyu from the county as well as reducing Kikuyu population in Nairobi. This was not a long term solution in the purchase of Kamba loyalty. A plan to expand agricultural production was necessary to the politics of colonial rule in order to ‘restore order and to forestall future discontent amongst the African populace by broadening the middle class collaborative base’ (KNA/DC/MKS/1/1/30, 1951:3).

Important for Machakos was the afforestation of barren hills such as Kanzokea, Kanzalu, Ngelani, Kathiiani and Matetani through the African District Council (ADC) with the £60,000 of the Sywnnerton Plan (Rocheleau, 1994:43). However the Machakos Betterment Scheme suffered severely due to lack of labour for most of the able-bodied men had moved out of the reserve in search of paid labour opportunities in Nairobi and Mombasa. The emergency and the Mau Mau ensured that Kikuyu labour was no longer reliable. Famine conditions in Machakos County also forced the men out of the reserve. The Akamba viewed reconditioning with suspicion for there were rumours that once the lands were restored they would be alienated to the
European settlers while the Akamba would work by force on settler farms established. This coupled with fears of compulsory stock reductions slowed down reconditioning work (KNA/DC/MKS/14/3/2, 1958:28). The Mau Mau was throwing its shadow across everything else and political activity suffered at a time when opposition to government was expressed by murderous violence. To criticise was to be in danger of being identified as Mau Mau (DC/MKS/1/1/31, 1953:3).

In addition, this use of development funding for political mileage was further demonstrated by the creation of Emergency Expenditure Funds. The government authorised the various departments in the colony to spend additional money to counter Mau Mau. One of the most prominent was the African Land Development Board (ALDEV). The background to this board was the establishment of the African Settlement Board in 1945 and its functioning under the Kenya Ten Year Development Plan, 1946-1955. The objective of the plan was reconditioning of African areas and African settlement. The Board was later renamed the ALDEV. According to Governor Philip Mitchell, since African lands were not only eroded but overcrowded and thus unproductive, resettlement of Africans into less populated drier lands would save the land from irredeemable deterioration. Thus land rehabilitation, destocking, resettlement and the development of a communal approach to agriculture became dominant themes in agricultural policy for the African areas (Thurston, 1987:17).

The aim of ALDEV was to centralise the coordination of agricultural betterment work in African areas guided by a Ten Year Development Plan. Mitchell was aware that the greatest hindrance to efforts towards improving African agriculture was lack of continuity and coordination as each DC followed what seemed to work for them. Considering that the DCs were changed almost every year, reconditioning work in
Machakos was marked with confusion. This is what ALDEV as a central agency was to eliminate. It controlled a three million pound Colonial Development and Welfare grant allocated under the 1946 Ten Year Development Plan, for the reconditioning of African areas and for African settlement and resettlement (Anderson, 2002:209). The funds were used for such projects as the construction of dams and boreholes, afforestation, tsetse fly clearance, reconditioning of grazing areas and grazing control schemes, largely in dry areas. Yet, opposition and suspicion to government-initiated efforts meant that improvement of land’s productive capacities was not achieved (Thurston, 1987:20; Mbithi & Barnes, 1973:29). In addition to receiving money from the Swynnerton Plan, ALDEV received extra money to provide physical development projects such as dams or boreholes for those who were loyal to the government. This was in attempt to persuade any people harbouring Mau Mau sympathies to change sides (Silberfein, 1989:150).

The Swynnerton Plan (1954-1962) led to intensified conservation work and strict enforcement of closed grazing areas especially up to 1958. There was the dispatch of a greater number of agricultural officers. Of significance among ALDEV projects in Machakos County was the building of the Yatta Furrow, which commenced in 1953. The Furrow took almost a decade to complete at a cost of £300,000. The major source of labour for this project was Mau Mau detainees (Kiereini, 2019:1). This Furrow was ten feet wide, sixteen to eighteen feet deep and sixty kilometres long. This project was completed in 1958 and inaugurated in 1959. The long-term objective of this project was to supply water to the Yatta grazing lands and thus permit rotational grazing and irrigation development. Government officials began and made popular development schemes to show the expected returns for loyalty (Silberfein, 1989:152). Indeed, much of ALDEV resources were absorbed by the Makueni settlement though intensified
compulsory terracing on communal basis in the populated areas was also important from the onset. Though the impact assessment of ALDEV projects on environmental conservation was not undertaken, it is evident that the foundation for scientific soil conservation had been laid.

5.7 Environmental Change and Response and the Clamour for Independence

From the early 1950s onwards, the British government came under strong pressure to grant independence to its colonies. Within Africa the voices that clamoured for freedom grew louder. Many of these were associated with the Pan-African Movement. Pressure for self-government further came from the words and actions of the United States and the Soviet Union which propagated an anti-colonial agenda even supporting nationalist movements in Africa. When Ghana got her independence in 1957, the journey towards Africa’s independence had begun (Apter, 2008:10). The upheaval caused by the Mau Mau revolt, as well as its subsequent repression meant that the transition to independence in Kenya was not an easy process. The problem was made greater by the large number of European settlers in Kenya who were not ready to see the dream of a White Man’s Country was about to be shattered (Elkins, 2005:29).

One of the complicated parts of colonial politics in these years of African nationalism was to create a balance between meeting African demands without seeming to ignore settler interests. Yet, it was clear that Britain could no longer turn a deaf ear to African political and land rights. All the efforts towards reconditioning Machakos with the aim of maintaining a strong grip on resources of the colony did not bear much. A drought in 1959 ‘suddenly’ revealed how overstocked the reserve was (KNA/DC/MKS/1/1/35, 1959:15-16). Though the Europeans had exaggerated the
positive impact of soil conservation a year before, it was apparent that such positive impact was not widespread and neither did it lead to a greater productivity of the land. In 1960 the colonial government was aware that the community was struggling to provide for its subsistence (KNA/PC/SP/1/3/7, 1960, 3). Food shortages and land degradation continued to be experienced in Machakos County due to the grazing of eroded areas as well as those closed for regeneration (Rocheleau, 1994:50). Reconditioning was transferred solely to the ADC relying on communal labour and the strong individual who was ready to bear the hard work of terracing (KNA/PC/EST/2/3/1, 1961:1). Mechanical terracing using tractors had ceased in 1957 due to exhaustion of government funds.

There was a progressive collapse of the colonial government’s authority from 1950 onwards, leading to the declaration of Emergency in 1952 and the subsequent campaign against forest fighters. Political tensions increased as Africans pressed for the return of alienated land. From this time onwards, land and political governance were the major grievances that occupied Kenyan nationalist leaders. With the formation of the two major political parties to negotiate for independence, African leaders were in objection to Europeans owning land in the highlands. From the moment the British government revealed its intention of giving power to Africans at the First Lancaster House Conference in 1960, the colonial economy entered a crisis, almost a standstill, which persisted well into independence. In the meantime KADU (Kenya African Democratic Union) and KANU (Kenya African National Union) politics continued to differ over land ownership and the type of government favourable at independence. The need to restore the economy was key. Kenya gained her independence in 1963 under KANU and Jomo Kenyatta as the Prime Minister.
with a strong capitalist economic system. Kenyatta emphasized respect for private property.

With the Kenya (Land) Order in Council of 1960, the government terminated its racially defined land policy by removing the official distinction between the scheduled European lands and unscheduled Africans lands. It also accepted the removal of restrictions on the transfer of land titles between persons of different racial orientations (Mbithi & Barnes, 1973:30). Africans wishing to own land could buy it off from the settlers at full market value. A modest program began in 1961 but pressure from both the Africans and dissatisfied Europeans led to a broader program in 1962 to Africanise European land. The land transfer program mainly involved the movement of a mass of African peasant farmers into the former white highlands.

Yet a small cadre of politicians, civil servants and traders aspired to take the place of European settlers as large scale capitalist farmers. Many of these were financed by the government through loans negotiated by the British government and the World Bank. In Machakos County, settler farms were bought by the Machakos Settlement Board (MSB) through the first settlement scheme launched in January 1961 (Leys, 1975:74). The land was then subdivided them among the people of Machakos who were organised in cooperative societies. Land redistribution, as well as an increase in the monetisation of small-scale farming, was viewed by both the Akamba and the colonial administrators as the remedy to hunger and poverty at both reserve and country levels. In the dry lands, many small-scale farmers owned pieces of land that were either severely degraded or unviable in size to form profitable production units under the agricultural technology in use. In the era of clamour for independence,
Akamba demanded land in line with the long dispute with the colonial administration to restitution of the lands customarily used as pasture (Musembi, O.I.:2019).

These settlement schemes were not a success in Machakos County. The Mua Hills although fertile, the area sold out to Africans had insufficiency of water supplies. The land purchased lay around the edges of the white highlands adjacent to the surrounding African land units. The land was not high in productivity and only caused a great disappointment. Settlement schemes, just as Yatta and Makueni Settlement, did not have tangible effect on reducing pressure on arable land. This was because the land purchased by the District Settlement Board was most of the badlands that did not have adequate water supply and thus 200 acres were only capable of supporting one family. Many of the areas, due to their lack of water, were taken up as ranching areas such as Koma Rock (KNA/PAD/1/296, 1962:4).

It is unfortunate however that all the work done during the colonial period never conclusively addressed environmental problems in Machakos County. Colonial environmental policies were not designed to benefit Africans since colonialism was predatory in nature. The solution to rural problems – the ‘gift’ of development – was defined solely in terms of western (colonial) science, with little or no sensitivity to indigenous African husbandry practices or prevailing systems of social organisation. Indigenous knowledge systems were not recognised as having any validity or any relevance in relation to progress and modernisation under colonialism. Colonial development programs therefore too often proved to be experiments that were doomed to fail because of errors, ignorance, misjudgements and simple misunderstandings on the part of developers (Leach & Mearns, 1999:4-6).
Due to the heightened political atmosphere in the early 1960s, it was difficult to continue with soil conservation and better farming practices as promoted by colonialism since the people felt that independence was going to be good riddance of the draconian policies of environmental conservation imposed on them by imperialists (KNA/DC/MKS/3, 1962:3). By 1961 the area conserved by terraces had fallen to 66,700 acres compared with the peak of 103,700 in 1958. During 1961 short rain season, a lot of damage occurred due to the abnormally high rainfall. Compulsion was not an option at this time due to the devastating effect of the floods that led to widespread famine (Nthei, O.I.:2020). Closed grazing areas were reopened and red patches begun to reappear in 1962-1963. Agricultural staff was cut back while grazing controls, soil and water conservation as well as controlled settlement largely ceased (Tiffen et al, 1994:194). Since the collapse of reconditioning in the early 1960s, such work, carried out with government support, was not undertaken until the mid-1970s and 1980s and through individual initiative from the mid-1960s.

5.8 Summary

After the Second World War, Britain instituted new programs of development and welfare in an effort to create new, visible manifestations of trusteeship in Africa. This was an effort to moderate pressure from the United States and the Soviet Union, as well as intellectuals in Africa, India and the Caribbean, that Britain grant independence to its colonies. In Kenya and elsewhere, however, these programs were actually methods of imperial control. During the 1940s and 1950s, officials diverted enormous chunks of the colony’s development monies to the Kamba in an effort to maintain political calm, as well as to ensure the loyalty of Kamba soldiers and police. After 1945, environment became even more political entwined in the politics of freedom and the ravages of the Mau Mau. In the process of silencing dissenting
voices in Machakos County, land, which was the greatest bone of contention, became
the negotiating tool. Several development projects were carried out in Machakos
County in the years following the Second World War in a colonial government’s
attempt to win Kamba loyalty. Among these were the Makueni Settlement Scheme
and the construction of the Yatta Furrow. These years were of great significance to
the environmental history of the county. The next chapter discusses the significance
of independence to the environmental history of Machakos County to show if self-
government was a solution to the environmental problems in the county. Machakos
Akamba expected independence to lead to the restoration of the grazing lands lost
during the colonial period for bettering their economic fortunes.
CHAPTER SIX

POST-COLONIAL POLITICS IN RELATION TO ENVIRONMENTAL DEGRADATION AND CONSERVATION, 1963-1999

6.1 Introduction

The three years before independence were marked with intense political activity. When it became evident that colonialism was coming to an end in the late 1950s, the colonial government was no longer willing to invest in environmental conservation. The independent government inherited an environment laden with conflict over land utilisation and environmental conservation. The independent government was, therefore dealing with the same environmental concerns of the colonial period. This chapter discusses environmental policies and approaches from 1963 to 1999 to decipher change or continuity in land use and conservation measures from a political ecology perspective.

6.2 1960s, a Decade of Adjustment

Independence came with renewed expectations as well as re-definition environmental challenges (Richards, 1975:10). Machakos was still experiencing famine and land degradation though there was an increase in overall national agricultural productivity (Leys, 1975:94). Kenya gained independence amidst ecological disasters which led to a famine in Machakos, Yua ya Ndeke, in the region in 1961 (Matheka, 1992:183-184). The series of disasters began with floods in 1959. This was followed by army worm invasions in the same and following year. After independence the Kenya government defined the major challenges facing the country as illiteracy, poverty and hunger. National plans were drawn with an economic development orientation while environmental problems were considered as a colonial legacy. (Rocheleau, 1994:16).
In Machakos underdevelopment was defined as problem of poor agricultural productivity with particular reference to exportable cash crops. The government thus promoted land consolidation, expansion of production to frontier areas, and land concentration directed by the logic of the Swynnerton Plan (Leys, 1975:85).

The government was also working towards legalising land reallocation. During the 1960s as Kenya was attaining its independence from Britain, a massive program of land transfer was undertaken to convey some 1.2 million acres of formerly European-owned lands and ranches into the hands of African smallholders and cooperatives (Leo, 1981:1). It came to be known as the Million Acre Scheme which was one of the world’s largest land transfer schemes of its kind (Mbithi & Barnes, 1973:25). It helped to meet the demands of the settler community, the political objectives of the nationalist leadership, grievances of landless Africans as well as the demands of the international community. It thus served to mute serious contentions over land at independence (Leys, 1974:80). In Machakos County, only the Mua hills and parts of Donyo Sabuk were affected by the Million Acre Scheme. This was because much of the land owned by Europeans in the county were utilised as ranches. The policy for their reallocation was for them to be retained as large-scale holdings (Tiffen *et al*, 1994:23). These were reallocated to Africans as such large units many of which remained unsettled until the late 1990s including the Komarock area.

Once independence was at hand however, many moved chose to become illegal squatters with the hope that redistribution of government lands and large settler farms underutilised or deserted by European settlers would grant them land ownership. Thus desire for land pushed people to ecologically delicate areas. Farmers established permanent farms on these frontiers and paved the way for the environmental crisis
that kept the government occupied in the 1970s and 1980s (Rocheleau, 1994:14-15). The momentum for migration had accumulated over a long time through land alienation, overcrowding, and reduced mobility. The migrations of the 1960s were had a relationship with independence and the possibility of extensive former settler estates being opened to individual and cooperative settlement (Tiffen, 1992:34). Moreover, those farmers who did not own any land or had owned relatively small plots in crowded yet high or medium-potential areas were quick to lay claim over other well-situated lands near water sources and road infrastructure on under-utilized government or private holdings.

In regard to environmental conservation at independence, emphasis changed from forceful implementation of policies to advisory services, although conservation legislation remained in statute books. This change initially resulted in an easing-off in soil conservation practices in the field particularly among new entrants into farming. In some areas, terraces and other conservation works carried out in the 1940s were left to fall into disrepair (KNA/PC/EST/2/3/1, 1969:4). Soil conservation works stalled during the first decade of independence since the people were overwhelmed with the need to adjust to the new political environment, the unemployment rate and the fact that they were still required to pay taxes and school fees (KNA/PC/EST/2/3/1, 1965:9). This was contrary to the promises given by African politicians in their independence speeches that independent Kenya would be free from all tax requirements.

Government advice on conservation work was best suited for the period due to the consecutive years of drought and famine in the region. The farmers were convinced that the only way to liberate themselves from perpetual suffering was by adopting
proper crops and planting them correctly at the right time (KNA/PC/EST/2/3/1, 1966:1-3). Therefore, rather than the punitive and forceful implementation of policy, the Agricultural Department adopted training farmers based on an analysis of specific environmental needs. Terracing work and grass planting were the major preoccupations towards soil conservation in the 1960s, although lacking the zeal and magnitude of the colonial period. The scale of operation during this period was the private land where work was performed by the people themselves through self-help groups, myethya, guided by the President Moi’s harambee (pulling together) philosophy (Tiffen et al, 1994:196, KNA/DC/MKS/3/324, 1967:5-6).

Land re-fragmentation was the greatest danger observed by agricultural officers who were convinced that more had to be done to conserve the soil. Improper cultivation of steep slopes often with continuous single crop where soil conservation measures were ignored was considered the cause of soil erosion. In addition to rainfall shortages, lack of continuity in the staff in the areas related to agriculture and soil conservation also greatly affected conservation work. Agricultural staff, that was already insufficient, was frequently transferred thus making it difficult to draw out and execute a solid plan on environmental conservation or agricultural development (KNA/PC/EST/2/3/1, 1966:3). Indeed, the major concern of the 1960s was agricultural development in the face of famine and drought rather than environmental conservation.

Extensive consolidation schemes, land planning and registration of title were aimed at increasing production, both of food crops such as maize and cash crops for better returns from the land. Farm consolidation and land registration resulted in better farm management and hence improvement of soil conservation measures in few private holdings (Republic of Kenya, 1971:31). In Machakos County however, land
registration only begun in 1968 due to opposition to consolidation. However, titles to land or lack of them thereof was not an impediment to agricultural development because Akamba economic organisation laws already protected individual investment (Tiffen et al, 1994:23).

6.3 Environmental Conservation in Machakos amidst Desertification Narratives

In the 1970s and 1980s there were not only droughts in Africa but drastic environmental changes in other parts that necessitated the convening of the United Nations conference on the problems of the human environment in June 1972. The major outcome of the conference was the setting up of the United Nations Environment Programme (UNEP). The aim was to unravel the African desertification hypothesis. Due to international media publicity about to desertification, there was renewed awareness of the need to conserve nature. In the 1970s, environmental challenges and the proper management of resources in Kenya began to attract interest nationally and internationally (Rocheleau, 1994:19). The Kenyan government was concerned about dam sedimentation at key hydroelectric establishments, cropland soil erosion, decline in crop yields, disappearance of forests, and shortages of wood fuel. The government began to increase trained manpower to support conservation efforts (Republic of Kenya, 1971:24).

The government was keen on water, energy and soil resources for the nation. Pastoral and farming activities of poor people in semi-arid rural lands were identified as the main cause of degradation. Further linked to such degradation was the expansion of the Kenyan population at that time “approaching 4 per cent per annum - one of the highest in the world” (Darkoh, 1990:13). In areas such as Machakos County, where conservation work was considered relatively good in comparison to other areas, the
government observed that without accelerated effort, it would take a hundred years to effectively protect the land from further soil erosion. This would be too late if there would be any soil remaining worth conserving (Republic of Kenya, 1971:26).

The problem of a deteriorating environment was well captured in 1971 by the National Report on the Human Environment in Kenya prepared by the Working Committee for the United Nations Conference on the Human Environment. With regard to national management of its natural resources, the report stated that Kenya had reached a watershed. On the one side was the accelerating decline of the fertility and yields from many types of resources, on the other a salvaging of every resource and its fullest development for the benefit of all the people. Danger lay in the continuation of the trend in that it would lead to a steady decline in the options available for the development of resources not yet fully utilised such as wildlife, domestic livestock and the harnessing of water supplies. Land-use conflicts would be exacerbated by unplanned population pressures from a nation expecting a piece of land for everyone. With deteriorating quality and quantities of water and the destruction of many delicate and valuable ecosystems, action was inevitable (Republic of Kenya, 1971:32). Although there was continuous increase in yield in some areas as a result of improved crop varieties and the increased application of fertilisers and pesticides, the nation’s capital in land resources was shrinking.

With a complete environmental management program based on secure land ownership, the anticipated consequences were improvements in range lands, fodder crops, livestock and wildlife as well as secure water supplies. This however, required investment in human resources through an educational system that related man’s activities to his environment and the long-term welfare of the nation (Republic of
Kenya, 1971:47). As such an appreciation of the natural world both as resource to be utilised and as a component of human culture would lead to greater knowledge and even eventually to improved utilisation of resources.

A central government authority, the National Environment Secretariat (NES) in the Office of the President, was established to take full responsibility for the health of the environment. It was one of the most important steps taken since independence towards environmental conservation. NES took up the function of surveillance and monitoring in order to avail data for the purposes of economic planning with concrete evidence and truthfulness of the state of the environment. These included soil fertility levels, degree of soil erosion, extent of cultivation and population growth in marginal areas, changing wildlife populations and varying silt loads in rivers and dams (KNA/BB/3/64, 1970:3).

The NES made several recommendations in December 1975 on the way forward in curbing soil erosion and general environmental degradation. Among these was a revision of the Agriculture Act to make it more comprehensive and accommodative of the need for soil conservation. A special fund for helping farmers or farming societies in soil conservation was considered necessary. Importantly this report proposed a national campaign against soil degradation which was launched by the President Jomo Kenyatta and carried out by mass media. This was because the maintenance of the old soil conservation works was usually neglected leading to their dilapidation and disappearance altogether. In some areas, soil erosion had prevented further cultivation because there was only infertile subsoil left or the farms were dissected by large gullies (KNA/BB/2/94, 1975:1-35). The effectiveness of the previous and unpopular government approach to soil conservation in colonial Kenya was hampered by failure
in development planning to be informed by a consideration of the resource base. As such the problem of soil erosion continued to pose a national threat that could only be tackled through the cooperation of various government ministries and departments (Mbate, O.I.:2020).

Following this report by the National Environment Secretariat, the work of the government was to work towards a policy of soil conservation in the counties. In Machakos County policy begun to be formulated and enforced on the basis of The Agriculture Act Cap 318; The Agriculture (Basic Land Use) Regulations of 1965. The DC in Machakos gave direction to the policy implementation issuing policy letters to the County Officers and Chiefs within the County. How well one did in the area of tree planting according to the DC, would be a criterion for consideration for promotions. The chiefs were required to work with myethya as they functioned after the Second World War in soil conservation efforts. These groups were expected to cooperate, under the supervision of the chiefs, in the construction of bench terraces. Bench terracing was labour intensive and by working as a group, the labour requirements were subdivided among the group to make sure that more was achieved in terracing than if the work was left to the individual.

In short, soil conservation efforts of the 1970s were concentrated around the findings of the National Environmental Secretariat of 1975. This Secretariat identified several reasons as to why the condition of the soil was at it was at that time. The situation was discussed as “accelerating soil erosion” which was “threatening to plunge the country into perpetual starvation and ultimate disaster” (KNA/BB/2/94, 1975:13). The critical problems and human malpractices contributed to the incidence of soil erosion. There was pressure of an ever-growing population on the carrying or productive capacity of
the land. There was over-intensive exploitation of soils in terms of unremitting utilisation and/or the introduction (excessive) of harmful chemicals including DDT (dichlorodiphenyltrichloroethane). The general breakdown of countrywide soil conservation programmes and other effective practices for combating soil erosion had led to a deterioration of the situation. This was accompanied by a clearance of vegetation and forests to permit cultivation of hillsides and steep slopes as well as along river and stream banks. This was accompanied by illegal clearance of forests for illegal settlement and cultivation as well as for charcoal burning. There was also excessive grazing across large areas of rangelands, marginal areas, in forests and in wildlife reserves. These problems, according to the government, could only be tackled on the basis of rigorous enforcement of government policy where applicable whilst on the other hand the DCs working with their subordinates, were to formulate ways in which the specific problems of the specific areas could be tackled.

As such, a new phase of soil conservation programmes in the 1970s in Machakos begun with research on the possibility of rain leading to soil erosion, soil erodability, rates of erosion as well as those of sediment deposit in small water bodies. As noted above, conservation efforts were driven by worries about dam sedimentation downstream (KNA/BB/2/94, 1975:19). Kenyan agencies adopted the strategies of the colonial period involving building terraces, dams and other structures for drainage purposes. This government initiative was partly influenced by international organisations such as the United Nations Environmental Program (UNEP). A 1975 UNEP report stated estimated the global area of degraded soils which were once biologically productive at twenty million square kilometres. This was more than the entire arable area used for agricultural purposes at that time. Such destruction was in most cases irreversible.
According to the Programme, Kenya was headed for a catastrophe since she was losing more that she was gaining in her GDP due to soil erosion. Additionally, “UNEP’s major arguments during the 1970s were centred on energy supply in relation to development planning and environmental management” (Rocheleau, 1994:60). According to Timberlake, energy sources and use surveys in Africa concluded that many families, businesses and individuals relied on firewood and/or charcoal for cooking and other uses such as burning of bricks (1994:15). The extent of fuel wood requirements led to questions being raised on the ways in which future generations would meet that fuel needs since the harvesting of trees was beyond the natural ability of the forests and scrubs to recover (Timberlake, 1994:15). By 1979, government forest reserves in Kenya produced wood able to meet the needs of only 4.4 per cent of country’s wood fuel demand. The remainder of wood fuel needs were met through tress on private lands as well as bushes and scrubs in unregulated areas (Rocheleau, 1994:60).

Tree cover loss was associated with the haphazard spread of population leading to widespread clearance of new lands, large scale clearance of forests for settlement, denudation of forest cover on hillsides, destruction on larger farms of tree-lines and shelter belts, commercial charcoal burning, overgrazing across huge tracts of rangelands and marginal areas, invasion of forests for dry weather grazing and general overstocking of cattle and goats (KNA/BB/2/94, 1975:19). Land consolidation superintended by the Ministry of Agriculture did not achieve the objective of safeguarding the land to avoid soil erosion. Unless addressed, the government was wary that this soil erosion would lead to a national disaster. Such views justified government intervention in the environmental management of Machakos County.
International help was sought. The Swedish International Development Agency (SIDA) gave institutional support for water and soil conservation from 1974. This agency concentrated on the most fertile areas of Kangundo. It began field work for the construction of cut-off drains and terraces with food for work schemes as well as assisting myethya by providing them with tools from 1978. Farmers in Kangundo confirmed to have received material as wheelbarrows and fertilisers in this period (Ndonye, O.I.:2020 Munguti, O.I.:2019). The agency’s activities led to significant control of soil and run-off losses on farms that had not been previously terraced. SIDA applied a whole farm approach using voluntary labour and technical assistance.

Soil conservation efforts of the 1970s majored on cultivated land. Grazing lands scarcely benefited from the activities of the 1970s. The droughts of the 1960s and 1970s, overgrazing and damage by termites left the land too bare to even regenerate when rainfall levels were high. In addition to soil erosion, the land was left bare and hostile for the natural reestablishment of grass (Mbithi et al, 1977:21-22). Machakos Integrated Development Programme (MIDP), which was initiated in 1978 attempted to address this problem by directing conservation efforts to Arid and Semi-Arid Lands (ASAL) of Machakos County.

6.4 The Success Story of the Machakos Integrated Development Programme

MIDP was a multi-sector rural development programme funded by the EDP grant and government of Kenya’s matching funds (MIDP Formulation of Phase III, July 1990:1-1). The incorporated the production of food, conservation and other aspects of rural development in semi-arid areas using SIDA’s whole farm approach. The major step was a loan application made to the World Bank in 1975 to support a programme of Integrated Agricultural Development. The justification was that since agriculture was
a major contributor to the country’s GDP, it was paramount that the agricultural sector was expanded at a greater pace than that was witnessed since 1965 (KNA/BB/3/120, 1975:1-10).

The aim was to increase agricultural output with the consequence that export of foodstuff would be increased over imports. This was implemented in Machakos County as the Machakos Integrated Development Programme (MIDP) whose first phase ran for five years from 1979. The initiative was limited to Machakos County’s Arid and Semi-Arid Lands (ASALs). It served as a ground-breaking plan to direct government environmental policy in Kitui County and other semi-arid farming counties in Kenya (MIDP Formulation of Phase II, Aug 1983:2-3). As with soil conservation, Machakos County served to set the pace of conservation in dry land farming counties in Kenya (Mbate, OI:2020).

The project was designed with emphasis on agriculture although all aspects of social and economic development were adequately covered. Agriculture and conservation were included but were separately addressed under different government ministries. Its central objective was to improve the standards of living of the local community. To do so, specific objectives were set. These included increasing the reliability and production of agriculture, water development, rational land use including soil and water conservation, grazing management and afforestation. To achieve these objectives, there was a need to improve essential services and infrastructure (KNA/BB/13/32, 1975:12).

Components of MIDP included agricultural development, soil and water conservation, afforestation, livestock development, cooperative development, rural industrial development, forestry, social services and adult education and programme
management. Under agriculture there was general farm management, soil and water conservation as well as cooperative development. Water development included the construction of earth dams and shallow wells, improvement of springs as well as setting up piping systems for water supply. For the first time since independence, therefore, there was a centralised and integrated system of agricultural development and soil conservation that was financed by the central government through the Ministry of Economic Planning and Development ((Tiffen & Mortimore, 1994:23). The Machakos experience suggests that there was little alternative to good governance to enable people to successfully tame and adapt to those difficulties imposed by nature and those of integration into the international economy. MIDP made useful contributions to improving soil and water conservation in the county. A wide awareness of the need for conservation activities was created. The provision of tools and the training provided to mwethya groups was particularly helpful.

MIDP aimed at benefiting small scale farmer families in the county. Small-scale farmers in Machakos who were motivated by the need to increase production in a sedentary manner constructed and repaired modified terraces on their farmlands. The terraces adopted required less labour to build. Their cost of construction was lower than that of the benches of the earlier period. The new model of terraces still collected and retained rain water, thereby increasing not only soil’s moisture content but also yields in crops planted on terraced farms. They also reduced the loss of soil nutrients and made the collection compost and water possible in new alcoves in the cropland (Tiffen, 1994:104). Through agricultural extension officers, farmers adopted the planting of bananas along the terrace bases in holes where water and compost collected. Farmers were also interested in increasing the areas on their farms under varieties of fruit trees. Since farmers were interested in increasing soil moisture and
fertility in the 1980s and 1990s so as to get maximum returns from horticulture and maize production, their interests “coincided with national soil-conservation interests leading to considerable success” (Tiffen & Mortimore, 1994:5-6).

Such activities could only succeed through community involvement in the projects in terms of awareness, sensitisation, training and support. MIDP environmental conservation projects began with the community through the catchment approach. The catchment method began with MIDP officers approaching a locational community to identify their needs. A community might point out food shortage in the location as the challenge while MIDP officers identified soil erosion as the underlying factor. Since MIDP was composed of agricultural officers, foresters, water and soil engineers, each working with their relevant government ministry, cooperation of these components was necessary. Consequently, tree planting on hilltops, proper agricultural methods, terracing work, education on livestock grazing and planting of fodder as well as dam construction all begun with community sensitisation (KNA/BB/13/32, 1982:2-4). This integrated method proved successful. The work done by MIDP was of long-term benefit. The dams constructed during the tenure of the MIDP were still in use at the close of the century while the forest areas continued to be added through community and individual efforts. Terrace repair and construction was a continuous work due to community sensitisation. Farmers willingly performed conservation work because of the tangible results of the programme (Makau, O.I.:2020).

MIDP had, by 1984, began activities related to the safeguarding of catchment areas in every ASAL sub-location of the county. This was inclusive of restoration of grazing areas, tree planting, control of gullies as well as promoting water collection from roof
tops. There was the use of propaganda aimed at publicising the need for soil and water conservation especially pamphlets, movies and slide shows, that explained the different ways for achieving environmental conservation. Presidential propaganda on soil conservation was also an important aspect of the soil conservation drives of the 1970s (KNA/BB/2/94, 1975:63). The decade of the 1980s witnessed a fundamental change in the way government and development agencies thought about environment and development. The two were no longer regarded as mutually exclusive. It was recognised that a healthy environment was essential to sustainable development and a healthy economy (Tiffen & Mortimore, 1994: vii).

Sustainable development requires for the conservation of the physical capital that produces goods and services that meet human needs. This means that as a society increases its population, changes its technology and improves its other economic and cultural status, the resources required for development, both physical and human, should be conservatively used to allow future generations an equal opportunity to benefit from them. Sustainable development requires a kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This was discovered to be a state of utopia (Bryant & Bailey, 1997:5). The concerted efforts of the MIDP from 1978 as well as a change in the trends of agricultural production in the county led to strides towards such development. There was an expansion of the cultivated area with a reduction of grazing areas accompanied by soil conservation measures. MIDP used the catchment approach to address environmental concerns (Mbate, O.I.:2020).

Part of MIDPs objectives was the improvement of agricultural production in the ASAL areas of Machakos County. Cash crop production was central to growing the
country’s exports from the 1970s to 1990s. As such the environmental conservation policies and efforts directed to some of the drier parts were with the aim of increasing cotton production. In Kasikeu farmers eventually abandoned cotton planting in the late 1980s and early 1990s. This was because cotton production was not only labour intensive, but also declining yields and poor international prices worked against farmers’ efforts. Declining yields due to a decline in soil fertility following continuous cotton farming was the greatest challenge to this economy in these locations as identified in West Africa (Robbins, 2012:161-162). In the same breath of the political nature of environmental conservation, SIDA worked in the highland coffee producing areas of Machakos such as Kangundo and Matugulu to increase coffee production by issuing farm inputs such as fertilisers, herbicides, wheelbarrows and spades as well as other implements. There was the formation of Machakos Co-operative Union to grant loans to both cotton and coffee farmers. A cotton ginnery was established under MIDP’s industrial development in the locations of Makueni to further support the cotton industry (Makau, O.I.:2020).

Another MIDP’s objective in the county was afforestation. Forest areas were considered an important aspect of a sound environmental policy. In 1970, forest areas in Kenya occupied only three percent of total land surface and their main function was the provision of secure and permanent water supplies. Though it is difficult to place an exact monetary value on the important regulatory function of these forests, the elimination of forests brought costly changes in river regimes. The major environmental problems in respect of the forest resource were connected with the effects of converting forested land to other forms of land use.
Excision of gazetted forest areas where there was, or was said to be, serious land hunger was usually the outcome of political pressure. This pressure may be parliamentary or was effected through encouraging defiance of existing laws and overt settlement within a forest reserve. Forest officers were threatened and in some cases attacked. Other forms of conversion included grazing, trampling, felling and burning thus depleting forest cover. An example is the Mau Narok forests where large areas were in the late 1960s and early 1970s being burnt, felled, farmed and settled. Charcoal burning led to the conversion of bush land to grassland. Although there was no serious study of the environmental impact of the charcoal industry, sufficient alarm was raised to result in government licensing of traders. With government licences, however, there was increased charcoal export in the 1970s. This was contrary to the aim of the licences which were intended to act as checks to excessive logging.

The depletion of forest in Machakos County had effect on steeper areas since there was a greater chance of soil erosion and an increased run-off, thus the greater chance of loss of soil fertility. In the lowland areas situated below mountain forest that were seriously depleted, there was clear evidence of a general decline in agricultural productivity (KNA/BB/2/94, 1975:5-9). Illegal grazing, illegal settlement and illegal clearing and cultivation of steep slopes combined to compromise the forest cover of Machakos County. In the highlands steep valleys and hillsides previously left as grazing areas were being cultivated without any soil conservation measures. The valleys of the highlands where forests had been cut or grazing land was transformed into arable land gulley erosion had set in. Landslides in the hilly areas such as Ngelani and Mutituni were common some of which led to loss of human life. In Machakos a tragic landslide in 1998 at Kaiti sub-location of Okia Location led to the death of four nuclear family members (Nzavi, O.I.:2019). It was foreseen that of these practices
continued, landslides would increase in magnitude leading to loss of life (KNA/BB/1/35, 1982:2-6).

Soil conservation by the MIDP depended on mwethya spirit and the self-help groups, known as ikundi at this time and composed mostly of women, who were also the main target of the MIDP conservation projects. The members of the mwethya came together voluntarily to willingly carry out work for both individual and communal interest. The local administration of chiefs, sub-chiefs and headmen was to provide motivation to the groups in public meetings, baraza, and later on in the villages as they continued with the work. The basic work of the MIDP was to establish demonstration catchments (also called a watershed, which was basically an area above a given point on a stream at which all runoff was collected). The catchment approach included all aspects of soil conservation package and a complete land utilisation proposal. The catchments were selected by local soil conservation committees who decided, depending on local priorities, where they wished the works to start. The catchments were situated in badly eroded areas with all features of soil erosion. This was because the catchment was supposed to act as a model demonstrating a concerted approach of appropriate conservation techniques which were to eventually lead to a well conserved environment. The local people participated personally so as to learn by seeing the result of their own work and efforts. MIDP officers made work plans on how the catchments were to work under a project supervisor.

The soil conservation package of the catchments included cut-off drains, gully reclamation (using gabion structures, trash structures, loose stone structures and re-vegetation [planting a gulley area with trees and grass then fencing it off to prevent encroachment by cattle for one or two years so that it recovers its vegetation]),
terracing, rural afforestation, fodder improvement, re-vegetation demonstrations, and road improvement. The re-vegetation demonstrations were the closing up of plots to enable re-vegetation either naturally or through the growing of grass/fodder for a period of time. This was carried out on identified pieces of land that were severely eroded. Studies in the 1970s and 1980s showed that much of the sediment in the rivers, dams, streams, etc was not from croplands but rather from grazing lands. Thus, just like the colonial government, the expensive projects of soil conservation were misdirected efforts. That is why the MIDP focused on the ASAL areas where livestock grazing was the main economic preoccupation.

The major distinguishing feature of the work carried out in the late 1970s and the 1980s is that the people of Machakos County were actively involved not only in the implementation of policy but also in an understanding of what was being done and why it was done the way it was done. For example, most of the tree nurseries were owned by the people under mwethya and ikundi groups (Makau, O.I.:2020). Government primary and some secondary schools established their nurseries. The students were allocated several tree seedlings to plant and care for within the school compound thus promoting a culture of afforestation in the young people. These tree projects were supported by MIDP, District Focus for Rural Development (DFRD) and The International Council for Research in Agroforestry (ICRAF) (KNA/BB/49/13, 1989:13).

The policy of Community Development whose goal was to involve people in their own development as “a democratic process in which the people themselves decide what kind of society they wished to work towards and then decide on means of achieving it” meant that the people of Machakos County were concerned about their
subsistence more than the preservation or reconditioning of the environment. Farmer training was of immense value in that it relieved extension officers of mass routine work and helped them focus on special problems.

From the Machakos experience it was evident that if certain techniques were simplified and the training courses were kept practically oriented, then farmers were able to carry out techniques and designs that were seen as the work of professional extension workers. This also helped to alleviate the tension and ill-feeling by the people that they were made to work in a ‘colonial project’ by allowing the farmer to own the soil conservation efforts and projects. People were trained on the design and layout of terrace systems, improved soil tillage, setup and management of self-help nurseries, pasture improvement (improved fodder production), rural afforestation (tree planting on farms), improvement of local roads and footpaths and construction of simple gulley structures. This training work was carried out through the MIDP. This helped to successfully integrate the farmers into soil conservation efforts that had been a disdained as a foreign concept in the colonial period. MIDP also produced propaganda material explaining soil conservation projects and emphasising the importance of the same. Soil conservation films were made for students and farmers, tools for soil conservation were also distributed to mwethya groups, and the issue of catchment protection.

Although key for the success of MIDP projects, community sensitisation was not always carried out satisfactorily. The people of a location could resist a project where the MIDP officers applied a top-down approach instead of a people-approach to project assessment and implementation. An example is a dam project that was rejected by the people of Kisekini in 1984 daring survey officers never to set foot in
the area or risk poisoned arrows. Two years later the same people were ready for the project after witnessing what had been done in other areas only to be turned away due to MIDP processes that a project could only be implemented in accordance to yearly Environmental Action Plan. Other times projects were rejected due to unwillingness of the owner of the identified site for dam construction to donate their land. MIDP project expenditures did not cover land compensation arguing that the projects would benefit not only the community but the individual on whose land the project stood (Mbate, O.I.:2020).

The other source of government intervention in Machakos County was through the District Focus for Rural Development (DFRD) through the Rural Development Fund (RDF) under the direct management of the central government. DFRD projects were planned by the District Development Committee (DDC) and funded by the national treasury through the provincial administration to implement district-specific projects. The DC was the chairman of the DDC though there was the District Development Officer (DDO) and the District Executive Committee (DEC) in charge of the technical aspects of the development projects. DFRD was inaugurated by President Moi in 1983, and faced by numerous challenges from its inception. The composition of the DDC was questionable since it was dominated by officials of the various government departments. Participation of popular representatives in the DDC was very poor since membership comprised 85% civil servants, 10% representatives of parastatals, and only 5% politicians (including Members of Parliaments and chairmen of local councils). Government revenue was absorbed mainly for emoluments and salaries leaving a small budget for funding environmental programs, except where there was some unique plan funded from foreign sources (Sigei, 1987:25).
There was distrust in the civil service of political intrusions in the planning process and often a politician was viewed as an adversary whose main interest in government investment in their constituency was to improve prospects for re-election. It was difficult for a political system based on patronage and rapidly shifting factional alliances to provide a foundation for a decentralised system of authority which presupposed national decision-making. It was grounded on unrealistic principles of administrative management (Rutten, 1990:168). In an economic, sense as long as resources were centrally controlled the counties were in fact not accorded any significant autonomy.

Moreover, the DC whose central role in implementation was reinforced was ultimately answerable to the Office of the President. Thus DFRD was a decentralisation of financial control and not a devolution or deconcentration of power from the centre. Real planning and implementation by the local people, as was announced at its inauguration by President Moi, was non-existent and finally projects initiated and implemented did not mirror local needs (Barkan & Chege, 1989:431). The prospects for rural development are highest where local people participate in determining the course of development initiatives, and where they believe they have a stake in their outcomes. DFRD therefore, did not achieve the objective of environmental conservation in Machakos County which was borne by MIDP and the various NGOs as well as self-help groups. Most ministries were reluctant to disaggregate their sectorial budgets on a district-by-district basis, a posture that greatly frustrated the implementation of the planning and budgetary procedures by the DDCs and the district administrative team. By the early 1990s, beneficiaries of DFRD environmental conservation projects contributed 25% to the RDF to cover the total cost. This cost-sharing policy applied to schools, dispensaries and hospitals as well
This was due to the negative impact of Structural Adjustment Programmes (SAPs) on the general economic health of the country. The greatest success of DFRD projects was the building of gabions to restore lands degraded by gulley erosion. Gabions were constructed along the roads and on the hilly areas where huge gullies had been formed by the uncontrolled flow of rain water. Trees and grass were also planted in these areas as part of DFRD’s soil conservation efforts.

Challenges for the MIDP were not lacking. For a program of such magnitude to run efficiently, it required experts in all the fields including water and road engineers as well as qualified agricultural officers. Kenya was lacking in sufficiency of such officers in the 1970s and 1980s. The donor community provided expatriate support in the guise of institutional support to overcome this challenge (Makau, O.I.:2020). In addition, the MIDP only began actual operations in terms of project implementation in 1980. This was because the design of the programme was initially hindered by the flow of money from the treasury to the actual spending on the field. Funds could only flow from the treasury through the PC in Embu who then disbursed it to the DC Machakos before finally reaching the project manager of the MIDP. This bureaucratic flow slowed down the possibility of expenditure despite a clear structure of how the money was to be spent. As such, the system of cash flow changed that money was transferred directly from the treasury to the MIDP account. Strict accounting procedures were followed.

Towards the end of the second phase of the programme in 1989 however, there was change of some of the senior staff in the programme. According to one of the former officers of MIDP, those that took over administration in 1989 did not understand the
strict nature of accounting standards required by the donor community leading to a collapse of the whole programme and the withdrawal of the donor citing financial mismanagement (Anonymous, O.I.:2020). As such, the third phase, with the prospects of a fourth phase of MIDP never materialised.

The other challenge for MIDP emanated from DFRD whose projects were mostly overlapping with those of the MIDP leading to conflict of interest especially due to the political influence within DFRD projects. Most efforts in Machakos that would have positive impact on the environment were impeded by the existing sectarian approach to environmental management, with the resultant lack of a coordinated legal approach on environmental management thus providing for contradictions and overlaps that acted as loopholes thus hampering efforts towards accountability (Scherr & Yadav, 1996:23). DFRD projects tended to be ambiguous with no budgetary ceilings set for any of the project proposals drawn annually. Government ministries also resisted DFRD projects for they lacked a legal framework. MIDP carried out soil conservation works that were on record the last government or donor financed environmental conservation works in Machakos County up to 1999. Most soil conservation of the 1990s was financed from farmers’ own resources, using hired labour and machinery, although mwethya was still used by the less well off.

6.5 Industrial Pollution as an Environmental Concern

Many factories in Kenya abstracted water from rivers for industrial purposes, and often returned it in the form of trade effluent. A large proportion of raw water for public supplies came from rivers and lakes, while sewage works discharged their effluent into these sources on which they depended on to a greater or lesser extent, for completion of the process of purification. People in the rural and urban areas, where
piped water was not easily accessible, have relied on these rivers and lakes as their sources of water for domestic use.

Apart from water supply, Kenyan rivers have had important functions in industry and recreation. The Athi River has not only provided the residents of Machakos County with water for domestic and agricultural use, but also enabled industrialisation and consequent urbanisation. Wildlife (in the Tsavo Nationa Park) depends on this surface water source as well. Athi River stretches from the slopes of Ngong Hills and empties its water into the Indian Ocean as Sabaki River. It is referred to as River Galana in Tana River County while the Mijikenda in Malindi refer to it as Sabaki. Athi River is the second largest and longest river in Kenya. It covers a distance of 540km from its source to its mouth in the Indian Ocean.

In the case of the Athi River traversing Machakos County, the harmful effects of industrial development were recognised from 1977. Development without destruction could only be a reality through enlightened action on the part of those involved for industrialisation is in often cases detrimental to the environment (NES, 1977:3). All county and urban councils in the county where industries existed were required to send reports to the NES on the state of the environment in relation to these industries in their areas. The Athi River Urban Council, in whose jurisdiction the Athi River passes, was concerned about the establishment of factories whose waste was not fully treated before its release into the river. Thus it posed an environmental hazard as the River was the chief source of drinking water in Athi River town (KNA/BB/49/13, 1994:7). In Machakos town, the challenge was similar where two industries (Bawazir Tannery Limited and Ocotan Tannery Limited) had been established and whose effluent polluted the Ikiwe River (Makau, O.I.:2019). Machakos County Council set
down ways to deal with the issue of effluent. Instead of its direct release into the river it went through treatment in ponds after which it was tested on the suitability of releasing it back to the rivers. Industrial effluent was still being handled by township sewerage works which meant that they were properly treated to be released back safely to rivers, streams and lakes. This however, did not mean complete elimination of the hazardous effect of the effluent (Mulavu, O.I.:2019).

The presence of industries in Athi River town led to river pollution leading to frequent deaths of both men and fish. Factories releasing toxic effluent into the river were erected along the river. Sources of pollutants entering water bodies emanated from human activities such as agricultural production, coffee processing, leather tanning, soil erosion and domestic effluent. Routine surveillance of industrial and domestic waste water discharges did not match the rapid industrial expansion in the county (KNA/PC/EST/2/94, 1996:7). The Ngong, Nairobi and Mathari rivers are heavily polluted by industrial effluent, human waste and garbage. These and other small streams that are equally polluted eventually join the Athi River thus increasing its levels of pollution.

Coffee processing was the main challenge in Machakos County. Coffee factories were located mostly in the rural areas near rivers because of their need to use large amounts of water for coffee cleaning. They were designed in such a way that the water so used as well as other emissions had to eventually go back to the rivers. Mechanisms that would not allow coffee waste material back to the rivers was non-existent (Kitonga, O.I.:2020). The simple regulations formulated to prevent pollution of streams and rivers by the coffee factories were adhered to with difficulty. Indeed, waste management efforts by the local authorities were ineffective (Mulavu, O.I.:2019).
Environmental pollution can be understood through Hardin’s tragedy of commons. According to him, it is not a question of taking something out of the commons but putting something in – sewage or chemical, radioactive, and heat wastes into water. The owner of a factory on the bank of a stream – whose property extends to the middle of the stream – often has difficulty seeing why it is not his natural right to muddy the waters flowing past his door (Hardin, 1968:1244).

This tragedy of commons however is debatable in the African context prior to colonisation and urbanisation with its constituent industrial and sanitary requirements and needs. Local knowledge has been addressed in the perennial debate of the sustainability of common property holdings (Beinart, 2009:213). Most Africanist historians have rejected simple renditions of the tragedy of commons. In fact, counter arguments contend that private ownership of land is not a guarantee against environmental degradation. Moreover people have gained access to the commons as members of communities with traditions of socially accepted usage through local authorities, customs and religious ideas which often reinforced constraints on exploitation. In relation to pastoralism, historical studies among the Maasai have shown that common management systems show limited evidence of environmental degradation (Homewood & Rodgers, 1991:10).

A strong counter-narrative refutes the idea of a tragedy of commons arguing that Hardin confused commonly held property with that accessible to everyone, asserting that in a true commons situation, local institutions facilitate cooperation between users such that resources can be managed sustainably. The ‘tragedies’ are a result of the breakdown of such arrangements, for example, through state intervention (Leach &
Industrialisation and urbanisation as a consequence of colonialism led to pollution of water bodies in Machakos County as well as the environmental degradation discussed in previous sections.

This raises the question of sustainable development in the international economic system. Industrial development necessitates change that remains permanent on the physical environment. Such changes lead to underdevelopment through environmental pollution, destruction and disruption of the environment. Environmental degradation is a historical process related to development and which cannot be sustainable (Aseka, 1993:2). This is especially so since the coffee farming was meant for export to the international economic system through exploitation for the periphery to benefit the core (Downing, 1992:26). Although there was a water treatment plant constructed at the Export Processing Zone of Athi River town, it was not effective in dealing with both domestic and industrial effluent. A demand beyond the capacity of the treatment plan was placed on it due to rapid population growth as well as increased industrial activities in the area (Kimwatu, O.I.:2019). There needs to be an assessment and implementation of sound environmental planning systems if sustainable development is to be attained along the Athi River.

**6.6 Sand Harvesting**

As soil erosion received the attention of national and county conservation and development agencies in the 1980s, sand harvesting became a crisis in seasonally dry stream and river-beds. The chief use of sand is mixing with cement to make concrete in construction. It is also used in reclaiming land, as asphalt in the construction of roads or bridges, in filtering water, in the production of glass, as well as in the industrial production of electronic devices, among others (Katisya-Njoroge,
According to NEMA sand is a sedimentary material, finer than gravel and coarser than silt with grains between 0.06mm and 2mm in diameter and includes stones, coral, earth and turf but does not include silica sand (NEMA, 2007: 2). Sand is not of one type and is grouped according to its size, thickness and makeup. The sand in river beds and river banks is the most useful in construction. Sand from coastal and marine areas is second in utility though due to its salty character it necessitates purification before use. The final source of sand is terrestrial, from pits and quarries. Desert sand is plentiful but is ironically not good for construction as it is it too smooth to be a good adherent (Katisya-Njoroge, 2021:167).

While sand is the least regulated resource in most jurisdictions, it is the largest extracted and traded solid resource by volume globally. In Machakos County most sand is obtained from semi-arid watersheds (rivers) and farms (on-land sand harvesting). The watersheds often change stream flow from seasonal to permanent, yet the sand deposited in stream-beds partly balances the disturbance of stream flow, helping to maintain water stored in the sand well into and in most cases through dry seasons. From the 1980s, road constructors and building contractors dispatched huge lorries and workers to harvest sand from dry riverbeds in the rural areas. Rampant sand harvesting was addressed by the press and the administration not as an environmental issue but as a legal issue. Therefore, the environmental impact of sand harvesting was not considered or evaluated. (Rocheleau, 1994:73). As such, a sand harvester was only required to seek a license from the local authority (county or municipal council) in charge of the area identified for sand scooping. In 1993 the license cost 8,000 Kenya shillings after which the licensee could harvest sand from any river within that jurisdiction (Nthei, O.I.:2020). There was no limit on how many
lorries were licensed and how much sand could be scooped in terms of lorries. This left the loophole for overharvesting of sand (GoK, 1989:15).

Sand harvesting is common in Kenya’s arid and semi-arid areas, but left uncontrolled it depletes water catchment areas prompting the need to promote sustainability by striking a balance between it and environmental conservation (Makau, O.I.:2020). Most of the rural communities had no piped water resources. Therefore sand stored and filtered water that was there only source in the dry seasons of the year. Their households and livestock survived on water stored in the sand during relatively long drought seasons (Rocheleau, 1994:73). Therefore, the ruin of these water aquifers added four to ten kilometres per day to the water-gathering expeditions by rural children and women and their livestock bearing in mind that most of the water is carried on backs (BBC: 3 September 2017). Only a few owned donkeys that could help to transport the water. Stress is therefore added not only on the water collectors but also on the animals themselves as well as physical damage to river banks, roads and soil conservation works (Rocheleau, 1994:73). On farm sand drenching renders farmlands unsuitable for cultivation as it leaves trenches and excavations in the farm. The scarcity of sand and efforts to regulate the sand mining industry has led to the emergence of an illegal trade. Much of the sand harvesting in Machakos County is illegal and is conducted under the cover of darkness or through the use of force (Nguta, O.I.:2020).

Although several laws for the regulation of sand harvesting existed at county and national level, the nomadic nature, timing and scale harvesting required some degree of enforcement at the local community level. These regulations are guided by the fact that sand harvesting activities affect the environment by causing loss of agricultural
lands, land degradation and diminishing quantities and quality of water in the affected rivers. Riverbed degradation as a result of sand over-harvesting leads to a decline in the ability of bridge support, and may change the course of a river, which constitutes marine habitation. There were widened and deep river beds in parts of the Athi and Thwake rivers as a result of unsustainable sand harvesting. Sustainable harvesting can provide for cyclical replenishment and provides local employment, while allowing local communities to continue with farming and other activities (TNRC, June 2021). Degradation of such an ecosystem leads to far reaching effects on the environment that are also enduring.

Colonialism led to the loss of the authority of community-based or local institutions that regulated utilisation of land and other resources in the pre-colonial period. They enjoyed no binding legal authority towards enforcement, even where the local community itself took a stand on matters of sand harvesting. Although national and county soil-conservation programs supported development of infrastructure at selected points of sand harvesting in Machakos, they were no means of protecting such sites from commercial interests by outsiders. This is where the nomadic nature of sand harvesting as well as the timing of such activities becomes relevant. Though a community sets its rules and regulations, sand thieves harvest at night and threaten even kill or main any person that tries to prevent such theft (Nthei, O.I.:2020). This partial treatment of the sand-scooping issue derived from the poor definition of responsibilities and rights as relates to commonly shared resources and the segmentation of expertise and authority between local and national institutions, presenting a potential tragedy of commons.
Stringent government regulation of sand harvesting in Machakos County began with the DDC in 1987 which endorsed the formation of sand cooperatives or societies to enhance accountability. Sand harvesting operations were to be licensed only under these umbrella bodies. This was not effective in controlling the activity due to pressure from interested parties in influential political positions who found sand harvesting lucrative (GOK, 1993:41-42). Enforcement of regulations became difficult due to capacity constraints and corruption. This was not exclusive to Machakos County or Kenya for that matter. In India, a black market for sand harvesting existed operated by violent sand *mafias* (illegal gangs carrying out criminal activities such as murder to secure monopoly of sand harvesting activities on their own behalf or that of influential individuals in the society). In China, the country's largest freshwater lake - Poyang Lake - was drying up due to sand dredging. Local people relied on the lake for fish as a source of livelihood, as did the millions of migratory birds that stop there each year (BBC: 3 September 2017). Sand harvesting remained a controversial issue in Kenya’s environmental governance landscape up to the end of the twentieth century.

The lack of understanding of the ‘tragedy of commons’ in Machakos (and of sand scoopers) leads people to a locked system that compels each to increase exploitation of natural resources, without limit, in a world that is limited. Indeed, “ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons” (Hardin, 1968:1245). Freedom in a commons brings ruin to all. Sand harvesting leads to the destruction of aquifers as well as the washing away of shores leading to wider rivers with dangerous flows during the rainy reasons. The individual suffers in the same way as the whole society of which he is a part suffers. With a desire to protect the water sources, the inhabitants
of these catchments and sand harvesters often engaged in confrontations some of which led to the loss of life and destruction of property (including burning of sand-ferrying lorries) in some areas (Mutisya, O.I.:2019). Some licensed cooperatives ceased their operations due to the violence associated with sand harvesting (Nthei, O.I.:2020). Legal and illegal sand harvesting continued in the county to 1999. The enactment of the Environmental Management and Coordination Act No.8 of 1999 opens an arena of examining its impact on sand harvesting regulation in the county. The Act provided for environmental protection through environmental impact assessment, environmental audit and monitoring and environmental restoration orders, conservation orders, and easements. It was under this Act that counties formulated sand harvesting and environmental protection laws in tandem with the specific conditions of the county.

6.7 Towards a Scientific Analysis of Environmental Change

On the basis of colonial claims, nascent pseudo-scientific narratives and accepted theories of the 1970s, the idea of human being’s role in climatic changes became part of international media and policy formulations of the 1970s and 1980s. The 1972-1974 successive years of drought triggered a famine that swept across the African Sahel from Senegal to northern Ethiopia (Leach & Mearns, 1996:5). Captions and photos worked together to reinforce the dominant narrative of the deforestation and desertification of formerly fertile lands. In 1977 for example, the influential environmentalist group Worldwatch Institute linked Sahara’s progress with African land-use practices including increased cultivation, firewood gathering and overgrazing. Large forests were believed to have once covered not only North Africa’s mountains but also many desert regions. In 1977 yet the United Nations Conference on Desertification under UNEP gave solid desertification figures: ten
percent of the earth’s surface was man-made desert while an additional nineteen percent was threatened by human misappropriation” (McCann; 1999:56).

During the 1930s French colonial historical accounts contended that the Sahara was progressing at a startling and quantifiable rate. It was held that the desert’s procession was due to human activity in the sense of misuse of resources. The term desertification was coined to explain this process of land degradation viewed as human-instigated in the Sahel (Davis, 2004:364). Such a narrative of desertification had an important incentive in colonial administration circles and later on among donors and agencies. The analysis of environmental narratives contributes to political debate by showing how political actors use or uphold truth claims in order to achieve wider political objectives (Forsyth, 2003:110). In the post-independence era, the definition and application of desertification was vague. As a phenomenon desertification was rather firmly ingrained in environmental circles by mid 1970s when the Sahel experienced unusual droughts. French colonial environmental history was constructed to justify the colonial project and that the concept of desertification as used in North Africa was far from ‘scientifically’ correct (Davis, 2004:363).

In the mid-1980s, it was common to link African cultivators and herders with recurrent drought and increasing desert conditions. International environmental policies therefore placed Africa’s environmental crises of the 1970s at the doorstep of Africans themselves, the result of both alarming rates of population growth and land degradation (Darkoh, 1990:5). Myths that surround environmental processes of desertification and deforestation tend to blur rather than clarify the discussion of environmental degradation and soil erosion (Richards, 1975:32). Desertification claims, although based on historical analysis, were both judgemental and wrong. It
asserted that Africans were reaping the fruit of their past actions. Studies of the early 1990s however, pointed out that the expansion of the Sahara and the Sahel were not due to human action but rather to wider global occurrences. The major study was that carried by the British Meteorological Department carried out in 1991. Data collected from satellites scrutinised the dynamics of vegetation in the Sahel between 1980 and 1990 as it related to rainfall patterns each year. This showed that the Sahara fluctuated either north or south depending on annual rainfall levels. The department re-evaluated the data for effect of vegetation on the Sahel’s climate. It noted the omission of chronological data from most ecological studies of the African continent. This research concluded that while vegetation played a minor role in sustaining drought, ocean temperatures were a greater determinant of rainfall cycles since they affect the location of the Inter-Tropical Convergence Zone (ITCZ) (McCann, 1999:59).

These larger oceanic conditions may result, in turn, from the effects of global warming that appear to differ between the northern and southern hemispheres. This evidence pointed out that the Sahel’s expansion was a result of general global warming occurring especially in from the mid twentieth century (Davis, 2004:370). A changed view about desertification came along in the early 1990s due to a changed leadership of the UNEP as well as the reservations of the new crop of dry land scientists. Desertification was debated at the Earth Summit in Rio de Janeiro in 1992. Out of the Summit was chapter 12 of UN Agenda 21. The analysis used some of the old figures about different categories of land loss. It however, gave climatic variation as a cause on an equal footing with human activities. Dry land populations and especially poverty became central to the analysis and solutions.
The measures proposed were closer to the ground, more modest and admitted considerable uncertainty. Improved information and understanding, better soil conservation and afforestation, a poverty focus and a search for alternative livelihoods, as well as drought preparedness were among the recommended solutions (Swift, 1996:84-85). There was a stress on community participation and environmental education. The need for change in national policy in order to provide a better enabling homework and incentives for the activities of herders and farmers was fully recognised. The so called desertification of the earlier studies therefore, could be attributed to global climatic trends more than human activities in the local areas. From this perspective therefore, African farmers and pastoralists were victims of a changing environment rather than the perpetrators of the devastating change (Davis, 2004: 362).

6.8 Summary

This chapter dealt with the environmental conservation approach of the independent government in Machakos County from a political ecology perspective. The independent government was dealing with the same environmental concerns of the colonial period. At independence, the political definition of environmental problems continued with the underdevelopment crisis (1960s and 1970s) and the crisis of soil erosion and development (1980s). The independent government continued with colonial methods of land distribution such as the Swynnerton Plan. This led to landlessness and near-landlessness further pushing people to fragile environments leading to the environmental crisis of the 1970s and 1980s necessitating the interventions of the MIDP.

The approach to these problems by the MIDP differed from the colonial one in that the people were involved in environmental conservation through community
sensitisation. Such involvement made the people enthusiastic of terrace building and
tree planting that by the close of the century such activities did not require
government enforcement. These conservation activities bore fruit from the evidence
of the farmers since soil erosion on farmlands became a story of the past. Land
productivity was also higher. The areas of severe erosion remained as the earth roads
which grazing areas having been dealt with through the MIDP (ASAL) programme.
The next chapter is a summary of this study concluding with findings of the research
as well as recommendations for further investigation.
CHAPTER SEVEN
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study was a discussion of environmental change, policy formulation and people’s response in relation to Machakos County’s environment from 1895 to 1999. Chapter one of this study introduced the theoretical and conceptual aspects of environmental history. It gave a background to an understanding of the environmental history of Machakos County. In order to understand change in environmental conservation policy, and its necessity in the first place, it was imperative to begin with assessment of the pre-colonial geographical setting and settlement patterns.

Through the first objective the study established that the people of Machakos County in the pre-colonial period had developed natural resource utilisation systems that were sustainable. These included shifting cultivation, rotational grazing and trade. The ecological disasters of the late nineteenth century destabilised the community’s economy and environment. At the time of the establishment of colonial rule, the Kamba had diversified their economy even moving to new lands (for land was in abundance) for survival.

The second and third objectives were based on colonial invasion up to the end of the Second World War. Colonial rule had far reaching political, environmental and economic consequences for Machakos. One of the aims of colonialism was exploitation of African resources. Land alienation was of greatest negative impact on Machakos County. Akamba economic, social and political systems were disrupted leading to environmental degradation. The confinement of the people and livestock within a relatively smaller land area in the name of Machakos reserve as well as the curtailment of movement meant that land was over utilised leading to famine and soil
erosion. The government piled blame on the Akamba for alleged overstocking and poor farming practices. This justified colonial intervention in the environmental management of African areas. Resistance to colonial policies of conservation were based on Akamba’s understanding of exploitation on the basis of land alienated from them and thus inaccessible. The destocking policy of 1938 demonstrated this view.

Objective four analysed the post-Second World War environmental policies in Machakos County. The study found out that this period was important since it was marked by increased political awareness among Africans and a demand for not only restoration of alienated land but a total break from imperial control. Due to the Mau Mau war, the colonial government changed tactic and up to the late 1950s, the environment was used as a tool to win the loyalty of the Kamba. Thus the environment was sufficiently political while the politics of Ukambani were sufficiently environmental up to independence.

The fifth objective was based on post-colonial environmental policy in Machakos County. At independence, the government inherited a land laden with indigenous claims and conflicts. These were partially settled through the Million Acre Scheme. Through this objective the study found out that environmental concerns occupied the government from the mid-1970s after a period of laxity. Pressure from international bodies such as the UNEP led to this change. The desertification scare of the 1970s directed conservation efforts in Machakos County for two decades. In the 1990s however, research concluded that blaming the farmer and the pastoralist for climatic change was erroneous and global warming was cited as the chief driver for environmental degradation in Machakos County. The MIDP programme was strategic in establishing a continual culture of conservation in the county. Therefore the set
objectives of the study were sufficiently achieved. The political ecology perspective used to analyse environmental change and response in Machakos served the study well.

The study arrived at several key findings. Conservation policy in Machakos County followed definite stages that coincide with the objectives set for this study. First was the initial concern about land degradation within the county. Degradation due to soil erosion was a result of land alienation and restrictions on land use imposed by the colonial government. Such degradation was blamed on the economic systems of the Machakos Kamba. Secondly, there was the preliminary identification of the solutions to the problem by the colonial administration. Reconditioning and destocking were viewed as the best suited anti-soil erosion measures to restore the productivity of Machakos County’s lands. The policies of destocking and reconditioning were, however, opposed by the Kamba up to the early 1940s. The final stage of policy was characterised by a wider colonial concern of maintaining imperial control which was challenged by the Second World War and the Mau Mau. There was therefore, the formulation of large-scale plans at the county, regional and colony levels with the application of a central funding for conservation measures.

Akamba had developed appropriate socio-economic systems that ensured sustainable land use in the period prior to 1895. Once colonialism set in, land degradation accompanied colonial land policy. This policy justified alienation of African land and the confinement of Kamba people within the Machakos and Kikumbulyu reserves. These were not fully secured for the Kamba but continued to be alienated for settler use up to 1920. These reserves became overcrowded as soon as they had been created.
Land degradation by over-cropping and overgrazing became a recurring theme throughout the colonial period. Later national agricultural and resource-management programmes in the independent period were grappling with the same problem. In the independent period, many agricultural production and conservation programmes promoted single-technology packages to achieve sustainable production. For Machakos, the MIDP and DFRD proved to be most ubiquitous in environmental management.

This study, which is nearly a hundred-year story of environmental change and policies in Machakos County, placed twentieth century environmental conditions and concerns within the international economic context. It was in this period that, cropping and land use systems transformed swiftly to respond to new capitalist market requirements, demographic pressures, large-scale migration and resettlement as well as changing property ownership dynamics. Many of the circumstances that outsiders perceived as inherent to the county or the Akamba were the consequence of specific policies and interventions by the colonial and national administrations as well as international players such as the UNEP. Political ecology understands that government intervention constitutes a driving force to environmental change and fuels people’s response. Such a cause-effect dualism of environmental change has consequences, both positive and negative.

Land conservation efforts were initially directed to cultivated land. Later on, in the late 1940s and early 1950s, conservation was directed to pastureland in the midst of Akamba resistance. This was through experimentation schemes that were set up to repair pasture lands that were over-utilised only allowing livestock to graze there through a controlled organisational structure. Consequently, supporters of compulsory
destocking believed that a total reduction of stock on overgrazed pastures would end the danger of erosion, while also easing overcrowding in the African areas as a whole. Since there was minimal involvement of Kamba herders and farmers, resistance was mounted by Africans against the colonial environmental conservation project of destocking.

In conclusion, all human survival endeavours disturb nature, itself a dynamic set of forces and this is a condition for development. Population increase has required and has been, in complex ways, related to intensification of production and exchange. Regulatory and conservationist strategies and policies have also reshaped resource use. This opens a window for further research in environmental history in terms of change and government policy in conservation in the global twenty first century.

There is need for research in the area of land-use in Machakos County to establish if land degradation in the twenty first century accompanies resource utilisation. It is imperative to establish the place of pastoralism in the face of increasing populations, diminishing individual acreages, transformed farming practices, global warming, as well as changing land-use patterns in the twenty-first century. Sand harvesting, charcoal burning, infrastructural expansion and industrial development are of particular concern to establish the impact of government policy on these activities. Community perception of government policy is important in the era of devolved governance in Kenya.
## SOURCES

### A. Archival Documents

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>KNA/DC/MKS/4/1</td>
<td>Machakos Political Record Book, 1901-1910</td>
</tr>
<tr>
<td>KNA/DC/MKS/10A/8/1</td>
<td>Ukamba Province File Mua Hills, 1908</td>
</tr>
<tr>
<td>KNA/DC/MKS/7/1</td>
<td>H.E. Lambert, A Note on Native Land Problems in the Machakos District with Particular Reference to Reconditioning, 1939.</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/25</td>
<td>Machakos District Annual Reports, 1932-1935</td>
</tr>
<tr>
<td>KNA/DC/MKS/4/6</td>
<td>Machakos District Political Record Book, Vol. IV, 1914-1920</td>
</tr>
<tr>
<td>KNA/DC/MKS/4/10</td>
<td>Machakos District Political Record Book, Kenya Land Commission, 1932-33</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/10</td>
<td>Machakos District Annual Reports to 1922</td>
</tr>
<tr>
<td>KNA/DC/MKS/10A/7/1</td>
<td>Boundary Disputes, Bound Inquest, 1954.</td>
</tr>
<tr>
<td>KNA/DC/MKS/14/3/2</td>
<td>Machakos District Gazetteer, 1959</td>
</tr>
<tr>
<td>KNA/DC/MKS/26/1/1</td>
<td>Forest Reservation in Machakos Native Reserve, 4.3.1948</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/15</td>
<td>Ulu District Annual Report for 1923</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/5/11</td>
<td>Ukamba Province Annual Reports March 1916-December 1921</td>
</tr>
<tr>
<td>KNA/MKS/DC/10A/29/1</td>
<td>R.O. Barnes, Memorandum on Soil Conservation in Ukamba Reserve</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/5/10</td>
<td>Ukamba Province Annual Reports, March 1911-March 1914.</td>
</tr>
<tr>
<td>KNA/DC/VQ1/29/5</td>
<td>Machakos District Political Record Book, 1914-1921</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/2</td>
<td>Ulu District Annual Report for the year ending March 1911</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/27</td>
<td>Machakos District Annual Reports, 1937-1938</td>
</tr>
<tr>
<td>KNA/DC/MKS/8/2</td>
<td>G.S. Cowley, Notes on Reconditioning: A Review of the Machakos Problems, 1939</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>KNA/DC/MKS/10B/15/1</td>
<td>Destocking Campaign and General Correspondence on Political Affairs, 21.1.1938-2.12.1939</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/28</td>
<td>Machakos District Annual Reports 1939-1944</td>
</tr>
<tr>
<td>KNA/DC/MKS/8/3</td>
<td>Gerald Hopkins, Report on Machakos District, 1944</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/29</td>
<td>Machakos District Annual Reports 1939-1945</td>
</tr>
<tr>
<td>KNA/DC/MKS/10B/17/1</td>
<td>Machakos District Soil Conservation, 1947</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/30</td>
<td>Machakos District Annual Reports, 1946-1952</td>
</tr>
<tr>
<td>KNA/DC/MKS/8/5</td>
<td>Reconditioning, 1947-48</td>
</tr>
<tr>
<td>KNA/DC/MKS/8/4</td>
<td>Miscellaneous Papers on Reconditioning</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/31</td>
<td>Machakos District Annual Report, 1953</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/32</td>
<td>Machakos District Annual Report, 1954</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/33</td>
<td>Machakos District Annual Reports, 1955-56</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/34</td>
<td>Machakos District Annual Report 1958</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/35</td>
<td>Machakos District Annual Report, 1959</td>
</tr>
<tr>
<td>KNA/DC/MKS/1/1/36</td>
<td>Machakos District Annual Report, 1962</td>
</tr>
<tr>
<td>KNA/PC/SP/1/3/7</td>
<td>Machakos District Annual Report, 1960</td>
</tr>
<tr>
<td>KNA/PAD/1/296</td>
<td>Soil Conservation Eastern Province, 1962-63</td>
</tr>
<tr>
<td>KNA/PC/EST/2/3/1</td>
<td>Annual Reports Machakos District, 1962-1969</td>
</tr>
<tr>
<td>KNA/DC/MKS/3/324</td>
<td>Annual Reports of other Districts and Departments, 1967</td>
</tr>
<tr>
<td>KNA/BB/3/64</td>
<td>Annual Report, Eastern Province, 1970</td>
</tr>
<tr>
<td>KNA/BB/2/94</td>
<td>Soil Erosion Reports and Prevention, 1975-79</td>
</tr>
<tr>
<td>KNA/BB/3/120</td>
<td>Annual Reports Eastern Province, 1989</td>
</tr>
<tr>
<td>KNA/BB/13/32</td>
<td>Integrated Agricultural Development Programme, 1983</td>
</tr>
<tr>
<td>KNA/BB/1/135</td>
<td>Soil Conservation and Afforestation, 1982-89</td>
</tr>
<tr>
<td>KNA/BB/49/3</td>
<td>District Development Committee Minutes, Machakos, 1990-1994</td>
</tr>
<tr>
<td>KNA/BB/49/13</td>
<td>District Development Committee Minutes, Machakos, 1986-1990</td>
</tr>
</tbody>
</table>
### B. Informants

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name</th>
<th>Age</th>
<th>Location</th>
<th>Date of Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kathitu, Michael</td>
<td>73</td>
<td>Kathiani</td>
<td>19.7.2020</td>
</tr>
<tr>
<td>2</td>
<td>Katingima, John</td>
<td>69</td>
<td>Kalam</td>
<td>18.8.2020</td>
</tr>
<tr>
<td>3</td>
<td>Katunge, Rose</td>
<td>64</td>
<td>Mua</td>
<td>8.1.2019</td>
</tr>
<tr>
<td>4</td>
<td>Kimwatu, Matolo</td>
<td>92</td>
<td>Watema</td>
<td>16.7.2019</td>
</tr>
<tr>
<td>5</td>
<td>Kitonga, Daniel</td>
<td>75</td>
<td>Kanzalu</td>
<td>17.8.2020</td>
</tr>
<tr>
<td>6</td>
<td>Kivai, Joseph Munyao</td>
<td>94</td>
<td>Muisuni</td>
<td>12.1.2020</td>
</tr>
<tr>
<td>7</td>
<td>Kyambi, Wanza</td>
<td>86</td>
<td>Kanzalu</td>
<td>15.7.2019</td>
</tr>
<tr>
<td>8</td>
<td>Maingi, Musau</td>
<td>68</td>
<td>Mutituni</td>
<td>9.1.2019</td>
</tr>
<tr>
<td>9</td>
<td>Makau, Monica</td>
<td>65</td>
<td>Kithimani</td>
<td>15.7.2019</td>
</tr>
<tr>
<td>10</td>
<td>Makau, Richard</td>
<td>70</td>
<td>Kakuyuni</td>
<td>16.4.2020</td>
</tr>
<tr>
<td>11</td>
<td>Mbate, George</td>
<td>74</td>
<td>Mutituni</td>
<td>17.4.2020</td>
</tr>
<tr>
<td>12</td>
<td>Mbole, Paul</td>
<td>85</td>
<td>Katoloni</td>
<td>18.1.2019</td>
</tr>
<tr>
<td>13</td>
<td>Muasa, John</td>
<td>57</td>
<td>Ngelani</td>
<td>12.1.2019</td>
</tr>
<tr>
<td>14</td>
<td>Muia, Daniel</td>
<td>72</td>
<td>Kithimani</td>
<td>15.7.2019</td>
</tr>
<tr>
<td>15</td>
<td>Mulavu, Jackline</td>
<td>41</td>
<td>Machakos</td>
<td>16.7.2019</td>
</tr>
<tr>
<td>16</td>
<td>Mulei, Nduva</td>
<td>83</td>
<td>Kanzalu</td>
<td>10.1.2020</td>
</tr>
<tr>
<td>17</td>
<td>Munugu, Ndeti</td>
<td>86</td>
<td>Nzambani</td>
<td>8.1.2019</td>
</tr>
<tr>
<td>18</td>
<td>Munyae, Peter</td>
<td>63</td>
<td>Tulimani</td>
<td>17.3.2020</td>
</tr>
<tr>
<td>19</td>
<td>Musyoki Musembi</td>
<td>96</td>
<td>Mbilini</td>
<td>13.7.2019</td>
</tr>
<tr>
<td>20</td>
<td>Mutavi, Cecilia</td>
<td>59</td>
<td>Kathiani</td>
<td>20.7.2019</td>
</tr>
<tr>
<td>21</td>
<td>Muthoka, Kisilu</td>
<td>70</td>
<td>Kyaume</td>
<td>11.1.2019</td>
</tr>
<tr>
<td>22</td>
<td>Mutisya, Francis</td>
<td>58</td>
<td>Kako</td>
<td>7.1.2019</td>
</tr>
<tr>
<td>23</td>
<td>Mutua, Bramwell</td>
<td>65</td>
<td>Kanzalu</td>
<td>10.1.2019</td>
</tr>
<tr>
<td>24</td>
<td>Mwai, Mary</td>
<td>54</td>
<td>Kathiani</td>
<td>16.7.2019</td>
</tr>
<tr>
<td>25</td>
<td>Mwanthi, Wambua</td>
<td>92</td>
<td>Muisuni</td>
<td>11.1.2020</td>
</tr>
<tr>
<td>26</td>
<td>Ndaa, Nzile</td>
<td>89</td>
<td>Mua</td>
<td>9.1.2019</td>
</tr>
<tr>
<td>27</td>
<td>Ndonye, Wambua</td>
<td>68</td>
<td>Kanzalu</td>
<td>17.4.2020</td>
</tr>
<tr>
<td>28</td>
<td>Ngila, Mutua</td>
<td>78</td>
<td>Mbilini</td>
<td>13.7.2019</td>
</tr>
<tr>
<td>29</td>
<td>Nguta, Joseph Kiio</td>
<td>88</td>
<td>Kithumuoni</td>
<td>17.4.2020</td>
</tr>
<tr>
<td>30</td>
<td>Nguu, Kasyoki</td>
<td>71</td>
<td>Katwii</td>
<td>6.1.2019</td>
</tr>
<tr>
<td>31</td>
<td>Nthei, Muoti</td>
<td>94</td>
<td>Kangundo</td>
<td>11.1.2020</td>
</tr>
<tr>
<td>32</td>
<td>Nthei, Philip</td>
<td>92</td>
<td>Kathityamaa</td>
<td>19.4.2020</td>
</tr>
<tr>
<td>33</td>
<td>Nyanzi, Paul</td>
<td>63</td>
<td>Kalam</td>
<td>17.8.2020</td>
</tr>
<tr>
<td>34</td>
<td>Nzavi, Mutumi</td>
<td>39</td>
<td>Okia</td>
<td>6.3.2020</td>
</tr>
<tr>
<td>35</td>
<td>Nzomo, Charles</td>
<td>63</td>
<td>Nguluni</td>
<td>16.1.2020</td>
</tr>
<tr>
<td>36</td>
<td>Thande, Kyalo</td>
<td>94</td>
<td>Mbilini</td>
<td>12.1.2020</td>
</tr>
<tr>
<td>37</td>
<td>Thitu, Nzula</td>
<td>72</td>
<td>Matetani</td>
<td>7.8.2019</td>
</tr>
<tr>
<td>38</td>
<td>Thukuli, Peter</td>
<td>79</td>
<td>Tulimani</td>
<td>17.7.2019</td>
</tr>
<tr>
<td>39</td>
<td>Wambua, Mueni</td>
<td>60</td>
<td>Kanzalu</td>
<td>18.8.2020</td>
</tr>
<tr>
<td>40</td>
<td>Wambua, Muteti</td>
<td>56</td>
<td>Kanzalu</td>
<td>19.7.2019</td>
</tr>
</tbody>
</table>
C. Theses and Dissertations


D. Government Reports/Papers


W. Ormsby-Gore, the Bishop of Liverpool, A. G. Church and others (1925). Educational Policy in British Tropical Africa (Cmd 2374). London, His Majesty's Stationery Office.

E. Journal Articles/Book Chapters


F. Books


202


**G. Internet Sources**


https://cleancurrentscoalition.org/coalition-projects/athi-river-kenya/


APPENDIX

A. Sample Interview Guide

Part 1: Personal Data

a) Informant’s name________________________________

b) Age____________________________________________

c) Location________________________________________

e) Date of interview________________________________

Part 2: Pre-colonial Environmental History up to c.1895.

1. What was the appearance of the land at the inception of colonialism?
2. What was the nature of the relationship between people and the environment at the eve of colonialism?
3. What factors or activities were considered to degrade or preserve the land at this time?
4. What lands were inaccessible just before colonialism came in?
5. Were the inaccessible lands of any benefit to the residents of Machakos and Makueni?
6. What policies were put in place to ensure sustainable land use?


1. How did the land change in appearance with the establishment of colonial rule?
2. How did the relationship between people and their environment change with the establishment of colonial rule?
3. In your view, how did colonialism impact on land use and resource utilisation?
4. Which areas of land were alienated by the Europeans?
5. Were all alienated lands utilised by the European settlers?
6. What was the impact of such land alienation on the relationship between people and their environment?
7. In what ways did Akamba pastoralist economy impact on the environment?
8. What were some of the regulations governing land use and resource utilisation in the colonial period?
9. How did these policies relate to the environmental history of Machakos County?


1. What changes came in with the Second World War on land availability and use?
2. What policies were put in place that impacted on the environment during and after the Second World War?
3. What was the impact of the Second World War on the environment?
4. In what ways were the nationalist movements concerned with the environmental history of Machakos County?
5. How did land consolidation and private ownership of land impact on the environment in Machakos and Makueni?
6. What led to the movement of people from the pre-colonial settled areas to other areas up to 1963?
7. How did such resettlement impact on the environmental history of the area?


1. What was the appearance of the land at independence?
2. What were some of the pre-colonial and colonial practices and relations with the environment that were carried into the independence era?
3. In what ways did independence relieve pressures on the land and on the environment?
4. What measures were some of the policies undertaken by the independent government to reverse the impact of colonial capitalism on the environment?
5. To what extent did these government initiatives succeed?
6. What is the extent of sand harvesting in the County?
7. What activities have led to land degradation in the County?
8. What are some of the initiatives by the residents to make land use more sustainable?
9. What is the role of non-governmental and donor organisations in the environmental history of Machakos County?
10. What are some of the economic activities that have proven of negative impact on the environment?
B. Research Permit

THIS IS TO CERTIFY THAT:
MS. LYDIA KANINI MUENDO
SCENYATTA UNIVERSITY, 0-20115
EGERTON, has been permitted to
conduct research in Machakos County
on the topic: AN ENVIRONMENTAL
HISTORY OF MACHAKOS COUNTY,
1895-2010
for the period ending:
17th June, 2020.

Permit No.: NACOSTI/P/19/6914/30848
Date Of Issue: 19th June, 2019
Fee Received: Ksh 2000

Director General
National Commission for Science,
Technology & Innovation

THE SCIENCE, TECHNOLOGY AND
INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science,
Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS
1. The License is valid for the proposed research, location and
   specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before
   commencement of the research.
4. Excavation, filming and collection of specimens are subject to
   further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy
   of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the
   License including cancellation without prior notice.
C. Graduate School Approval

We acknowledge the receipt of your revised Research Proposal entitled “An Environmental History of Machakos County, 1895–2010” as per recommendations raised by the Graduate School Board of 6th March, 2019.

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking forms per semester. The form has been developed to replace the progress Report Forms. The Supervision Tracking forms are available at the University’s Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you.

MUKIRI MUBIRUKI
FOR: DEAN, GRADUATE SCHOOL

cc. Registrar (Academic) Att. Mr. Likam
Chairman, Department of History, Archaeology & Political Studies

Supervisor

1. Dr. Edwin Gimoide
   C/o Department of Hist. Arch. & Political Studies
   Kenyatta University

2. Dr. Pasak Kikai
   C/o Department of Hist. Arch. & Political Studies
   Kenyatta University

RM/cao

Committed to Creativity, Excellence & Self-Reliance