

**A HISTORY OF THE PERKERRA IRRIGATION SCHEME IN BARINGO
COUNTY, KENYA, 1954 - 2013**

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented for examination in any other institution.

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DEDICATION

Dedicated to my mother Elizabeth Sergon and my siblings, Irine Keitany, Sheila Keitany, Daniel Keitany, Kipsergon Keitany and Kandagor Keitany.

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I thank God for creating me and giving me this great opportunity and the capacity that has shaped me to what I am in writing this thesis.

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ABSTRACT

This study examines the history of the Perkerra Irrigation Scheme from 1954 to 2013. The scheme was started in 1954 to harness water from the Perkerra River for irrigation. This study explored how the Tugen and IlChamus communities, in spite of their pastoral resourcefulness, were persuaded to embrace mixed farming. These communities were able to change from pastoralism to arable irrigation farming despite some resistance during the colonial period and after independence. Recent studies indicate that several irrigation schemes in Kenya were set up to increase food production and to make semi-arid lands productive. Perkerra Irrigation Scheme was among the projects set up with the same objective. Initially, communities living around the scheme being primarily semi-pastoralists resisted the establishment of the project as their pastureland was being converted to farmland. Mau Mau detainees were used to provide manual labour in the project at its early stages as part of their rehabilitation. Establishment of the irrigation project had various social, economic, ecological and political effects on the area during the period of the study. The area also experienced various challenges in the period 1954 to 2013. The study utilised political ecology theory to explain how policy decisions were influenced by environmental factors in the Perkerra area. The policies in turn influenced the ecology of the area. The study integrated data from primary and secondary sources. The archival documents consulted included District Development Plans, minutes of various meetings, National Irrigation Board annual reports and files on the irrigation scheme. Snowball. An interview schedule was used to gather information from workers in the irrigation scheme, old residents in the farm and members of the neighbouring community. Secondary sources comprised of books, journal articles, research papers, theses and the internet. These sources were accessed from the Kenya National Library Services library at Kabarnet and the Egerton University Library. Historical method was carried out in line with the objectives of the study which comprised the tentative chapters. The study contributes to the historical analysis of irrigation agriculture and its significance in Kenya.

TABLE OF CONTENTS

DECLARATION AND RECOMMENDATIONii

COPYRIGHT.....iii

DEDICATIONiv

ACKNOWLEDGMENTS.....v

ABSTRACT.....vi

LIST OF FIGURES.....x

LIST OF ABBREVIATIONS/ACRONYMSxi

CHAPTER ONE 1

INTRODUCTION 1

1.1 Background to the Study 1

1.2 Statement of the Problem..... 2

1.3 Objectives of the Study..... 3

1.4 Research Questions..... 3

1.5 Justification of the Study 3

1.6 Scope and Limitations of the Study..... 3

1.7 Operational Terms 4

1.8 Literature Review 5

1.9 Theoretical Framework..... 17

1.10 Methodology..... 19

CHAPTER TWO	23
LIVELIHOOD IN THE PERKERRA AREA BEFORE INCEPTION OF THE IRRIGATION SCHEME IN 1954.	23
2.1 Overview.....	23
2.2 Agriculture.....	23
2.3 Trade.....	29
2.4 Hunting and Gathering	46
2.5 Summary.....	51
CHAPTER THREE	53
DEVELOPMENT OF PERKERRA IRRIGATION SCHEME UNDER ALDEV, 1954-1967	53
3.1 Overview.....	53
3.2 Land Adjudication, Survey and Establishment of the scheme.	53
3.3 Growth of Marigat Town.....	57
3.4 Employment opportunities provided by the irrigation scheme.....	60
3.5 Summary.....	66
CHAPTER FOUR	67
PERKERRA IRRIGATION SCHEME UNDER NIB MANAGEMENT, 1968-1993.....	67
4.1 Overview.....	67
4.2 Change from ALDEV to NIB Management.....	67

4.3	Contributions of Financial Institutions	70
4.4	Corporate Social Responsibility (CSR)	73
4.5	Factors Affecting the Scheme's Development	79
4.6	Summary	86
CHAPTER FIVE		87
KENYA SEED COMPANY AND PERKERRA IRRIGATION SCHEME, 1994-2013.		87
5.1	Overview	87
5.2	Emphasis on Seed Production by KSC on the Scheme	87
5.3	Challenges Experienced by the Scheme during the Period 1997-2013	97
5.4	Summary	107
CHAPTER SIX		109
SUMMARY, CONCLUSION AND RECOMMENDATIONS		109
SOURCES		114
APPENDICES		122

LIST OF FIGURES

Figure 3.1: Map Showing Location of Perkerra Irrigation Scheme.....20

LIST OF ABBREVIATIONS/ACRONYMS

ALDEV	African Land Development Board
CCSP	Community Capacity Support Programme
CSR	Corporate Social Responsibility
DC	District Commissioner
FAO	Food and Agriculture Organization
HCDA	Horticultural Crops Development Authority
KARI	Kenya Agricultural Research Institute
KCB	Kenya Commercial Bank
KSC	Kenya Seed Company
KWAL	Kenya Wine Agencies Limited
MFCS	Marigat Farmers Cooperative Society
NIB	National Irrigation Board
PIS	Perkerra Irrigation Scheme
PPS	Perkerra Primary School
SHS	Shillings
TVA	Tennessee Valley Authority

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Perkerra Irrigation Scheme is one of the schemes set up in Kenya by the colonial government. It derives its name from the River Perkerra which is the only source of water for the project. The river flows from the southern part of the Tugen Hills which are humid to the lower and semi-arid part of Baringo County. The soils are loamy and clay with an average alkalinity of 7.5 pH.¹ Irrigation of the farms largely depends on the river though unreliable short rains sometimes supplement the river water. Due to the limited availability of water, only 607 ha are cropped annually out of the 810 ha developed for a gravity furrow irrigation system.² The irrigation project has a potential of 2340 ha with a developed irrigated area of 810 ha.³ The water flow to the furrows and is controlled by the National Irrigation Board (hereafter NIB) and Kenya Agricultural Research Institute (KARI). The scheme was incorporated into NIB upon its formation in 1966 through an Act of Parliament cap 347, laws of Kenya.⁴

Perkerra Irrigation Scheme (PIS) is situated near Marigat Township in Baringo County. Originally mooted in the 1920s, the scheme only began in 1954 when Mau Mau detainees were used to construct a main dam on the Perkerra River.⁵ The detainees were drawn mainly from Central Kenya where the Mau Mau rebellion was underway. Each province at that time was allocated a camp for detention and rehabilitation of Mau Mau followers by the colonial official Thomas Askwith on behalf of the government.⁶

The scheme is the only mandated farm under NIB drawing water from the permanent Perkerra River. The farmland is favourable for gravity irrigation using furrows. Under NIB,

¹R. Chambers, *Learning from Project Pathology: The Case of Perkerra* (Nairobi: East African Educational Publishers, 2005), p. 16.

²E. A. Mugatsia, "Simulation and Scenario analysis of Water Resources Management in Perkerra Catchment using WEAP Model", MSc Thesis, Moi University, 2010, p. 9.

³Ibid, p. 18.

⁴National Irrigation Board, Annual Report, 1966, p. 4.

⁵D. Anderson, *Eroding The Commons: The Politics of Ecology in Baringo, Kenya 1890-1963* (Oxford: James Currey, 2002), p. 22.

⁶T. Kamugo, *Squatters and the Roots of Mau Mau* (Nairobi: East African Educational Publishers), p. 15.

neighbouring irrigation schemes also come under Perkerra Irrigation Scheme. The three small irrigation schemes that fall under Perkerra are Eldume, which draws its water from Molo River; Sandai scheme, which draws from Waseges River; Kapkuikui irrigation scheme, which gets its water from Lorwai springs. These were community based irrigation schemes before being incorporated into NIB management. The neighbouring communities which include Ilchamus, Tugen, Pokot and Turkana directly depend on the irrigation scheme while some benefit from the scheme indirectly.

From the start, PIS was a horticultural production scheme. It was a major source of onions, chilies, watermelon, paw paw, and cotton. However, due to problems like marketing, seed maize was introduced in 1996. With an assured market, better and prompt payment, seed maize became a boost to crop production in the scheme.

PIS was started in 1954 after a protracted conflict between the local pastoralists who were against forceful takeover of their grazing land and the colonial agents who wanted to introduce crop agriculture. To the colonial government, pastoralism was a waste of large plain land and large herds of livestock were a threat to ecological balance. Colonial officials believed that crop farming in irrigated land was the best solution. They introduced new methods and disregarded the ancient IlChamus irrigation methods. Pastoralism was blamed for soil erosion, poverty and wastage of large pieces of land. The irrigation scheme is thus one of the schemes started to help change the inhabitants from pastoralism to crop farming and in the end alleviate the poverty among the inhabitants.

Large scale irrigation schemes were set up in several parts of the country by the colonial government. Their establishment and operation were mooted based on the need to rehabilitate the arid and semi-arid areas. Indigenous irrigation systems existed in many communities in the pre-colonial period. Small scale sustainable irrigation was established even before colonization along the lower River Tana also in Keiyo, Marakwet, West Pokot and Baringo districts. Pastoralism was the main economic activity of the inhabitants of most irrigated areas. The flat lands were the best grazing lands for the communities.

1.2 Statement of the Problem

Before the establishment of the Perkerra Irrigation Scheme in 1954, pastoralism was the main source of livelihood in the area. But owing to land degradation caused by population increase

and overstocking, it was considered necessary to set up the irrigation scheme. The impact of the scheme has had both local and national long term effects which have not yet been analyzed. This study therefore, by examining the history of Perkerra Irrigation Scheme brings out the impacts over the period 1954 to 2013.

1.3 Objectives of the Study

The study was guided by the following specific objectives:

- i. To discuss social change in the Perkerra area.
- ii. To analyze factors that influenced the establishment of the scheme.
- iii. To assess the impact the scheme has had locally and nationally.

1.4 Research Questions

The study was based on the following questions:

- i. What was the life of the residents like before the establishment of the Perkerra Scheme?
- ii. What factors necessitated the establishment of Perkerra Irrigation Scheme?
- iii. What impacts has the scheme had?

1.5 Justification of the Study

The study was focused on the history of Perkerra Irrigation Scheme from the period 1954 to 2013. This is because the irrigation scheme was set up in 1954 and previous scholars like David Anderson and Daniel Kandagor have covered the period before the inception of the scheme in 1954 adequately. No study has, however examined the scheme from its inception to 2013. The present government has focused on irrigation as one major area to invest in. Colonial irrigation schemes in Kenya which included Mwea, Bura-Galole, Ishiara, Yatta and Perkerra were established for the benefit of the inhabitants and the country at large. Hence, the current study will contribute the relevant knowledge in the field of irrigation from its inception date to the year 2013.

1.6 Scope and Limitations of the Study

This study focused on the history of Perkerra Irrigation Scheme and its impact on the local and national economies. The study was carried out within the Irrigation Scheme and among

the surrounding community members who are involved in the irrigation scheme production. The neighbouring communities such as the IlChamus, Pokot, Turkana and Tugen were involved too.

The study covered the period 1954 to 2013, with a small throwback to the pre-colonial period to outline the history of the community. This is informed by the fact that the pre-colonial period through to the colonial era to 1954 has been adequately covered by Anderson and Kandagor in their works on the scheme. The Perkerra irrigation scheme history period has not been covered thus the need for the study.

Locating and accessing documents from the scheme's management board library posed a challenge since the National Irrigation Board offices at Marigat had no elaborate archives or arranged library. The files were stacked in a haphazard manner but the researcher searched through the files to locate relevant information at the end. The researcher corroborated the oral interview information with archival information from the Kenya National Archives and Documentation Centre in Nakuru and Nairobi. This limitation of difficult access to information in the irrigation scheme's archives was also overcome by a comparative study of the small body of other irrigation schemes works in Egerton University Library.

1.7 Operational Terms

Irrigation: Means the artificial application of water to the land. It is used to assist in the growing of agricultural crops, maintenance of landscapes and re-vegetation of disturbed soils in dry areas and during periods of inadequate rainfall.

Destocking: Implies to a policy for reduction of livestock population in order to ameliorate land degradation. This policy was applied in Kenya's pastoral areas from the 1930s.

Rebbin Qelle: This is a term used by one Ethiopian pastoral community which literally means, "Unless God Kills". Pastoral communities living in Perkerra Irrigation Scheme area did not slaughter their animals unless they died naturally of drought or disease.

Swynnerton Plan: Refers to a programme initiated by the Director of Agriculture in Kenya Roger Swynnerton in 1953. The Plan was aimed at creating family holding of land to provide sufficient food and generate extra cash and also aimed at land consolidation and registration with a view to modernizing peasant agriculture in Kenya.

Legislation: Denotes the preparation and enactment of laws by a legislative body through its lawmaking process. This involves the formation of laws and regulations governing irrigation schemes and agricultural practices in Kenya.

Siret: Refers to a woman's dress made from the skin of a wild animal like, bush buck. This cloth was smooth and common among the Tugen community members in the pre-colonial up to the colonial period.

1.8 Literature Review

This part presents a review of literature on irrigation and agriculture in Kenya and some selected parts of the world. It also outlines the works of other scholars on Perkerra Irrigation Scheme and how the scheme has contributed to social change in the study area. In reviewing existing literature in the subject, it would be necessary to first review works on the Kenyan irrigation schemes.

Irrigation is not a new phenomenon as it has been part and parcel of history. It is an activity which has been practiced since time immemorial by many communities though in small scale. This has been elaborated and proven by several scholars to have been developed long time ago to help curb food shortages. According to Jannik Boesen, in the Chagga Irrigation Scheme in Tanzania, there were several hindrances to crop agriculture introduction.⁷ The colonial government tried to force Africans to start planting crops and abandon pastoralism. In many areas, soil erosion was a major problem, notably where there was overgrazing, large areas had been cleared for mechanized farming and where density of peasant cultivation has increased beyond the limit of what can be maintained with existing techniques. He further elaborates that the pattern of settlement follows climate and vegetation, with exceptions relating to specific historical circumstances. The highest levels of population density were found in mountainous areas. Not only because of their potential for permanent cultivation but

⁷ J. Boesen, et al (ed), *Tanzania Crisis and Struggle for Survival* (Uppsala: Scandinavian Institute of African Studies, 1986), p. 109.

because the plains were often controlled in the pre-colonial period by larger and more militaristic tribes, dependent wholly or in part upon livestock. Because of this, one finds highly intensive systems of cultivation in some of the mountainous areas. The Chagga people of Kilimanjaro introduced irrigation and a permanent cropping before the arrival of the first Europeans. These were experienced according to Jannik but the pastoralists were hard to transform to full crop agriculturalists. The farmers on the mountainous sides practiced dairy farming and kept exotic cattle and this forced them to encroach on the forested area in the highlands. The destruction of forests meant that the flat lands downstream experienced soil logging and siltation due to the soil erosion up the mountains. The soil was deposited on the land which was supposed to be farmed and it was a great challenge. This was also evident in Perkerra area, where the tributary rivers silted due to the soil washed and deposited downstream. It is also noted that the several challenges faced by the scheme are associated with the soil washed downstream due to deforestation.

Tyambe Zeleza notes that in Kenya irrigation is an old phenomenon which has existed for as long as habitation of the country has been.⁸ Irrigation, although practised in small-scale in the post-colonial period was one main source of food security in Kenya especially in the arid and semi-arid lands. This form of farming according to Zeleza is sustainable and more reliable than the other methods of farming like rain-fed method. The methods and equipment used by the ancient irrigation farmers may have been crude and uneconomical but it served the locals well. The farming was for small subsistence and the objective was achieved. There was indigenous irrigation practice and the new methods of irrigation introduced by the colonial government. Zeleza further states that elaborate irrigation systems developed in lower Marikwet in the Kerio Valley, especially in the Endo section with its long furrows spectacularly engineered from high up the rivers and along the escarpment face, eventually to feed the fields laid out on the valley floor.

Shifting from rain water dependency to irrigation farming was of great importance. Since most areas in Kenya according to Zeleza are composed of arid and semi-arid lands, there was urgent need to provide alternate solutions to the food deficiency. Marigat area in Baringo was one of the dry areas in the country which were to be accessed and provided with solutions sustainable and cheap to maintain. Zeleza indicates further that it was paramount to introduce

⁸ Tyambe Zeleza, *A Modern Economic History of Africa* (Dakar: CODESRIA, 1993), p. 25.

crop irrigation so that it could be possible to farm throughout the year and avoid the seasonal crop farming. This was more felt in the arid and semi-arid areas where rainfall was not even sufficient for profitable crop farming. Adano Roba and Karen Witsenburg, have argued that the communities which change to irrigation farming experience fewer incidences of conflicts than pastoralists.⁹ Although they appreciate that in the area there are many pastoralists than crop farmers. To them, irrigation farming in Kenya is the solution to the constant fighting and raiding experienced by the pastoral communities. The cattle raids cause instability and farming is disrupted. What could be a bumper harvest is reduced to mere produce due to the disturbances.

Articles from the Food and Agriculture Organization (FAO) of the United Nations indicate that, irrigation is the chief support programme of agricultural production.¹⁰ According to the organization, irrigation carried out using water from running rivers is more sustainable and manageable than the one relying on boreholes. Sinking of many boreholes to satisfy the water demand may lead to earth curving hence a danger to humanity. FAO estimates that if most of the dry parts of the African countries are irrigated and managed well, sustainable food production can be realized. Legislation has been made in Kenya to allow for proper irrigation. Laws and regulations on irrigation and drainage to avoid siltation and leaching have been put in place. The organization has brought out a clear picture of the work to be done on African underutilized land but in a broad way without the small considerations on the small projects like Perkerra. Sinking of boreholes is thus encouraged for domestic water use only and not done for extensive irrigation. This informed the damming of Perkerra River for its water to be used to irrigate the arid land and not dependency on rain fed farming or borehole water.

The transition from pastoral practice to crop agriculture in Ethiopian plains as in Perkerra area proved to be a hard one. The colonial administrators faced opposition from the local pastoral communities. Mesfin Marriam asserts that perhaps it is important to understand the lifestyle and the attitudes and value systems of peasants and nomadic pastoralists.¹¹ The

⁹ A. Roba and K. Witsenburg, "Conflicts among Kenyan Pastoral Communities over Water", in B. Derman, R. Giggard and E. Sjaastad (eds) *Conflicts over Land and Water in Africa* (Oxford, James Currey, 2007), p. 235.

¹⁰ www.fao.org/docrep/003/y1860e/y1860e05... accessed on 27th June 2013.

¹¹ W. Marriam, *Rural Vulnerability to Famine in Ethiopia, 1958-1977* (London: Intermediate Technology Publications, 1986), p. 60.

Ethiopian peasants view their livestock as a form of capital, as instruments of production and as savings. For the nomadic pastoralists, livestock mean even more, since they are considered as the only source of livelihood. Without livestock, the peasants have nothing to rely on for the farm work that they must hope to continue in the future. The pastoralists dependence on livestock is so total that they consider them almost beyond value. In the southern part of the Awash Valley, for example, there is a group of pastoralists that illustrates this special value attached to livestock. This group of pastoralists is called *Rebbin Qelle*, meaning literally "Unless God kills". That is to say, the group never deliberately kills cattle, sheep, goats or camels for any purpose. They eat meat only when "God kills" the animals. They had a common belief on tendering the livestock by all means possible. Whatever may be said about the risks to health, this pastoralists' belief raises livestock to a level of sacredness and assures their natural increase. This is what was also experienced in Perkerra area since the inhabitants were pastoralists.

Similarly, Adams, Watson and Mutiso, posit that in 1855, Joseph Thompson in his book *Through Maasai Land*, recorded that local people were using irrigation for agriculture.¹² To date, irrigation occurs along the Marakwet Escarpment from the South of Aror to north of Tot on the western side of the Kerio Valley in northern Kenya and also around the northern slopes of the Cherangany Plateau in Pokot. The form of irrigation is by gravity, with water being diverted from steep and fast flowing rivers down the escarpment and carried by extensive systems of branching furrows across and down the escarpment to the valley floor. The Marakwet Irrigation system is undoubtedly pre-colonial in origin and probably several hundred years older than PIS which was established during the Emergency period and has not generated much literature. The works written on the indigenous irrigation methods came in handy during the construction and establishment of this scheme. The vast knowledge from the other schemes was practised in Perkerra Irrigation Scheme in its initial stages.

Resource management in the colonial period and up to date has been a difficult issue to handle sufficiently. Anderson argues that the government of that time had several challenges trying to solve the imbalance in resource distribution and management.¹³ One of the earliest

¹² W. Adams, E. Watsons and S. Mutiso, "Water, Rules and Gender: Water Rights in an Indigenous Irrigation System, Marakwet, Kenya", *Development and Change*, Vol. 28, No. 4, 1997, p. 710.

¹³ Anderson, *Eroding the Commons*, p. 197.

attempts to deal with perceived problems of resource management as perceived by colonial authorities was through compulsory destocking. He further elaborates that beginning in the 1930s, several destocking programmes were initiated. Most were abandoned because of the negative and sometimes violent, response on the part of local herders. The writer further indicates that natural disasters like droughts and diseases affected the cattle kept. Diseases like rinderpest killed many of the livestock reared by the locals and they protested harshly against destocking as their herds were already diminishing.

Anderson further explains that in the 1940s and 1950s the colonial perception of the range problem shifted from that of overpopulation to that of land mismanagement under the African Land Development Board (ALDEV) programme from 1946 to 1956. Efforts were made to rehabilitate the severely degraded areas, such as Baringo and to introduce and often forcefully implement new resource management techniques. While the ALDEV programme generated useful information on technical approaches to semi-arid land, it further alienated pastoralists from the state because of its style of intervention. Anderson thus wrote much on how the local community was rebellious against introduction of new crop farming than pastoralism. He wrote on the change from primarily depending on pastoralism to the introduction of mixed farming. However, his focus on Perkerra Irrigation Scheme is on the colonial period only. He has not touched on the post-colonial period which has also experienced some change.

Chambers contends that the project initially received little attention with the community leaders agitating against its establishment.¹⁴ He elaborates that in 1957, about 1000 acres of arable land were being irrigated and funds provided by Emergency reforms funds to help in setting up many irrigation schemes to provide the required quantity of produce for the increasing population.¹⁵ However, he mentions that there are about four lessons which can be learned from the scheme. He basically bases his lessons on the colonial period and a small portion of the post-colonial period. The lessons are: the costs and risks of haste and ignorance, the compounding problems in complex project, the irreversibility of the creep of commitment and the high true costs of poor projects. These problems seem to recur all

¹⁴ R. Chambers, *Learning from Project Pathology; the case of Perkerra* (Nairobi: East African Educational Publishers, 2005), p. 42.

¹⁵ *Ibid.*, p. 4.

through the schemes life up to date. The lessons however touch on the initial setting up period of the project and do not capture all the challenges up to date.

Patterson on the other hand discusses the response of the Pokot to colonial intrusion and introduction of new agricultural techniques.¹⁶ He suggests that the Pokot were conservative and unwilling to accept foreigners' viewpoints. They stuck to their traditional points of view. The farming techniques they were conversant with are all they stuck to and did not want new methods. Cattle keeping was their major occupation and they did not like the exotic breeds introduced by the colonialists. They saw irrigation farming as a form of destocking and still advocated for nomadic pastoralism. This clearly shows why the locals were reluctant to accept colonial visitors. To date, it is proving difficult for the Pokot community to adapt new forms of farming and they still maintain large herds of cattle long after introduction of new breeds. Irrigation of their land is not practised in their vast land and they do not support even the local PIS project. Although they border the scheme, they do not participate in most activities like their counterparts the Tugen and IlChamus.

Massam notes that the colonialists tried to introduce new crops to the local inhabitants who resisted strongly forcing the government to introduce demonstration plots.¹⁷ The plots were established in several areas in fertile land to encourage crop production. At the end, the colonial government decided to establish irrigation schemes, among them the Perkerra one. The scheme's work was expanded to accommodate more crops with the intention of increasing yields but the inhabitants were not supportive of the project. As such, yields did not increase as expected. He points out that, the area had swamps which encouraged breeding of mosquitoes and bilharzia. The colonialists wanted to drain the swamps which filled up during the rainy season and diseases spread by the pathogens in them affected the locals. This is an indication that justifies the idea that schemes were also established to reclaim unused lands and disease growing places to be economically viable. Massam is thus really on point by saying that the locals were not that receptive of new crops and modes of farming from the colonial government.

¹⁶ K. D. Patterson, "The Pokot of Western Kenya 1910- 1963: The Response of a Conservative People to Colonial Rule", Occasional Paper No. 53, Maxwell Graduate School of Citizenship and Public Affairs, Syracuse University, 1969, p. 54.

¹⁷ J. Massam, *Cliff Dwellers of Kenya* (Nairobi: Evans Brothers, 1968), p. 24.

Kandagor has noted that the Tugen community in the pre-colonial period did not practise irrigation.¹⁸ They practised hunting and gathering which they supplemented with livestock keeping which was a major economic practice. He further observes that the Tugen community used the flat terrain as grazing fields for their livestock. In 1925, the government experimented on irrigation in the area and set up experimental plots at Kapkamburia near Lake Baringo where they planted beans and maize but all was eaten by hippopotamus. In 1954, the government set up the irrigation scheme in the low lying area to facilitate irrigation by gravity. The Scheme was surveyed in 1932 but implementation did not start until 1954. The delay was not well explained but it was merely reported that it was due to lack of enough funds to start off the project. The Scheme faced problems right from inception. The neighbouring communities (the Tugen, Pokot, IlChamus and Turkana), for example, quarreled over ownership of the project land. The local residents also thought that the project was started by the colonialists for their own benefit rather than that of the community. The research work carried out affirms that the residents of the area covered by the scheme were reluctant to change since they thought and believed that the colonialists were taking advantage of them. The locals wanted to maintain their farming techniques and challenge the new methods.

Maloba, has pointed out that the African Land Development Unit (ALDEV) was established to deal with land problems and in 1946, it identified irrigation as part of a broad agricultural rehabilitation programme.¹⁹ ALDEV was provided with funds and other resources by the government to set up and manage irrigation schemes in the dry areas. PIS was one such scheme. ALDEV initiated a number of irrigation schemes in the country as pilot projects. Maloba further elaborates that the schemes used Mau Mau detainees as labourers. The resources allocated to ALDEV by the government were not sufficient and thus it required help from the detainees. Detainees' labour, according to Maloba was cheap as Mau Mau were not paid but depended on farm management to provide them with food and shelter only. They were sorted out and categorized into two groups at the camps. Those considered dangerous, that is much immersed in Mau Mau ideology, were immediately labeled "black"

¹⁸ D. R. Kandagor, *Rethinking British Rule and the 'Native' Economies in Kenya* (Nakuru: Pangolin Publishers Ltd, 2000), p. 51.

¹⁹ W. O. Maloba, *Mau Mau and Kenya: An Analysis of a Peasant Revolt* (London: James Currey Publishers, 1982), p. 140.

and dispatched to special detention camps like Mageta Island in Nyanza Province. The detainees classified as “grey” were dispatched to the more than forty-five work camps scattered throughout Central and Rift Valley Provinces. It is thus worth noting that Perkerra falls in the category of the Camps where grey marked detainees worked. The Mau Mau detainees were utilized for the time they were under rehabilitation but after independence the locals were engaged to provide the labour. Those who had learned the skills from the colonialists were lucky and they have helped to pass on the techniques to the other members.

The colonial period in Kenya thus saw the growth of several irrigation schemes as Ngigi elaborates.²⁰ Tana Irrigation Scheme is the oldest project started by the colonialists in Kenya. The project was started in 1953 by colonial government as a scheme to increase crop production using Mau Mau detainees. They were used as a source of cheap and readily available labour. The main crops grown were cotton, groundnuts and maize intercropped with cowpeas. It was not much successful but it served its core purpose of transforming pastoralists and rehabilitating detainees.²¹ The Tana Scheme collapsed in 1989 when River Tana, which was the main source of water, changed its course at the Laini water intake points. These problems experienced by the Tana Irrigation Scheme were not limited to it. Perkerra Irrigation Scheme experienced almost similar problems as evidenced in this study.

The Tennessee Valley Authority (TVA) project in the United States of America is another scheme set up to mitigate agricultural problems. David Lilienthal, argues that the TVA scheme was established initially to address the management of diminishing natural resources.²² The authority managing the scheme was established in 1933 by Congress since by then most of the land had been overused. Crop yields had fallen along with farm incomes. The best timber had been cut. The TVA built dams to harness the region’s rivers. The dams controlled floods, improved navigation and later generated electricity. The TVA developed fertilizers, taught farmers how to improve crop yields and helped replant forests, control forest fires and improve habitat for wildlife. Lilienthal further contends that the project was started to help reverse the effects of over-farming of the land and overgrazing. Perkerra Irrigation Scheme was established to make use of the underutilised pastoral controlled valley.

²⁰ S. Ngigi, *Review of Irrigation Development in Kenya* (Nairobi: University of Nairobi Press, 2002), p. 7.

²¹ *Ibid.* p. 8.

²² E. D. Lilienthal, *TVA: Democracy on the March* (New York: Harper & Brothers, 1944), p. 26

On the upper part of Tugen Highlands, there was a major destruction of forests by the farmers who wanted to increase crop production. This caused further erosion and thus TVA had a similar plan to reclaim their land as Perkerra farmers also did.

Carlsen also traces the emergence of a plan that saw transformation in Kenyan agriculture.²³ She states that in 1954, the British Government adopted the Swynnerton Plan. This was a guideline provided by the Colonial Director of Agriculture Roger Swynnerton.²⁴ The Plan introduced a radical shift in African land tenure and what boasted the irrigation farming was the introduction of new breeds and crops by the plan. It emphasized on Africans turning from large livestock keepers to crop producers. The new crops were distributed to the farmers in the colonial established schemes and it yielded good harvests. This plan was implemented by the harsh disciplined colonial masters. Farms were prepared for tilling in the Kenyan highlands and demonstration farms were established for the African farmers to get to learn how to plant and tend to exotic cash crops for their own benefit. Although the African farmers were difficult to convince, the demonstration farms like the one in Marigat at Kapkamburia according to Kandagor, was of essence as it helped to prove to the locals that farming was possible. The Swynnerton Plan saw several irrigation schemes benefitting, including Perkerra. But there was a problem as noted by Carlsen that the local inhabitants were against the resettlement of new people in their area and taking away of their good pastoral pasture land.

Other writers have written on how local inhabitants kept their cattle and valued them so much. Van Zwannenbergh, notes that initially African cattle had provided the supply for European herds.²⁵ He notes that, the locals were challenged by their leaders to provide animals for feeding the colonial army and their administration leaders and they did this voluntarily since they had large herds and felt that it was not a problem giving out a few. Punitive expeditions during the period of conquest involved the confiscation of large numbers of cattle, which were then sold at private auctions to settlers. He further observes that the

²³ J. Carlsen, *Economic and Transformation in Rural Kenya* (Uppsala: Scardinanan Institute of African Studies, 1980), p. 27.

²⁴ *Ibid.*, p. 67.

²⁵ R. Van Zwanenbergh and A. King, *An Economic History of Kenya and Uganda, 1800-1970* (London: The Macmillan Press Ltd, 1975), p. 96.

Tugen lost their best grazing land. Their land was alienated and given to the colonial farmers and this left the Africans with no good land to till and keep their animals. Grazing land was scarce during the colonial period and coupled with the animal diseases, the locals had a great challenge ahead. The Secretary of the Land Commission of 1934 argued that land alienation for European settlers had negatively affected African farming.²⁶ Van Zwannenberg further posits that European attitude towards African nomadic pastoralists was a compound of self-interest and mythology, based on the culture-bound assumption that animals could only be valued as exchangeable property. Nomadic ways of life were seen as inferior and should be discontinued and replaced with agriculture.

Another project is Mwea Rice Irrigation Scheme. This was the brain child of the Mwea Development Scheme which had been started to restore land that had been eroded and degraded as a result of overstocking. Kabutha and Mutero state that the project was essentially started to utilise the young untapped energy of the youth instead of going to Mau Mau activities.²⁷ It is situated about 70 miles north east of Nairobi in Kirinyaga District of Kenya on the dry plains south-east of Mount Kenya. The project started with experiments on irrigated crops, notably rice and tobacco. According to Kabutha and Mutero, tobacco experiments failed and the scheme is now termed chiefly as a rice irrigation scheme. The construction works went ahead with unskilled and unwilling labour with no previous experience on irrigation. But despite this, by 1960, most of the major building works had been completed. The tenants with landlessness, as the only qualification, were drawn from the Mau Mau detainees who were from the Kikuyu districts of Kiambu, Muranga and Nyeri. The Cowan Plan was used in the scheme to speed up its activities. This was a plan introduced by Senior Superintendent J. B. Cowan working for the colonial government. He stated that he had established a method of rehabilitation which was known as the “dilution technique”. However, the application of this technique, “which involved the use of highly cooperative detainees to persuade their fellow detainees to confess and respond to rehabilitation” did not work very well. The Plan was used in Perkerra too but much has not been elaborated on it.

²⁶ *Ibid.*, p. 96.

²⁷ C. Kabutha and C. Mutero, *From Government to Farmer-Managed Smallholder Rice Schemes: The Unresolved Case of the Mwea Irrigation Scheme* (Nairobi: East African Educational Publishers, 2007), p. 15.

Mutiso ascertains that many of the captured Africans who were suspected of being troublesome in the community were taken to work on the colonial government introduced projects.²⁸ The colonialists used the Mau Mau detainees in the schemes to provide cheap labour. Government officials claimed that they were helping Africans produce for their sustainability yet it was for their own advantage. The government officials advanced their agenda of getting cheap labour for the settlers other than benefiting the Africans themselves. They helped to plant crops and curb soil erosion in the areas which had been affected. Soil erosion was indeed one of the main problems in the Perkerra area. Irrigation of the land was the first proposed solution. This was not as effective as the soil was constantly washed off, then gabions were also introduced later. The pastoral communities were encouraged to abandon their practice but many declined.

According to Karina and Mwaniki, the 2011 policy guidelines bringing on board various water management and user associations under the Ministry of Water and Irrigation are expected to improve water use efficiency.²⁹ Water is supposed to be utilized and as much land as possible brought into productive use. Arid and semi-arid lands are to be watered and drought resistant crops introduced in the reclaimed lands. As it is in Perkerra Irrigation Scheme, large number cattle keeping mentality should be slowly eliminated and replaced with irrigated land management. This is to enable farmers to put more land under irrigation. Even though, research institutions and other research promoting agencies need to explore and introduce to farmers yield improving technologies particularly in relation to improved seed, cultivation, harvesting and post-harvest equipment, yields achieved are low, post-harvest losses are high and water supply is insufficient. Karina and Mwaniki further write that the land mainly under private small-holder irrigation is devoted to production of vegetables and fruits for export and local market. This makes it a lucrative venture than the public owned Schemes which are complex to change their methods of operation and engagement with the locals.

²⁸ G. C. M. Mutiso, *Kenya: Politics, Policy and Society* (Nairobi: East African Literature Bureau, 1975), p. 214.

²⁹ F. Karina and A. W. Mwaniki, *Irrigation Agriculture in Kenya: Impacts of the Economic Stimulus Programme and Long term Prospects for Food Security in an era of Climate Change* (Nairobi: Heinrich Boll Stiftung East & Horn of Africa, 2011).

According to Sandra Postel, irrigation was the foundation on which many ancient civilizations were built.³⁰ The ancient civilization of Egypt had an irrigation system known as *Shadoof* which flourished long before other civilizations came to use it. She argues that in striking contrast to the early civilizations and those of Sumer, Akkad, Babylonia and Assyria in Mesopotamia, the great Egyptian civilization in the Nile River Valley has sustained itself for some 5000 years without interruption.³¹ It lasted through warfare and conquests by the Persians, Greeks, Romans, Arabs and Turks as well as through pandemic diseases that devastated its population. Yet, its agricultural foundation remained intact. The Egyptians practised basin irrigation, a productive adaptation of the natural rise and fall of the river. They constructed a network of earthen banks, some paralleled to the river and some perpendicular to it that formed basins of various sizes. The author tried to show the economic importance of the scheme at that time but changes have occurred over time and are different for Perkerra Scheme.

Hyslop also points out that, in 1899, Sir William Garstin who was then Adviser to the Egyptian Ministry of Public Works recognised that the great Gezira Plain could be irrigated.³² This could be possible in the event of a barrage being constructed on the Blue Nile at Sanaar. The level of this river could be maintained at flood level at all seasons and feed a canal discharging its water out of the Blue Nile above the barrage and running to the farmed ground. The main purpose of Gezira Irrigation Scheme was to provide the northern portion of the Gezira plain with plentiful supply of water for the purpose of cotton growing. The main objective of the scheme was to produce cotton to meet the industrial needs of Britain. The water from the Blue Nile River is distributed to the farms in the scheme through furrows and by gravity. The Gezira plain was a pasture land for the nomadic community but was converted to irrigation land. The soils and operation of the scheme are similar to PIS but due to its larger population, it has gained much attention and has lots of literature written on it.

Based on the existing literature, the impact of irrigation farming in general in Kenya's marginal areas and their role in food production is not adequately covered. The available literature especially on PIS are those which address the colonial period and do not cover the

³⁰ Sandra Postel, *Pillar of Sand: Can the Irrigation Miracle Last?* (New York: Norton Company, 1999), p. 24.

³¹ *Ibid.* p. 26.

³² W. Hyslop, *The Sudan Story* (London: The Naldrett Press, 1952), p. 67.

post-independence period. There are issues dealing on the dynamics which affected the setting up of the scheme and do not touch on the impact and challenges experienced by the scheme. It does not have a focus on the growth of the scheme and all the aspects that surround the irrigation scheme.

1.9 Theoretical Framework

The study adopted the political ecology theory to inform it. The theory was essential for the research on Perkerra Irrigation Scheme because it addresses the concerns of ecology and political economy. Blaikie and Brookfield define political ecology as a theory that combines together the shifting dialectic between society and land-based resources.³³ On this context of PIS, the changes are witnessed on the farm when the communities living around are taken off their grazing land and made to irrigation blocks. It is thus attempting to explain environmental change in terms of constrained local and regional production choices. The theory provides the interrelationship between local patterns of resource use and the larger political economy.³⁴

Political ecology theory also is an urgent kind of argument that examines winners and losers in ecological interactions. The challenges which the scheme has faced since inception are numerous and the management must have won and lost in others. Political ecology is narrated using dialectics, begins and ends in a contradiction and surveys both the status of nature and stories about the status of nature. It shows how decisions based on political considerations affect the natural environment.

Frank Thone in 1935 came up with the term political ecology as he showed the relationship between environmental issues and political decisions.³⁵ He elaborated how the two affected each other. The political decisions guiding the way the environment is taken care of. The major decisions to irrigate the plain land were made by the colonial government and it affected the pastoral land use of the inhabitants.

³³ P. Blaikie and H. Brookfield, *Land Degradation and Society* (London: Methuen, 1987), p. 17.

³⁴ *Ibid.*, p. 18.

³⁵ B. Piers, *The Political Economy of Soil Erosion in Developing Countries* (New York: Longman Publishers, 1985), p. 29.

PIS was set up in the plain land for easy gravity irrigation. The reception of the project by the inhabitants was hostile although the leaders were involved. The decision to establish the scheme was at the national level but the local unit did not accept it well. So there was a conflict between the two levels. Hempel explains that, political ecology is the study of interdependence among political units and of interrelationships between political units and their environment.³⁶ It is further explained that it is concerned with the political consequences of environmental change. The theory therefore explores and explains the regional and local level political actions in a global perspective and its impacts and the response to them.

The colonial government officials brought in Mau Mau detainees to work on the scheme. The officials also allocated plots to the inhabitants using criteria they deemed suitable to the area. These decisions were made from the headquarters and it affected the lowest level inhabitants. The environmental change experienced was felt by the local inhabitants. Political ecology theory thus explains the reason why decisions made at the top trickles down to affect the locals.

Political ecology theory is important because it seeks to expose the flaws in dominant approaches to the environment. These approaches which are favored by international authorities and the local authorities affect the environment. These also in turn affect market conditions and lead to change in perspectives of the locals. The theory thus comes in handy to explain why there has been change in crops farmed in the scheme. This is always informed by the market prices and consumption within the country.

However, the political ecology theory has a weakness in that it tends to explain all the environmental changes as caused by political decisions. The whole blame of environmental change is put on the political decisions yet many may be natural. Thus the theory is based on political decisions mostly and overlooking other causes of change. The theory is thus used to inform policymakers and organizations of the complexities surrounding the environment and development, thereby contributing to better environmental governance.

³⁶ Hempel, *Environmental Governance: The Global Challenge* (Washington DC: Island Press, 1996), p. 150.

1.10 Methodology

This section discusses the methodology that was used for this study. It includes the research design, area of study, data collection procedures, sampling methods, research instruments, data analysis and interpretation.

Research Design

The study adopted historical research design to investigate, establish and explain the history of PIS. Historical method is the study of change over time involving internal and external criticism of the primary and secondary sources. Interview schedules were used to guide selected informants during the oral interviews. The research dealt with the growth and development of the irrigation scheme from the time the colonialists left its management to the Africans to 2013.

The Study Area

The area of this study was mainly carried out in Marigat sub-county, Baringo County. Perkerra Irrigation Scheme is in Marigat Division. Figure 3.1 shows the location of the scheme in Kenya. Most of the people who work in the Scheme live in neighbouring villages and Marigat town. The National Irrigation Board (NIB) and Kenya Agricultural Research Institute (KARI) have offices within the scheme. The respondents were drawn from the neighbouring villages, Marigat Town, KARI and NIB.

According to the 2009 National Population Census, Marigat sub-county had a population of 13,177 people.³⁷ This is the number of the people that directly depend on the irrigation scheme. This calls for sufficient structuring of the scheme's work to be able to meet their food demands.

³⁷ Kenya National Bureau of statistics, Baringo, 2012, p.31.

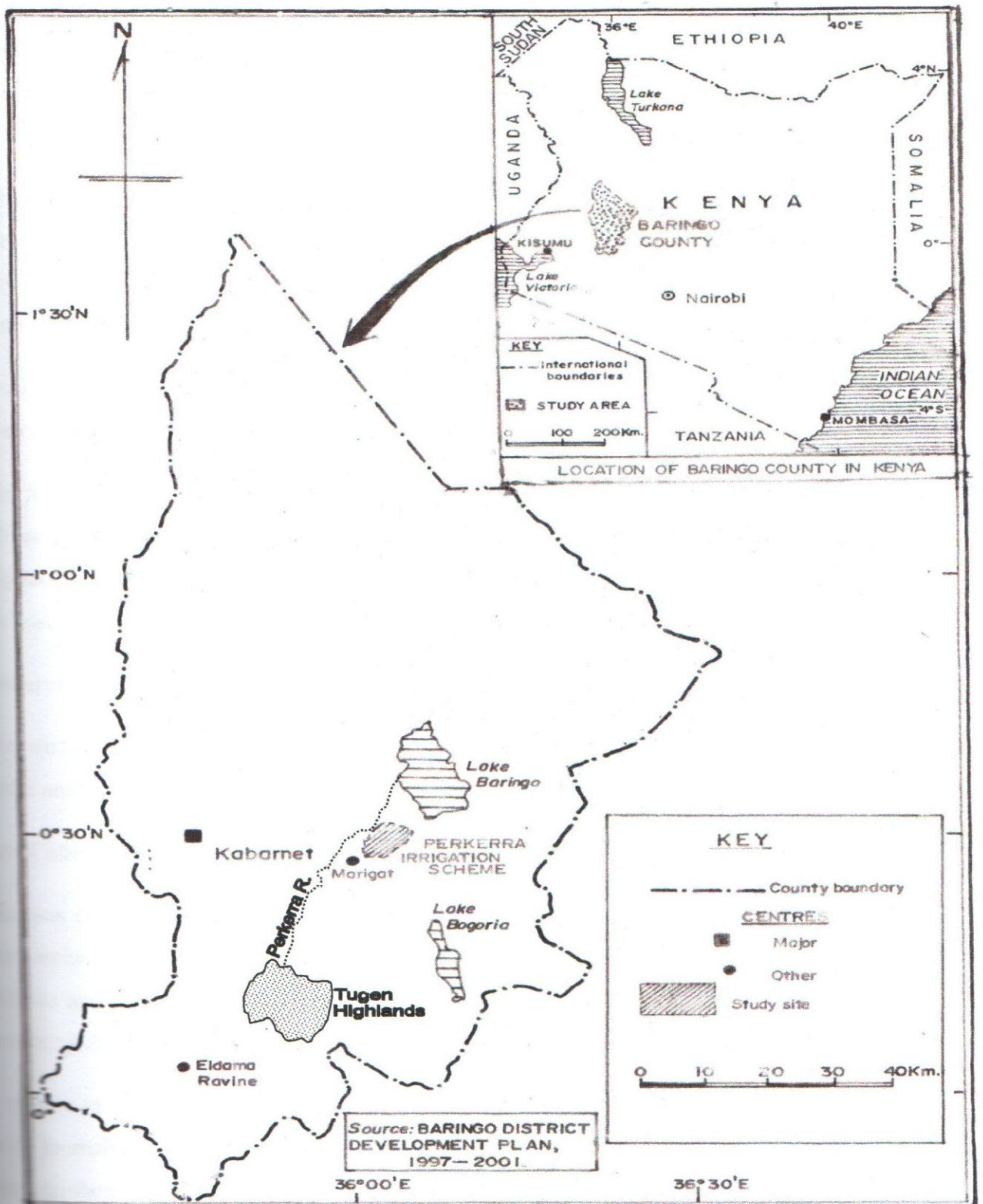


Fig 31: Location of Perkerra Irrigation Scheme

Sampling

This study utilized non-probability sampling method which comprised of purposive and snow-ball sampling. These methods were used in identifying and dividing the informants in to three selected groups.

The study interviewed 62 respondents who were divided into three groups. The first group was composed of ten elderly people who have lived around the scheme since its inception. Elders who witnessed the establishment of the scheme and other knowledgeable informants were interviewed.

The next group comprised NIB officers who are involved in daily operations of the scheme. They provided relevant information based on their experiences at the scheme.

The final group consisted of other stakeholders like people who trade with the scheme farmers. These were people who are conversant with the history of the irrigation scheme. The neighbours also came in handy as they engaged in activities which made them knowledgeable of the scheme's history.

Research Instruments

The study used instruments of research which included interview schedules, observation guides and tape recorders.

Data Collection

Data was collected from both primary and secondary sources. Primary data was obtained from archival sources and oral interviews. The researcher visited the Kenya National Archives and Documentation Services Centres in Nairobi and Nakuru to get archival data concerning the irrigation scheme and also the National Irrigation Board offices in Marigat.

In respect to secondary materials, relevant historical data on the irrigation scheme from books, journals articles, newspapers, theses/dissertations, conference papers, books, etc these were corroborated with data from primary sources. Secondary sources also informed the theory for the study.

Fieldwork was carried out in the irrigation scheme area and various interview schedule questions were formulated to cover the various aspects of the study. The methods used in the field included oral interviews, observation and focus group discussions. Oral interviews were tape recorded with the consent of the informants. English, Kiswahili and vernacular were used as appropriate language of inquiry.

Snowball sampling method was used to get respondents for the interview. This method involved getting one respondent who guided the researcher to others who in turn introduced others.

Since this is a historical inquiry, both qualitative and quantitative data was collected. A lot of data was gathered from the field. The collected oral information was corroborated with the available written sources before being used in the thesis.

Data Analysis and Presentation

The primary and secondary collected in this study was analysed in relation to the research objectives and premises. The data collected was mainly qualitative in nature. Qualitative data was analysed in descriptive levels and made the tentative chapters.³⁸ Interviews done were tape recorded and transcribed after each day's work and analysed in relation to the research questions. Research findings and conclusions on a history of the Perkerra Irrigation Scheme were drawn from the themes discussed in the field from where conclusions were drawn. Snow-ball sampling method was used in the field for particular objectives to be achieved. A careful examination and thorough revision of the collected notes was done so as to come up with the tentative chapters of the study.

³⁸ J. W. Creswell, *Qualitative Inquiry and Research Design: Choosing Among Five Traditions* (London: Sage Publishers, 2009), p. 24.

CHAPTER TWO

LIVELIHOOD IN THE PERKERRA AREA BEFORE INCEPTION OF THE IRRIGATION SCHEME IN 1954.

2.1 Overview

This chapter analyses livelihoods of the indigenous communities in Marigat area before the introduction of modern irrigation there. The main activities included traditional irrigation, trade, hunting and gathering. These were carried out in an orderly and civil manner since the traders had taboos and indigenous knowledge which guided them and which helped the local communities sustain themselves. To the local communities they had a life to live with their meagre resources and if disaster struck, they had means and ways to mitigate them. The social fabric in the community was tight and they helped each other in order to achieve their goals. They had a duty to provide for the community members and their families using the available resources.

2.2 Agriculture

During the pre-colonial period, the Perkerra area was occupied by the locals who practised small scale subsistence farming. There was less tillage of land as emphasis was put on pastoralism. Land degradation was minimal except on the routes the pastoralists used with their cattle. Farms were small and shifting cultivation was practised. The introduction of colonial rule came with new methods of farming which aggravated land degradation.

Indigenous irrigation was practised by the traditional families by pouring water to their farms using traditional methods like barks of trees and trenches dug using sticks. The area around Lake Baringo had local communities which practiced traditional irrigation. This area was inhabited by the three main communities which are Tugen, Pokot and Njemps.³⁹ Indigenous irrigation was practised by the Njemps in the lowlands (*ilpurkel*) for economic sustainability since time immemorial. During the field study around the irrigation scheme, many interviewees observed that the IlChamus community had traditional knowledge on irrigation and practiced it very well to an extent of providing food surpluses to their neighbours.⁴⁰ According to respondents the IlChamus (Njemps) are the main occupants of the lowland

³⁹ Anderson, *Eroding the Commons*, p. 100.

⁴⁰ Mwangi, Boiwo and Chepkonga, OI, 23.12.2014.

around Lake Baringo unlike the Tugen and Pokot who have lands elsewhere like in the highlands.⁴¹ IlChamus occupy the lowland and have no other lands. Even during the pre-colonial period, the Njemps were always confined to the small low land area.⁴²

The Njemps occupied the lowlands around the Lake Baringo. This community and the Maasai are culturally one in almost every respect save for the dialect difference.⁴³ They are believed to have practised indigenous irrigation to supplement their livestock. Irrigation was their other main economic activity since time immemorial. They practised the art of watering their plants in the small plots they had been allocated by their elders. Accordingly, the farms were sub-divided to ensure that all the families which had ability to till the land and tend the plants were allocated space. Indigenous irrigation farming among the Njemps was practised by all the sexes. Families owned land in the area as per their ancestral origin. Related people were allocated strips which bordered each other. Men used to work on the farm alongside women. As women engaged on the planting and weeding of the plants, men did the tedious work of managing the canals and also watering.⁴⁴ There was a great challenge in the management of the canals as they did not have efficient tools and they had low knowledge of the scheme management too. It is also noted that among the Njemps community all the members participated in the farming without gender bias.

The irrigated farms were small in size. Since the farms tilled were small, it was easy for the families to manage and produce a good harvest. The crops planted were for subsistence use only. This system was economically sound and relevant as the objective of each farmer was to raise food for his family rather than for the market. Seeds for planting were easy to acquire since it was a small farm which required a small quantity of seeds. The management of water on the small farms was also easy and efficient since the canals were not long. Water was available all through the year since the farms were neighbouring Lake Baringo. The indigenous form of irrigation only had one main problem: it was labour intensive as most of

⁴¹ Luchau, OI, 05.01.2015.

⁴² Lemayan, OI, 27.11.2014.

⁴³ B. Heine, *The Non-Bantu languages of Kenya: Languages and Dialects Atlas of Kenya* (Berlin: Dietrich Fischer Publishers, 1980), p. 61.

⁴⁴ Luchau, OI, 05.01.2015.

the work was done manually. It required the physical presence of the human being to manage and control the whole system.⁴⁵

The Tugen community, though not so much involved with irrigation agriculture, had small farms too which they irrigated.⁴⁶ They were mainly focused on animal husbandry but they had some inclination to crop irrigation. They had some knowledge of crop farming from their neighbours IlChamus.⁴⁷ It was not a prime farming activity amongst them like cattle keeping but they grew crops to supplement their predominantly pastoral diet. This crop farming among the community grew to be common because it was sustainable and cheaper than cattle keeping. As was the case with other pastoralists, it was rare for the Tugen to slaughter their animals so they depended on crops from the farms to fill the gap.

In the Marigat area, indigenous irrigation was possible and much boosted by several factors. The main factor was that, the valley was almost flat but with a small tilt towards Lake Baringo. This made it possible for gravity irrigation to be practised. Water was drawn from streams and diverted through canals to the farms and it was constantly flowing without being pumped. As opposed to now, the land was flat and had no gulleys.⁴⁸ The gulleys were few and were not around the tilled land. The flat nature of the land was a major boost to effective indigenous irrigation. The land was bushy so they just had to clear it and subdivide. It is worth noting that this enabled the IlChamus to practise irrigation for a long period of time using the traditional methods and were able to meet their required target.

Another important aspect is the element of good favorable climate.⁴⁹ The area was warm, sunny and humid, which enabled crops to grow and mature fast. The evaporation rate was high and though rainfall was scarce, the irrigation water came in handy always. This climate enabled the farmers to grow crops several times a year and harvest them fast. It took less days

⁴⁵ Colony and Protectorate of Kenya; Annual Report on Native Affairs, *Kenya* (Nairobi: Government Printer, 1938), p. 12.

⁴⁶ C. Ehret, *The Civilizations of Africa: a history of 1800* (Oxford: James Currey, 2002), p. 16.

⁴⁷ Same, OI, 21.01.2015.

⁴⁸ Makachuma, OI, 12.12.2014.

⁴⁹ Colony and Protectorate of Kenya, *Annual Report on Native Affairs*, p. 13.

as compared to those farmers in the highlands (*Mogoswok*).⁵⁰ The warm climate ensured that the crops took short time to mature and after harvesting they were not destroyed by humid conditions. The harvest was dried in the hot sun for a few days and then stored for future use. The harvest could be stored for a long period of time without being spoiled since the granaries for storing them were well build and provided the warm and dry weather, the crops could not be damaged but were stored for a long period of time.

Traditional irrigation was a success on the shores of Lake Baringo shores because the area had fertile soils. The soil was fertile because of the silt deposited from the highlands. The rivers which were used to irrigate the flat land had their source in the Tugen highlands and as they flowed to the valley carried the top fertile soil with it and it was later deposited on the irrigated land. This according to informants made it easier for the irrigation farmers to plant crops all seasons without applying any fertilizer.⁵¹ Irrigation was done and the soil could sustain water for some time. The indigenous farmers did not need to do watering frequently as the soil retained water for long.

Given that the traditional system of land use was communal, it was hard for an individual to introduce new ideas without the consent of the elders. However, the clan communal economy changed towards individual holding economy when the colonialism was established in the El Chamus and Tugenland. It was reported that colonial administrators focused their attention on the agricultural needs of the local inhabitants not because they wanted to do it but because they were forced to do so by the circumstances.⁵² Natural disasters such as locusts and drought forced the colonial government to help the community increase their agricultural production, in spite of the opposition from the European settlers. However, it is worth also appreciating that the problem of soil degradation was mainly felt after colonial policies came into place.

Millet was the main crop produced on the indigenous irrigation scheme.⁵³ Traditionally, the communities planted only finger millet (*wimbi*). They could not be induced into breaking the

⁵⁰ B. K. Kipkulei, "The Origins, Migration and settlements of the Tugen People from the Earliest Times to the turn of 20th century", BA Dissertation, University of Nairobi, 1972, p. 7.

⁵¹ *Lallesh*, OI, 23.12.2015.

⁵² Anderson, *Eroding the Commons*, p. 16.

⁵³ KNADC/BAR/4/2, Annual Report, 1954, P. 18.

custom of the years of planting anything other than the sufficient *wimbi* although they quite appreciated other crops as foodstuffs. They liked feeding on other crops although they did not plant the crops themselves. They got some of the foodstuffs through barter trade. Crops like, vegetables, bananas, oranges, cassava and sweet potatoes had been introduced by the Department of Agriculture in the highlands of Baringo.⁵⁴ These crops were reported to thrive well in the highlands and they were exchanged with millet. In the indigenous irrigation farms, during the pre-colonial period, beans, cassava and sweet potatoes were encouraged in public *haruzas*. This was done particularly during the famine periods. Maize was also introduced to the irrigation farms in that period and it thrived so well on the farms. These crops were now produced successively during the seasons and surplus produce was available for trade. The drought resistant crops were abundant in the lowlands and grown on the irrigation farms whereas English potatoes were mainly planted in the highlands.

The invention and use of farming tools also came to be very important. Initially, farmers used made tools such as digging sticks, wooden hoes and bones to prepare the land. The irrigation farms were labour intensive and with time, the farmers were forced to modify their tools to suit the demand of the local inhabitants who did not engage in crop production themselves. When the iron-industry matured enough and special groups of clans took over the iron-smelting, they produced efficient farm tools. These tools are reported to have been sold to the farmers by the iron-smelting families and with time a group of wealthy iron-smelters arose. This proves that there was a thriving business between the two groups. Another major contribution was that the time taken to till an irrigation farm reduced substantially and the produce was increased. Farmers got good time to plant and plan on the produce other than the ancient tedious farming with bone-heads on sticks. The metal tools were sharper, faster to use and could take time before being replaced unlike the bone and stick tools which needed regular repair and replacement.⁵⁵

Informants intimated that the irrigation farms were a source of employment to many casual labourers who came from far and wide. It is reported that Tugen from the highlands came to the lowlands to provide labour at the farms.⁵⁶ Pokot men are reported to have also been part

⁵⁴ WDCBAR/11/2, Annual Report, 1964, p. 20.

⁵⁵ Interview, OI, 23.12.2015.

⁵⁶ Interview, OI, 08.01.2015.

of the labour. The youth were given an opportunity to earn wages from the indigenous irrigation farms as they provided the much needed man power on the farms. Crop yields increased due to the availability of strong man power, leading to production of surpluses. The surplus food was exchanged for other goods which the farmers did not produce themselves. Informal markets came up at the borders of the irrigation farms.⁵⁷ Traders came with their wares which the farmers did not have and they exchanged with the farmers at the centres.

During the pre-colonial period, farmers introduced enclosure system of their irrigation strips. They put up fences to protect their crops from wild animals and also the large herds of cattle they kept. The lands were fenced off according to clan ownership and it became easy to protect the crops. The plants were left to mature without interference hence the yield was increased. Existence of good water sources for irrigation on the farm was another main contributing factor to food trade. Informants reported that, although IlChamus and Tugenland is an arid area, it was supplied with plenty of water by several rivers.⁵⁸ The rivers overflowed at the same time each year and when the water subsided, people dug up the fertile banks using wooden hoes. Even during the dry seasons, basin wells (*Togom*) was dug up and due to its high water table, the river beds provided water.⁵⁹ The water was then drawn from the river bed to canals and irrigation was sustained. They sowed seeds and watered them with the river bed water when the need arose.

Descriptions of the communities then by an informant captured the way they lived. It is reported that as people became settled, they no longer needed to search for food, few people died of starvation. This was because there was more provided food unlike when they hunted and gathered. The population also had started to increase and this in turn resulted in high demand for food to feed the growing population. The neighboring community to the irrigation farms who were also semi-pastoralist began the tedious act of barter trade with the farmers. During the times when there were droughts and famines, the irrigation farmers came handy as they fed the starving communities until when there was abundant rainfall and enough food for the pastoralist. The irrigation farms were the source of food during the hard

⁵⁷ P. Little, *The Elusive Granary: Herder, Farmer and State in Northern Kenya* (Cambridge: Cambridge University Press, 1992), p. 15.

⁵⁸ Ilchamus, OI, 09.01.2015.

⁵⁹ Ilchamus, OI, 21.01.2015.

times for the people on the highlands. Although the highlands had an average rainfall from 1200 mm per year, sometimes rains failed and thus there were no crops harvested.⁶⁰ The lowland had an average of 650 mm, but it was highly variable, spatially and temporally. The seasonal pattern of rainfall was also somehow different to that of other regions of East Africa with only single long rains from March through to August with maxima in April. These unpredictable rain conditions necessitated irrigation to supplement the rain fed cropping.

In many cases, the Tugen people living in the highlands are reported to have engaged in food searching (*mutit*). This is the act of engaging in manual jobs in the farm in order to be given a small amount of farm produce as payment to take back to their families. It is thus proven that the farmers on the highlands when they did not get enough crop harvest engaged in trade with the irrigation farmers who had reliable crop harvests. The crops which were exchanged then in the farms include maize, finger millet and sorghum. This is evidenced by remains of pollen found in Lobo Swamp near Lake Baringo.⁶¹ The pollen was collected from sediment cores and this hints at the presence of these crops as early as seventeenth century.

2.3 Trade

The indigenous communities living in the area before the introduction of Perkerra Irrigation Scheme engaged in trade with their neighbours and traders from far off areas like Kambaland. The later were the groups referred to as long distance traders. Local trade involved products like milk, honey, hides and skins while long distance traders brought in products like salt and clothes. Barter trade was the main form of trade. Trade refers to the exchange of goods and services for mutual gain or profit.⁶² It satisfies the needs of both consumers and sellers. For trade to take place those involved must be in need of the goods and services as its principal function is to satisfy human needs. This was also the norm in the pre-colonial communities living along the valley presently occupied by Perkerra Irrigation Scheme.

⁶⁰ Anderson, *Eroding the Commons*. p. 18.

⁶¹ W. M. Adams, "Definition and Development in African Indigenous Irrigation", *Azania*, 1989, Vol. 24, No. 16, p. 24.

⁶² R. A. Austen, *African Economic History* (London: Weyden Field and Nicholson, 1976), p. 47.

There were several trading activities in the indigenous setting. Trading materials were either readily available or sought for from far and wide. The trade items included leather, which is durable and flexible material made from tanning of raw animal hide and skin. It is produced from a process which involves intensive softening of the products. In the pre-colonial period, the people living near the current Perkerra Irrigation Scheme were involved in the production of leather product.⁶³ Hides are the skins of the larger animals like cattle, deer, buffalos and zebras while skins are the ones from the small animals like sheep, goats, calves, dik dik, bushbuck, kudu, and hare. The locals around the currently irrigated land were engaged in the leather trade in the pre-colonial period. The hides and skins used in the trade according to informants came from domestic animals and wild animals. The most skins were from wild animals which were hunted down by specific clans tasked with hunting. The clans had the obligation to provide skins to serve the market which was demanding. This trade on hides and skins thrived so well among the residents and they expanded the trade to even neighbouring communities.

The hides and skins trade among the residents was a well organized trade. Traders were selective of the quality of the skins they wanted and thus there was a specific group of people to deal with the skins. Since wild animals provided good skins, hunters were tasked with providing high quality skins.⁶⁴ Those skins which were without many holes fetched a good sum. The skins were removed from the carcass and then dried using pegs pinned on the ground. The pegs were just drilled through the edges of the skin ensuring minimum damage to the skin.

Local traders travelled far and wide in search of customers for their skin products. In almost all their neighbouring communities, ceremonies were performed and the leaders put on special regalia. The special traditional regalia were made from animal skins. (*Sambut*), a special skin cloth made from wild animal skin was sold to the neighbouring communities in the highlands (*Mosop*) which did not have these varieties of animals in their forests.⁶⁵ It is said that some family members were given the task of collecting the skins for these functions. Elders had in mind some families in the plains which could supply the skins in good time and

⁶³ Chesoi, OI, 22.01.2015.

⁶⁴ Chesoi, OI, 15.01.2015.

⁶⁵ Chesoi, OI, 05.01.2015.

at an affordable price. This proves that the irrigated lands were good hunting spots for the locals before the conversion to irrigation farming which came later during the colonial period.

Between the year 1936 and 1946, the state of quarantine imposed on cattle stagnated livestock trade.⁶⁶ The quarantine is reported to have been imposed due to outbreak of Rinderpest and Foot and Mouth disease. This was a hindrance to livestock sale, but hide and skins were allowed to be sold. The diseases caused large loss of livestock and the semi-pastoralists resorted to selling the skins. The hide from the dead animals was the only product which the community benefited from. To a great extent this was the turning point for trade in leather, hides and skins as they got a wider market. The trade on skins and hides from then attracted many traders who specialized on their leather production.

Dried skins and hides were also used in the community as bedding. There were specific skins for specific groups but since the production was high, the surplus was sold to communities in the highlands. During the droughts and farming periods, there was abundance of hides and skins. This was because many animals died and the only salvageable product for sale was the skins and hides. The years between 1927 and 1930 realized a high number of skins sold because of the infamous drought, *Kiplelkowo*.⁶⁷ This denotes the white bones drought in Tugen dialect. This was a very severe drought which left the semi-pastoralist with many dead cows and goats. They skinned the cows and sold the skin. Though the exact number of hides and skins sold was not available the informants recall that the highest number of skins sold in their memory was in between 1927 and 1930.⁶⁸

Trade on skins became prominent in the neighbouring communities like Pokot after induction by the locals living around Lake Baringo. Pokot and Tugen community members began bringing the small amounts of leather they collected from the interior with the established markets near the lake. Informants observed that, in the past they went to Lake Baringo shores to buy tanned leather to be used by mothers after delivery. Midwives advised that the best leather belt (*Leketyo*), a belt used by new mothers came from the shores of Lake Baringo.⁶⁹ The informant indicated that their parents used to go that far to acquire the leather which was

⁶⁶ Sandhu, *Rethinking British Rule*, p. 123.

⁶⁷ *Ibid.* p. 100.

⁶⁸ *Ibid.* p. 106.

⁶⁹ *Ibid.* 01, 24.11.2014.

good and durable. The distance they covered on foot every market day was long and they had to travel since they wanted the best quality skin which was only found there.

Hunting wild animals in the valley was allowed. The art was perfected by the young men and thus they engaged in the exercise to a later stage in life. The population of wild animals was also still high and readily available weapons also acted as a catalyst for the hunting. The main target during the dry seasons was meat to supplement the few available food stuffs but the locals also sold the skins to earn an extra income. Indian traders are reported to have come all the way from the coastal town of Mombasa to Lake Baringo to purchase skins and hides from the locals. The skins and hides were from domestic and wild animals. The Indian traders build stores at the shore to store their leather as indicated by informers. The stores acted as shopping stalls also as the locals exchanged other goods also at the centers which later transformed into some of the current trading centers. Informants also pointed out that these stores gave some locals jobs.⁷⁰ The traders employed few people from the locality to collect and pack the skins for export. These workers are believed to have come from different places apart from those living around there.

The inhabitants of the Lake Baringo shores engaged in the local leather trade.⁷¹ The inhabitants became entrepreneurial in the area and provided other goods for exchange. Those locals who were not able to buy and sell the skins acted as the labourers for the wealthy traders. Consequently classes emerged among the locals as divisions were witnessed. The well-off members of the community who were wealthy and had the ability to engage in trade formed a different class from the less endowed inhabitants. Informants indicated that many of the locals acted as labourers as they did not have the resources to engage in the trade on their own.⁷² Other informants advanced the argument that the locals engaged in intermarriages between the poor locals and the wealthy traders. The skins and hides business provided a medium of meeting and exchanging ideas.⁷³ Informants intimated that marriages were

⁷⁰ R. M. Maxon, "Agriculture", in William, R. Ochieng' (ed.), *Themes in Kenyan History* (Nairobi: East African Educational Publishers, 1989), p. 37.

⁷¹ KNA/DC/BAR/33/16, Annual Report, 1954, p. 15.

⁷² Kmoj, OI, 24.11.2014.

⁷³ *Ibid*

initiated in the process and families were established.⁷⁴ These small unions later developed into larger family units along the shores.

Skins were processed to be fine and smooth then they were used to make attractive products like bags, belts and baby pouches. The spines from porcupine (*Sabtit*) were extensively used as needles for sewing together parts of the skin and hides.⁷⁵ This was an innovation used since the spikes were sharp and easy to manipulate. Neighbouring community members walked for long distances to the area to purchase these products from the locals who had expertise in making them. Barter trade was the main form of trade. Beaded skin clothes (*luliko*) were also made by the women and sold to neighbouring communities. They were used as ornaments and symbols of wealth by some community members. Bones too were used to decorate some of the leather cloaks to make them attractive. This was the case with bones of bush buck (*Siranet*).⁷⁶ The bones were used to decorate a cloak which was worn by the elders. The cloth was sold to the community elders who wore it during high profile traditional ceremonies only. The locals had the indigenous knowledge of producing those clothes and selling them to neighbouring communities.

Skins were not used only for ceremonial purposes. Most times the neighbours took part in honey harvesting and they had leather bags which were made specifically for storing and transporting honey. The bags were so dear that the locals ensured they were well protected and stored in safe places.⁷⁷ Vessels for carrying water, food and medicine for ceremonies were also made from leather. Skins and hides were well guarded as they were a great source of income to the local traders. During the rainy seasons, informants point out that, the Mosop merchants came down to the valley to buy warm skins to cover themselves from the cold. They brought in fruits, maize and sorghum from the highlands for exchange. The skin of bush buck (*Siranet*) was used to make skirts for women known as *Siret*.⁷⁸ This was very valuable clothing which ladies covered themselves with and wore them during high profile traditional occasions. They were exchanged for other goods by the neighbours and acted as trade goods.

⁷⁴ Interview, OI, 24.11.2014.

⁷⁵ Interview, OI, 12.01.2014.

⁷⁶ OI/DC/BA/R.32/290/1, Annual Report, 1977, pp. 10-16.

⁷⁷ Interview, Hellen, OI, 06.01.2015.

⁷⁸ Interview, Limb, OI, 09.01.2015.

Hides from larger animals like Kudu were also valuable and used to make cloaks for older people. The cloaks from the larger animals were worn at special ceremonies as they were rare and expensive.

The main use of the Zebra skin which was tanned and dried was to make royal ceremonial bedding. It was prepared specifically for the leaders and sold to them at a high price unlike the hides of cows and other bovines. The hides of giraffe (*Agori*) and Buffalo (*Soet*) too were expensive. It was not an easy job to hunt these large animals so their hides were rare and therefore more expensive compared to those of the common animals. Lion's (*Ngetundo*) mane was of particular significance as it was worn as a ceremonial ornament. The elders were the only ones allowed to wear this attire and were accorded a lot of respect. Informants indicated that the attire was particularly worn during the planning of raids or handing over the authority from one generation to the next.⁷⁹ These were very important events in the Tugen community and were well attended by the inhabitants. The attire was designed to suit the occasion and traders in leather were paid handsomely for the traditional regalia.

By 1957, there were several hides and skins trading points around Marigat area for the wild animal hides as well as domestic ones. A letter by the District Commissioner (DC), Baringo District indicates that ramshackle structures had been put up in the area by residents which were used as collection points.⁸⁰ Kiplagat Arap Sorte, a trader in hides and skins set up a structure at Marigat and the DC ordered it to be demolished as it was threat to health. The provincial administrator, while on his usual safari, is reported to have spotted the structure and ordered it demolished. The structure was ordered to be demolished since it was setup in an up hazard manner and it was not fit for human habitation. The large store in the area proves that skins trade was practiced at a larger area and it was one of the main sources of income in the area. The traders went to the interior to acquire the skins and brought them to the collection centre and later transported them to external markets.

Hides and skins trade among the locals in the valley was indeed one of the best economic activities. It provided a source of living for several families in the pre-colonial period and supplemented their income. Although the trade was hampered by several problems like lack

⁷⁹ Ibid, 09.01.2015.

⁸⁰ Baringo District Annual Report, 1954, p. 19.

of proper storage and road infrastructure, it was still one of the main income earners and generators for the locals. Informants help to prove that since the semi-pastoralist rarely killed or slaughtered their animals, droughts made the traders at least happier as they got skins from the dead livestock.

Trade in honey among the communities living in Marigat dates back to time immemorial as they used it as a basic trade commodity and a valued product all through. This commodity was found in the valley in plenty and its management was well outlined by the community norms and culture.⁸¹ The Tugen and IlChamus communities which have lived side by side for a long period of time have very clear rules on how to handle issues on honey like they do in cattle conflicts.

The Tugen and IlChamus communities lived at the Marigat valley and had several types of honey. The honey varied according to the insects which produced it.⁸² There were several insects which provided the product. Bees were the main insects which produced honey. They are still the main ones up to now. Bees (*Segemik*) are found in plenty in the lowlands and are the insects which travel far and wide to collect nectar for the honey production.⁸³ The bees either stayed on man-made bee-hives or on hollow sections of trees known as *lootio*. Those which lived on the *lootio* were wild bees and often they were fierce as they protected their honey. According to informants, there were so many *lootio* but the elders controlled which to be harvested and which ones stayed as a reserve for hard times. The *lootio* honey was harvested by specific clans and not allowed for commercial trade like the ones from bee hives.

Indigenous bee-hives from logs were the main types used in the valley. Informants indicate that men strove to ensure that they had several bee hives to their names.⁸⁴ Logs of trees were cut down, the trunks were well curved and the two halves made into good vessels. There were families which specialized in the bee hive production and were paid to do the work. The logs were smoothly dug and sold to the bee keepers or they themselves hang the hives on their

⁸¹ Cheptoo, Joshua, OI, 27.11.2014.

⁸² M. A. Ogotu, *Sedentary Hunting and Gathering among the Tugen of Baringo District, Kenya* (Nairobi: University of Nairobi Press, 1986), p. 34.

⁸³ *Ibid.*, p. 38.

⁸⁴ Cheptarus, Chemjor, OI, 08.01.2015.

The trees with good trunks were well guarded by the elders and fell down upon permission from them although there were a few exceptions from those who were against them. This logging was done by men as it was a difficult work. When a honey harvester had hanged a bee hive on a tree, it was commonly named after him as his bee hive tree. The other bee keepers kept off that tree and when the hive fell down or got old he replaced it with another one.⁸⁵ The bee hives required constant monitoring especially when it was not yet inhabited by bees so as to keep off animals like squirrels and snakes which took advantage of them as their residence. Thus the honey keepers always employed people to be checking for them the state of the hives and gave them some token as payment for the job.

Bee-keeping was practised by a few hardworking people along the Marigat valley during the pre-colonial period. An informant pointed out that; "Bee-keepers were the hardest working of the inhabitants. It was not an easy work. A man would work the whole day, the whole week to produce only two honey barrels. But the benefits were satisfying."⁸⁶ This show how hard it was to get the honey but also points out that however small the quantity was, the benefit were satisfying. It also shows why people respected the honey collectors and held them in high esteem. This was because they were considered tough in the community and always thoughtful unlike the lazy community members. As stated, the collection of honey (*kumnyan*) was solely the work of men.⁸⁷ Since they were responsible for the making of bee-hives, they also had the ideas on how to harvest and when. They had basic knowledge of when a hive is full and ready for harvesting. It was suggested that the appearance of certain types of flowers on certain plants or disappearance of others was a sign that honey was plentiful or the hives were full. They had ways of determining when time for the men to go check on their harvest was ripe. The neighbours at *Mogoswok* and highlands also saw the flowers and knew it was time to visit the valley and buy fresh honey.

The men set out to collect honey with their containers known as *chereiywonde*. This was a container which honey was first stored in as they transported it from bush to their house after the harvest. Normally, the work was done by stuck naked men so as to avoid many bee stings. A bunch of well curved sticks with an odour was carried by the honey harvesters. The hive

⁸⁵ Kediwon, OI, 12.01.2015.

⁸⁶ Cherono, OI, 21.01.2015.

⁸⁷ Ogutu, *Sedentary hunting*, p. 45.

was smoked using the sticks to drive away the bees before honey was removed. The sticks were known as *Sisto*.⁸⁸ Those sticks were bundled together and could be used to smoke out bees in more than one bee hive as they lit for a long period of time. The honey harvesters removed all the honey combs except one which was to hold the bees not to migrate from the bee hive. Quality of the harvested honey was one very important aspect in trade. The honey was supposed to be sweet and tasty. This was so because not all nectar produced sweet honey. Colour and taste of the harvested honey varied according to the type of flowers available in a season. There was a time when the honey was sweet and a time when it was dark in colour and bitter in taste. This affected the price of the honey and its value. During honey harvesting, some of the product is consumed on the spot, the rest was stored for special ceremonies and another bunch for trade. If it is to be stored for further trade, it was boiled then stored. This ensured it stayed for a long period of time and was ready for consumption anytime. Honey collectors could keep up to 100 barrels each and could collect several traditional wooden honey containers known as *Kete* of honey depending on the season.⁸⁹

Kusumwo, was another insect which produced honey apart from bees in pre-colonial times among the communities living in the Marigat valley. It produces the substance called *Mwaibo kusumwo*.⁹⁰ They normally keep their honey beneath the earth in honey nests in the ground. The honey is obtained by digging. These insects are docile and do not sting like the bees. Honey from the *kusumwo* has more advantages than bees' honey, but it is rare and found in small quantities. Since it is found underground, it does not have honey combs or caskets like bees' honey. It was so much looked for by the community members because it has great medicinal value. It was also very pure and free from any impurities since it was found underground. According to informants, *kusumwo* had no difference in taste and smell as compared to honey which varied. *kusumwo* was the same all through and thus the community members appreciated the honey and valued the medicinal value in it a lot. They sold it far and wide and thus it was one of the main trade commodities.

⁸⁸ *Ibid.*, p.26.

⁸⁹ Sandagor, *Rethinking British Rule*, p. 130.

⁹⁰ Demitei, OI, 20.01.2015.

Wax from the honey combs was a product for trade.⁹¹ The wax was sold to the neighbouring communities to be as bonding glue during the rainy season according to informants.⁹² The neighbouring communities bought the wax from Marigat valley since it was of high quality as compared to theirs. It was also used to smear new bee-hives so that it could attract bees. It was one of the products of honey which the highland residents came and bought from the locals at markets and it fetched an extra income for the bee-keepers. Informants indicated that since this work on bee-keeping was very tough and challenging, it was a curse if ever harvested honey from someone's bee-hive without his consent. It was risky to steal honey from another person's hive. It was believed an entire generation could be wiped off if one stole from another's hive. They believed in that and engaged on constant reminders of the same.

Harvested honey was also used in making a traditional brew known as *Kipketinik*.⁹³ It was alcoholic and was enjoyed by the elderly. The brew was sold and it earned money for the local brewers. The brew was also used during communal ceremonies to bless. Informants indicated that a traditional ceremony was not complete without the honey made brew. The brew was sprinkled on the ones to be blessed and it was also poured as libation. The bee-keepers sold the honey to the event organizers in exchange of what they lacked. It became a medium of exchange for the community members and their neighbours.

Trade was conducted through barter, a system in which traders exchanged goods for other goods without using modern currency. Commodities such as honey served as a currency. This according to informants implies that a person with millet for example, exchanged it with a fixed amount of honey measured in a standard wooden vessel called *Kete* or a leather bag called *Tokol*.⁹⁴ These were standardised containers which were universal among the honey harvesters. It was fixed, at a time, that a *kete-ful* of honey would fetch a 20 kilogram bag of millet.⁹⁵ This was agreed to in all the markets along the valley and they stuck to it for a long

⁹¹ V. O. Wasonga, "Linkages between Land-use, Land Degradation and Poverty in Semi-Arid Lands of Kenya; The Case of Baringo District", PhD Thesis, University of Nairobi, 2007, p.30.

⁹² Lepirito, OI, 28.11.2014.

⁹³ D. M. Anderson, "Agriculture and Irrigation technology at Lake Baringo" *Azania*, Vol. 24, No. 85, 1989, p.

⁹⁴ Kandagor, *Rethinking British Rule*, p. 106.

⁹⁵ Partenew, OI, 28.11.2014.

period of time. It was also evident from the informants that in the nineteenth century, among the valley communities, a *kete-ful* of honey fetched a bar of iron.⁹⁶ These illustrations help to draw the conclusion that trade in honey was one very thriving business in the valley at that period and the locals attached great significance to the venture. The importance of the commodity is also emphasized by the use of it as a currency unlike other products.

Honey can be stored for a long period of time if well packaged and thus the community members kept some in their families. They could buy a substantial amount and store a small portion. This was because honey is believed as a great medicine. Informants pointed out that it is used as a medicine for abdominal pains.⁹⁷ It is known to be a great pain reliever and relaxer to the stomach pains. Thus, many medicine people directed their patients to buy and use the honey to get healed. It was also a common practice for the inhabitants of *Mogoswok* to come to the valley and buy honey which they took to their friends as a token of appreciation. It was believed to be kind and respectful to give a member of the community honey during a visit.

In sum, it is evident that trade in honey and its by-products was extensive in the Marigat valley. Informants have recounted on how the valley was respected for its quality honey. Honey was also used as a medium of exchange. *Kete* and *tokol* containers were used as the standard units of measure in barter trade. It helps to prove that the trade on the commodity was coordinated to help boast the community's fortunes. Honey supplemented other forms of production and provided an alternative source of employment for some members of the community.

Chamus, Pokot and Tugen communities as earlier pointed out lived have along the shores of Lake Baringo since time immemorial. The communities lived together in harmony despite the few known disputes but of mention is the smooth, peaceful coexistence amongst them. Chamus had many cultural associations which related more with the ones of Samburu and Masai than with those of the Pokot and Tugen. They are believed to be linguistically related

⁹⁶ Kandagor, *Rethinking British Rule*, p. 65.

⁹⁷ Barkwang, OI, 06.01.2015.

to the two communities. Therefore IlChamus had a closer relation with the Maasai and Samburu than with the Pokot and Tugen.⁹⁸

According to their oral traditions, the IlChamus economy underwent a succession of changes. They began by being foragers of food in the forests in the Marigat valley, then to fishing and cattle keeping, then to irrigation which was later improved by the colonial government. Fishing began in the community because of the abundance of the resource in Lake Baringo.⁹⁹ This was a break with the traditions and taboos of the pastoral community. Informants indicated that it was against the taboos of the IlChamus to engage in fishing but some members took the risk for economic gain.¹⁰⁰ They engaged in fishing so as to sell the fish to the traders who came from their neighbouring communities. Even today, eating fish among the Samburu and Maasai is a taboo punishable by their cultural standards but to the IlChamus it has become part and parcel of their lives.

Since Lake Baringo had swallow shores, the IlChamus took advantage of that and engaged in intensive fishing. They harvested a lot of fish for subsistence and for trade. Informants indicated that fish oil served as medicine and communities came from as far as Mogotio area to buy it. It was cheap and readily available in the area and it was also fresh unlike the one brought to them by long distance traders from the Kenyan Coast. *Ambatch*, a distinctive fishing canoe was built by the IlChamus. This was a locally made canoe from reeds and bound together with sisal ropes. These boats were paddled with a pair of small hand oars. The boat looks extremely unstable but the locals have used it for decades to transport fish, its by-products and other produce without problems.

Throughout the late nineteenth century and even when the district headquarters of Baringo was on the northern shores of the lake, the IlChamus and Tugen sold their produce to passing caravans of explorers and traders. The fact that the caravan route to Uganda from the Coast passed through the region led to a success of the business among the Njemps and enabled

⁹⁸ *Ibid.*, *The Non-Bantu Languages of Kenya*, p. 34.

⁹⁹ WDC/BAR/59/1/1, Baringo District Annual Report, 1964, p. 38.

¹⁰⁰ Interview, OI, 28.11.2014.

them to engage in fishing for long.¹⁰¹ Traditional methods of preserving fish were used to extend the storage of the produce. Informants elaborated that they used to go and buy dried fish from the IlChamus and could consume them to supplement their diet. This fish were sold to the neighbours and it earned them an extra income besides the usual pastoral and other economic activities. Thus fish trade among the communities living along shores of Lake Baringo, though it was a taboo, was widely practiced.

The inhabitants of Marigat valley had specialized cottage industries which produced goods for trade amongst themselves and their neighbours. There were specific clans who were specialized in handling one type of industry. The clans either produced the goods in bulk then others came to trade with the goods or they took them to the market themselves. Pottery was one of the lucrative ventures and there were very smart looking pots produced and sold in the area. Informants say that there were certain clans that specialized in the art of pottery.¹⁰² The pots were of various sizes and others had handles while some were held by the neck and what was common amongst the pots was the decorations put on them to mark their origin. These pots were used for storing water, honey and for brewing traditional brews. Traders came from as far as the Eldama Ravine highlands to buy the traditional earthenware at the markets situated in Marigat valley as they were considered long lasting compared to others made in the cold highlands. It was also noted that the art of making pots was kept as a secret by the clans endowed with it so as to avoid competition from neighbours.

Iron-making was practiced by specific individuals or groups. The individuals belonged to a certain clan which was skilled in both iron-making and iron-working. The clansmen would work on the iron-ore (*Ngoriemik*) and do intensive works on it and at the end come up with iron.¹⁰³ Although in a lesser scale, they were able to satisfy the needs of the community. The clansmen overtime even went further to produce surplus for neighbouring communities overtime. According to informants, blacksmiths (*Kitongik*) had particular market places, where

¹⁰¹ A. Mohamud and P. Rutto (eds), *Closed to Progress: An Assessment of the Socio-economic Impact of Conflict on Pastoral and Semi-pastoral Economies in Kenya and Uganda* (Nairobi: Practical Action Publishers, 2005), p. 100.

¹⁰² Rutich, OI, 14.12.2014.

¹⁰³ Kandagor, *Rethinking British Rule*, p. 145.

people from neighbouring areas came to purchase the implements.¹⁰⁴ The market places included, Koriema, Maoi, Lobi and Marigat. The blacksmiths had a space in the markets where they sold their products.

The iron tools produced by black smiths for trade included, cutting blade (*Moru*), axe (*Laiya*), swords, spears (*Ng'otik*), hoe (*Mogombe*), cow bells (*twoliot*), tongs, hammers, chains, bracelets, armlets, arrowheads, rings, anklets and bush-clearing knives among other implements. These were the core implements in the community and they were the ones which fetched additional income for the locals. These tools boosted early agriculture. They made clearing of forests easier than before and gave way to cultivation on a larger scale as compared to the past when locals used sticks and bones to farm. Iron technology led to increased trade. This was because iron implements were regarded highly and were on great demand. They were exchanged with agricultural produce boosting trade and creating jobs for the local traders and their neighbours.¹⁰⁵

Because iron-working was a valued activity, blacksmiths were accorded special status in the society. Among the IlChamus, for example, blacksmiths were respected and thus able to accumulate wealth that put them above other members in the society.¹⁰⁶ This started off the system of stratification of members of the society according to wealth status. It is recorded that, in the nineteenth century, the iron-workers had grown very rich and their children abandoned the trade after inheriting their father's enormous wealth. This affected the iron industry so that the Tugen and Njemps were forced to import some iron implements from their neighbours such as Maasai and Marakwet. This changed the mode of trade in iron, from being depended on to being the dependants of the people they used to sell to. But this was reversed in the next century by their grandsons.¹⁰⁷ Trade in cottage products was thus one of the main economic activities in the pre-irrigation time. Traders were taking advantage of small scale irrigation to produce iron implements to sell to them.

¹⁰⁴ Rotich, OI, 14.12.2014.

¹⁰⁵ *Ibid.*, p. 150.

¹⁰⁶ Adolemew, OI, 21.12.2014.

¹⁰⁷ Kandagor, *Rethinking British Rule*, p. 165.

Livestock since the pre-colonial period was among the major contributors of good living standards of the Tugen and Ilchamus community.¹⁰⁸ Livestock have been a major source of livelihood among the Tugen, Pokot and Ilchamus communities. These communities have been pastoralists since time immemorial. There is a clear distinction between pure and semi-pastoralists. The pure pastoralist type being those that rely entirely on livestock husbandry as their form of production, while the semi-pastoralist communities are those ones which indulge in agriculture and trade as well as herding. These communities living along the Marigat valley were basically a semi-pastoralist group as they practised hunting, herding, cultivation and gathering. They are said to have relied more on cattle keeping also due to the conducive climate and environment as compared to the other activities. Cattle-keeping was most often an adaptation to semi-arid open country rather than those other economic activities.¹⁰⁹

Cattle were kept in the Marigat valley in large numbers. Since the valley is in a dry and semi-arid area, there was less grass and the cattle fed on wild fruits. Informant indicated that there was a product called *Ngoshek*, which cows chewed the top cover and the seed inside was boiled and used as food.¹¹⁰ The fruits were collected and cooked for a long period of time then taken as food during the long droughts that affected the area. The surpluses of the fruits were sold to their neighbours to help them minimize the effects of the famine.

Cattle were highly valued among the communities of Baringo District. An informant pointed out that in the family, the father treasured his cows so much that when one was unwell, he too could suddenly fall ill and look for medication of the animals and himself.¹¹¹ To the communities, their main source of livelihood was cattle. In the community, everyone had a definite task in relation to cattle keeping. Small boys were responsible for the calves which were spread and separated from the herd as the cows were still milked. The calves were taken to graze in the plains near the homesteads and always guarded against predators. Cows and bulls were always taken to graze in the plains far away from the homes. They were driven to

¹⁰⁸ KNA/DC/BAR/2/281, Baringo District Annual Report, 1965, p. 7.

¹⁰⁹ P. Spencer, *The Pastoral Continuum: The Marginalization of Tradition in East Africa* (Oxford: Clarendon Press, 1998), p. 23.

¹¹⁰ *Ibid.*, p. 56.

¹¹¹ Kiptoon, OI, 10.12.2014.

greener pastures in distant lands. This was helpful since the sizes of herds which the communities maintained were large and could not depend on the surrounding area. The average animals owned by a family were more than hundred heads of cattle in the pre-colonial period. These communities continued with the practice of maintaining large herds and this is evident even when the colonial government took over, they ordered for a destocking. According to records, there was a circular which was issued in 1950 which specified the destocking exercise.¹¹² It was recorded that the number of stock owned by each stock owner should be recorded by location and on being issued with directions; the stock owner should reduce his stock units to a number to be decided by the local district officer. This was done by the government due to the overstocking they foresaw and according to some informants, so as to tame the pride of the local cattle owners.

Cattle herds were well taken care of by initiated boys and younger men since they had the knowledge on how to defend the animals from wild animals and even cattle raiders from other communities. According to an informant, the herders ensured that their cattle licked rock salt as often as once in a month.¹¹³ They went as far as Tiaty Mountains in Pokot land for the salt and rock then back to the valley. This helped the cattle stay healthy and nourished for trade as they de-wormed the animals naturally and from then they could fetch good prizes in the market. They usually went there before rainfall and waited for the fresh grass to recover from the de-worming effects. Herbs were also used to treat hailing livestock.

Among the communities that lived in the valley, there was a notion of splitting cattle and distributing among several families.¹¹⁴ This was done so that there was a spread of risks. If one herd was attacked by wild animals or a deadly disease, at least the other herd in another man's house was safe. They spread these among families in neighbourhood and also far places but they did not sell the animals at all to them. The herd would be split into browsing stock, milking and non-milking stock. It was not unique to find a man having more livestock outside than what he had at home and at home having more cows belonging to another person than his. The man was assured of security for his cows when they were outside than when in his own home.

¹¹² KNAPC/RV/1/12, Annual Report, 1956, pp. 28-30.

¹¹³ Chepkurgat, OI, 30.11.2014.

¹¹⁴ Kandagor, *Rethinking British Rule*, p. 15.

The herds kept were resistant to tse tse fly and other infectious parasites. They survived in the harsh conditions and on the grazing fields which were marshy, moors and semi-desert. Increase in number of the livestock was high and there were several problems of cattle inbreeding leading to low quality of livestock. The milk produced was used for domestic consumption and others given to the neighbours. According to an informant, milk was given free of charge and it was considered a taboo to sell milk.¹¹⁵ They mixed fresh milk with animal blood to produce a thick substance which when men drank were well nourished as it was considered so nutritious.

It was uncommon in the initial stages of introduction of irrigation farming for the herders to sell their livestock but after the intrusion of long distance traders the community slowly began to embrace cattle trade for economic gain. This trade, according to informants, started with barter trade among the neighbours and it grew to a bigger trade. An informant indicated that the communities slowly appreciated the trade and they started castrating bulls so as to fatten them for trade.¹¹⁶ The bulls were castrated using the traditional method or removing the testicles and using ashes as a disinfectant. Castration was done during the rainy season when there was plenty of pasture. This was followed by intensive feeding to fatten the bulls so that they could fetch high price when sold off. Every cattle owner castrated his bulls and left at least one so as to be the one fertilizing his cows.¹¹⁷ An informant said that one bull was selected, fattened to be his herds' bull and farmers were heard singing songs of praise composed on behalf of the aforementioned bulls and this bull was not slaughtered or sold as it was his owner's pride.¹¹⁸

Cattle auctions were opened in the pre-colonial period for these fattened bulls. However, before the markets picked well, most of the community members were reluctant. They perceived as a curse sale of their favorite livestock. An informant affirmed that they could not imagine one going to an auction and exchanging his livestock for money.¹¹⁹ A case is remembered of when the community members took all skull bones of the dead animals to an

¹¹⁵ Kibet, OI, 09.01.2015.

¹¹⁶ Chepkurgat, OI, 30.11.2014.

¹¹⁷ KNA/DC/BAR/60/1/2, Annual Report, 1974, p. 39.

¹¹⁸ Chemjor, Cheptarus, OI, 08.01.2015.

¹¹⁹ Kiptoon, OI, 10.12.14.

action in Marigat when they were requested for bulls to slaughter and export the meat. This was like trying to curse and discourage the establishment of Marigat auction. But with time the rebellion subsided.

An abattoir was established in Marigat area in 1953 to be used as the main slaughter house for government officials in the colonial period. This abattoir was a source of constant quarrels as some colonial officers took meat for free and the cattle were bought from the locals at a low price. Although the prices were low farmers usually supplied the cows as it was a mandatory exercise during colonial period. Another one was established at Mogotio area which supplied meat to Nakuru. Archival source indicate that all stock traders had to report to Mogotio veterinary area for their stock to be dipped.¹²⁰ They were individually inspected for foot and mouth disease at the crush in Mogotio. Since they were many cattle, a new crush was established at the area since no cattle left Mogotio without being checked. These punitive measures were taken so as to stem the spread of foot and mouth.

Traders went as far as East Suk District to get cattle for markets in Marigat and Mogotio.¹²¹ These cattle were inspected and inoculated with Lapinised vaccine for Rinderpest. This was strictly adhered to as the risk of moving this stock through controlled areas was well known. Marigat and later Mogotio were the areas for inoculation according to the then District Livestock Officer for Baringo Albert Webb.¹²² The cattle transported to the markets were many, thus proving that the trade was increasing over time and the farmers were embracing the idea of selling cattle to avoid losses during droughts and famines. Trade in cattle was also an economic booster in the area as the farmers exchanged them for the products they lacked in their area. Cattle auctions picked from the pre-colonial period in the named areas and have been maintained up to now as a major source of income for the communities.

2.4 Hunting and Gathering

Hunting and gathering also called foraging is the mode of living in which people depended primarily on wild foods for subsistence.¹²³ This culture did not only work well for the nomadic people but also all nature of groups. The nomadic group which practised hunting as

¹²⁰ KNA/DC/BAR/281/2, Annual Report, 1956, p. 39.

¹²¹ Patterson, *The Pokot of Western Kenya 1910-1963*, p. 12.

¹²² KNA/DC/BAR/11/4/2, Baringo District Annual Report, 1965, p. 67.

¹²³ Ogutu, *Sedentary Hunting and Gathering*, p. 54.

they moved from one place to another with their livestock is considered a foraging group. The second type of hunting and gathering were the sedentary group. These were agriculturalists that were settled but practised hunting. The third group was the commercial hunting and gathering practiced by those concerned with extracting parts of animals and plants for profit. Tugen and IlChamus communities which lived at Marigat area and around Lake Baringo before introduction of irrigation farming in the pre-colonial period practised hunting and gathering so as to supplement their usual diet and if they remained with surpluses they traded with their neighbours. They fell in the group of sedentary and commercial hunters and gatherers depending on the prevailing conditions.

During the pre-colonial period, along the valley, there were clans which specialised in hunting and gathering. These clans were few in a community and were trained and capable of carrying out their duties with less or no supervision. Like the blacksmiths, potters or basket makers, these clans excelled in hunting. According to the informants, their parents lived among the many wild animals. They pointed out that there were plenty of elephants, buffalos, rhinoceros and lions among other animals along the Lake Baringo basin. Although dangerous, the communities lived with the animals and shared the same area as the animals lived in the thickly forested areas while the hunters preferred open areas.¹²⁴

Hunting was the work of boys and men in the community. These were the most energetic groups in the community and they could endure the harsh conditions of hunting. The boys who were involved in the hunting, according to informants, were those who could go for long hours without food and water.¹²⁵ They were chosen and picked by the eldest hunters from those families who were known to have the wanted endurance. It was their practice to engage on the selection every time they wanted carry out a hunting expedition.¹²⁶ An elder was called upon to perform the exercise and all those with curses were returned back to their families. They were not allowed near the hunting fields because there were high chances of them being speared because of the curses they were believed to abhor. Married men also engaged in the hunting as they had the wanted experience. They taught the youth the best techniques of

¹²⁴ Kandagor, OI, 05.01.2015.

¹²⁵ Chumar, OI, 30.10.2014.

¹²⁶ Yusuf, OI, 12.01.2015.

hunting and were familiar with the terrain. It was easy to choose the boys and men to undertake any hunting expeditions.

The size of the animals to be hunted down was the main determinant of who carried out the exercise. Big animals like buffaloes, elephants and antelopes according to the sources are that their hunting involved men only.¹²⁷ These large animals were so destructive and dangerous. Their hunting was sophisticated and needed proper planning. This also determined the techniques used to kill the animals. Men of the age of eighteen and above carried out these serious hunts. The size of the animals determined all these practices and methods of completing the exercise. Sometimes the animals were hard to kill and some animals were wounded and if not killed were very dangerous. The hunters ascertain that a wounded wild animal if left to go could devise a revenge method and could come back to cause a lot of harm to the locals. Thus it required the expertise of the older men to kill the animals and ensure safe handling of those large and dangerous ones.

Young energetic men were involved in the tracking and hunting of small animals like dik dik and hare.¹²⁸ The two could be hunted down any season of the year and with the help of dogs, they hunted them quickly and effectively. The hunters trapped the small animals or waited for the evenings when they knew their hiding spots and stormed those spot killing them. The neighbouring communities which lived on the highlands came to the valley to buy and get the wild animal products from the hunters in the valley. Because of their size, the small animals were always considered easy to kill than the large ones which were hunted by the elders. The larger ones were killed using various methods but the small ones did not require much skill. Organized group hunting was considered more serious and effective than individual efforts. If well planned, organized groups could at all times ensure animals were hunted down successfully.

It is worth noting that, there were several methods of hunting down animals.¹²⁹ These methods varied according to the size and area which the animals inhabited mostly. Small animals like the dik dik and hare were reported to be hunted down by young men using non-poisoned arrows and clubs. They could be hunted down and followed by the hunters using the

¹²⁷ Ogutu, *Sedentary Hunting*, p. 10.

¹²⁸ Bartonjo, OI, 22.01.2015.

¹²⁹ KNA/DC/BAR/1/1, Baringo District Annual Report, Game Offences, 1980, p. 23.

help of the blood trails then clubbed on the head to finish it off if it was not completely dead. Holes were also dug on the routes used by these animals and if they fell in they could be collected the following day and their products sold at a good price since they had no injuries at all on their skins. String traps were also put in place to trap these animals and in the morning they could be clubbed to finish them off. Other informants pointed out that, some hunters laced food items with a kind of traditional poisonous seed ground to powder and if the small animals ate them, they became docile and a time unconscious and they could just come and kill them.¹³⁰ It was also a common practice to surround an area where small animals existed or were discovered to be hiding and beat the bush so as to drive them into the open and since the hunters were in large numbers, the animals were then shot and killed.

Larger animals were hunted in special ways as they were difficult to kill. Pits were dug on their tracks and covered with a fragile surface. As the animals passed by, one could fall on the pit and was easy to come and kill it inside the hole and later remove the carcass and use the products for trade.¹³¹ Informants also observed that use of poisoned arrows was one of the main methods used to kill the large animals. The arrows could stick to the animals for a long time as the poison is absorbed and after sometime the animals fell down dead. This was effective since the animals could surely die. Another effective method was spearing them. The large animals were ambushed by old men using spears and struck at the point directly to the heart. The spears were non-poisoned but due to its size and the proximity of the animals, accuracy was more guaranteed than arrows.

Gathering of wild plants was also practiced in the pre-colonial period. Fruits of specific plants were gathered and used as food during droughts and famines. Plants like tamarind (*Ariek*) provided an alternative source of food during hard times.¹³² Other fruits were also gathered from the bush and taken to homes as food to supplement the usual food. There were times in the pre-colonial period when Pokot people came to the valley to buy the gathered wild fruits to be used as food. They brought in products like beads for exchange with the fruit. There were also a special group of people known as herbalists (*chepsakitin*) who gathered wild fruits and roots for medicinal purposes. These fruits, barks and roots were

¹³⁰ Kipkoech, OI, 23.12.2014.

¹³¹ Ogutu, *Sedentary Hunting*, p. 16.

¹³² *Ibid*, p. 5.

boiled and used as medicine for known diseases. Patients from far and wide came to the valley for treatment and they brought in items for exchange with the gathered wild products. There were trees which were guarded by traditional groups because of their sacred nature and were only touched by few medicine men that had the permission of the clan elders. Most of the plants gathered were grouped according to their functions and taken to be sold by the selected community members.¹³³ It was one of the few lucrative jobs as they were rewarded and respected by all members of the community.

Birds were hunted by young men and they always ensured they were the edible breeds. The meat of some birds had medicinal value so they were preserved to be used by the medicine men. The young men sold the birds to the elders who in turn exchanged them with some goods for the hunters. Larger birds like Guinea fowl (*terkekyan*) were hunted in the mornings for their meat and feathers. The meat of the birds was edible and could be preserved for long while the feathers were sold for they were useful in making arrows. These birds were in abundance in the valley and on the shores of Lake Baringo. The people from highlands came to the valley to buy the feathers and the meat. These products earned the locals good prices. One informant illustrated how his family lived on the proceeds of this trade alone for a long period of time.¹³⁴

Hunting of the wild animals was not limited to the reason of obtaining alternative source of food only. Most of the hunters were looking for the precious skin of the animals which were sold to highland communities and also locally. The hide of animals like the buffalo was used as bedding of elders. It was sold to the village elders who utilized the skins well. Ceremonial regalia were also made from wild animal skins and thus the traders came to the hunters to obtain the skins. According to informants, the Tugen community did not allow consumption of wild meat when food was plentiful. They considered it a taboo to eat domestic animals meat and at same time wild game meat, so they sold almost all the wild meat to the neighbouring communities in exchange of some other commodities which they did not produce themselves. The Tugen and neighbours living in the Lake Baringo basin were also

¹³³ H. Kjekshus, *Ecology, Control and Economic Development in East African History* (London: James Currey, 1996), p. 15.

¹³⁴ Kandagor, OI, 05.01.2015

was hard for the locals to be convinced by the colonialists to go against the local elders' declarations and suggestions. That these practices were extremely important in traditional life needs no further emphasis as the community members depended on these activities for a better living, to sustain their lives and to add more to their resourcefulness.

harassed arrested by colonial game rangers when they were found killing wild animals.¹³⁵ In 1959, the DC for Baringo wrote a letter to his counterpart in West Suk district not to prosecute the Tugen arrested at the border in Kapenguria. They were supposed to be prosecuted at Kabarnet since it was their headquarters. This letter shows that the communities engaged in illegal game hunting and sold the meat and other products to their neighbours.

In sum, hunting and gathering of wild animals and plants respectively was practised by the local communities. They engaged in the vice for economic growth of the community. Wild animals were still in plenty at the initial times of the colonial period but later got diminished due to heavy hunting. The consecutive governments encouraged the fight against wild game trade so that their numbers could increase. Despite all those efforts, the local inhabitants participated in the lucrative business and it went on well with many communities getting products they did not have in their areas. Thus, hunting and gathering was one of the economic activities which boosted the livelihood of the community. Herbs were picked from the bush by hunters and gatherers and they later sold them at a good price. Trade in wildlife products also thrived well in the valley during the pre-colonial to the colonial period.

2.5 Summary

In this chapter, an analysis was made of the livelihoods of IlChamus, Pokot and Tugen communities which lived in the valley around Lake Baringo and the activities they used to engage in before the establishment of PIS. From research, it was evident that traditional agriculture, trade and hunting and gathering earned them a living and recognition up and until when colonial government introduced modern irrigation, the study identified that the members had several economic, political and social activities which sustained them as they were still a small number able to be managed by community elders. Colonialism was realised to have introduced land degradation in the area since it has several severe policies which instead of curbing degradation aggravated it. It is evident that, despite all the challenges in the area like droughts, famine and natural calamities, the social fabric of the community was so closely knit. This enabled the community members to live and follow on the instructions by the elders. The elders were known to be the chief decision makers, which explain why it

¹³⁵ KNA/DC/BAR/1/1, Game Offences, 1980, p. 39.

CHAPTER THREE

DEVELOPMENT OF PERKERRA IRRIGATION SCHEME UNDER ALDEV, 1954-1967

3.1 Overview

This chapter deals with the initial stages of the Perkerra Irrigation Scheme and its development up to 1967. It tries to elaborate on impacts experienced after the inception of the scheme as opposed to when the area was primarily used as pasture land. It highlights the scheme as opposed to when the area was primarily used as pasture land. It highlights the inception of the scheme, how it was received, its impacts (which includes insecurity), among others. There were various employment opportunities that came up with the inception of the scheme. The link between the irrigation scheme and the growth of Marigat town from a small centre to a business hub is also done.

3.2 Land Adjudication, Survey and Establishment of the scheme.

In the pre-colonial period, land was communally owned and its use was decided on by the community elders. Individuals did not own land as the sole owners but the land was in the custody of clans. This explains why community members took time before accepting to give off some part of their land for irrigation by the colonial government. Before any decision was arrived at, all the community members had to be consulted. The tendency to take long before all the clan members agreed on one development agendum was always experienced. It was not until 1925 when the government experimented with irrigation at the administration camp at Kipkamburia near Lake Baringo that they started realizing the potential of the land.¹³⁶ The agricultural department established the need for irrigation in the area upon visitation by the country's Director of Agriculture. It reported that the director went back to Nairobi and requested for funds to set up Perkerra Irrigation Scheme. As a result of the proposal for establishment of an irrigation scheme, a survey of the area for suitability was carried out. Informants indicate that the colonial adjudicators came to the area, mapped the area and set aside the suitable land. It was estimated that 16000 acres could be used for cultivation.¹³⁷ This was the land that had suitable natural drainage. The land chemist also checked on the chemical content of the soil and declared it suitable for irrigation. The end of

¹³⁶ Kandagor, *Rethinking British Rule*, p. 15.

¹³⁷ E. A. Mugatsia. "Simulation and Scenarion analysis of water Resources Management in Perkerra Catchment using WEAP Model", MSc Thesis, Moi University, 2010. p. 4.

The survey saw 16000 acres approved for irrigation using the River Perkerra as the source of water. A dam was proposed to be constructed along the river to act as a reservoir. It is also worth noting that initially only 2500 acres were irrigated out of the possible 16000 acres.¹³⁸ The small area was irrigated as opposed to the large adjudicated area because of the limited resources. These acres were subdivided into parcels for the local inhabitants by ALDEV for easy management and allocation. These parcels of lands were given out to the ALDEV management by the elders. ALDEV management then took the cautious advice by the elders to subdivide the plots in the scheme to the inhabitants. It is established that it took the intervention of elders with the help of agricultural experts to convince the inhabitants of the irrigated valley. Given their pastoralism nature, the locals took time before they were convinced. It only happened fully after they were assured that their cattle and bee-keeping would not be affected.

PIS was then established after the government approval and the plots in the scheme were allocated to the inhabitants. These plots were allocated first to the indigenes of the area who are the Tugen, Pokot and IlChamus. These were the communities that had grazed their cattle in the scheme area for a long time. The locals had always used the area as a pastureland for their large herds and also had some reserve pasture in the highlands if worst droughts came. They had carried out all their economic and social activities in the valley before introduction of the scheme. The surveyor divided the strips of land in a way that all the families had one piece of the land abutting a road. The 2500 acres were subdivided into parcels which were of reasonable proportions and each family allocated. They were provided with plot numbers and complaints dealt with at the right time by the officers. Each parcel of land had a furrow feeding it with water. The planning was appropriate and well executed to ensure that all the parcels were well measured and given to the right families. This was the nature of European scheme planners who took the model from Sudan.¹³⁹ Sudan had its large area irrigated earlier than Kenya and so it acted as a model for the local irrigation schemes established and PIS was one of the benefitting schemes.

¹³⁸ *Ibid*, p. 47.

¹³⁹ Ngetich, OI, 10.12.2014.

Even though not all the locals had land initially around the scheme's location, at least they were allocated a share in the irrigation scheme when it was established. The Pokot and Turkana who initially did not own land in the area also benefited from the small parcels since they were around when subdividing was done. The Mau Mau detainees who were brought in to work on the farms were not allowed to own land at all. Mau Mau detainees were just allowed to work in the irrigation scheme with strict supervision up and until when Kenya attained independence. It was established that those who own parcels at the scheme got them after independence, unlike their counterparts who were allocated theirs by elders in the pre-colonial period. Mau Mau detainees who upon independence decided to settle in Marigat area bought the parcels since they had earlier provided the much needed labour on the land only. They were engaged in the construction of dykes and furrows. They were not allowed to be the first farm owners.¹⁴⁰ This was because the colonialists did not want to lose the labour from them. Provided they were under correction and rehabilitation from Mau Mau indoctrination and they were not entitled to ownership of property.

The survey had covered the 16000 acres and only the 2500 were cleared for irrigation farming. The rest were left for either rain-fed local crop farming or pastoralism. The good thing with the lands is that they were adjudicated, surveyed and allocated to the locals. The survey and allocation was done free of charge by the government. Plots were allocated without the farmers incurring any costs since they were initially part of the irrigation scheme. All the land in the valley now has definite owners and the conflicts experienced by neighbouring communities do not affect the adjudicated area. An informant indicates that the surveyors sent were very vigilant and based their decisions on the traditional clans and family ownership.¹⁴¹ The survey work was extended to the neighbouring farms. This demystified the notion that the irrigated farm was to benefit the colonialists only.¹⁴² The community members felt the impact of the coming of the scheme in a positive way. It was not only beneficial to the immediate farmers but also their neighbours. This was also the case after independence when the government provided extension services to the community. They helped the community to plan where to plant their crops and where to keep their cattle.

¹⁴⁰ KNADC/BAR/33/1/2, Baringo District Annual Report, 1957, p. 34.

¹⁴¹ *Interp.* OI, 10.12.2014.

¹⁴² *Interp.* OI, 12.01.2015.

Erosion of the land was now minimal as the farms were well utilized in an organized manner unlike the previous haphazard methods.

Thus, the valley inhabitants were provided with proper land administration at a small or no cost as all the services were provided by the government. This was a good economic gesture from the government to the local inhabitants who had born many natural disasters and calamities in the valley. The land division, although it restricted the farmers to their small plots, was the best way to deal with the farmers and end the constant quarrels between the crop farmers and the cattle keepers.¹⁴³ The farmers had clear cut boundaries and if one had the ability to fence his parcel, he or she fenced it to avoid the quarrels. This was achieved because some farmers put up temporary fences which at least restricted movement of cattle to destroy farms. It was reported that, many cattle keepers chose to reduce their herds so as to avoid trespass by their livestock. They decided to venture into crop farming to minimize the conflicts.

James Richardson, brought in by the colonial government from Gezira Irrigation Scheme in Sudan was the first manager of Perkerra Irrigation Scheme.¹⁴⁴ He brought new ideas with him for the irrigation. He sympathized with the tenants problems and tried very hard to solve them. He was the first employee to be paid by the government and he was allocated a plot on the same scheme so as to work in the scheme for long. According to Kandagor, the manager was awarded a high salary of Shs 7000 per month.¹⁴⁵ This was at the scheme's initial stages of development. Although Richardson was of great help in the scheme to the farmers as he provided them with necessities like agricultural tools and allocating them a place to live in Kapchampi where all tenants inhabited. Richardson's salary was initially paid by the government but after 1965, the responsibility was handed over to ALDEV.¹⁴⁶ This meant that the high cost of labour and maintenance was met by the national government appointed agency on behalf of the tenants. It was hard to sustain the manager as he was among the highest paid officials at the time.

¹⁴³ W. Adams, E. Watson and S. Mutiso (eds) "Water, Rules and Gender: Water Rights in an Indigenous Irrigation system, Marakwet, Kenya" in *Development and Change Journal* Vol. 28, 1997, p. 48.

¹⁴⁴ Chambers, *Learning from Project Pathology: The Case of Perkerra*, p.45.

¹⁴⁵ Kandagor, *Rethinking British Rule*, p. 45.

¹⁴⁶ *Ibid*, p. 65.

The survey work was done with at the cost of the colonial government as earlier indicated. Every parcel of land was allocated a number and all farmers within the scheme who were moved from their grazing land allocated a space. It was then now that irrigation was done on the farms and these farms were not fenced off. Perkerra Irrigation Scheme has a small group of people employed as guards. Sources point out that these guards come from the neighboring villages. They have the basic knowledge of the area. These guards have several roles to perform in the area. They chase away wild animals in the night to protect the produce, they also guard the lands from intruders who steal the produce. They guard the farms all through the year and they are paid by the scheme's management. They offer intelligence from the scheme to the police who use it to deal with problems like theft.¹⁴⁷ These guards are so important in combating crime in the area as they watch over the scheme and they ensure maximum yields are realized and at the same time they offer information to the police on crimes reported. They thus have helped in ensuring that the area has proper security. In general, inception of the scheme introduced large numbers of people in the town who in turn increased the cases of insecurity. There were interventions sought and the area is more secure than the past due to the presence of a police station. Trading activities are now carried out in peace and in large scale due to the peaceful nature of the area now.

3.3 Growth of Marigat Town

This town began as a small collection point for farm products and exchange zone for the traders. It is one of the fast-growing towns in the Marigat valley just at the outskirts of Perkerra Irrigation Scheme. Its growth has been supported by the introduction of the irrigation scheme in the area. The town began as a meeting point for traders who assembled their products for transportation to bigger towns like Nairobi and Nakuru.¹⁴⁸ It was initially a makeshift housing area with few structure which just acted as stores for the produce. As the produce from the farm increased, the centre too grew up as the farmers needed more space for goods storage.

¹⁴⁷ E. Karina and A. W. Mwaniki, *Irrigation Agriculture in Kenya: Impacts of the Economic Stimulus Programme and Long term Prospects for Food Security in an era of Climate Change* (Nairobi: Heinrich Boll Stiftung East and Horn of Africa, 2011), p. 16.

¹⁴⁸ Kiptoon, OI, 10.12.2014.

Although Marigat was a cattle auction point before the establishment of PIS, the scheme came and enhanced as growth at a faster rate than the cattle trade.¹⁴⁹ This was so because the cattle auction was once in a week so traders came and many left that same day but the scheme's products are collected daily and for long during the harvesting season.¹⁵⁰ The traders are reported by an informant to have stayed for a long period in the area as they collected the produce and this enhanced trade in the area as they exchanged goods and services. These traders established their makeshift structures and after sometime the government intervened so as to bring law and order in the area. The County Council of Baringo adopted the centre as it grew and engaged the local inhabitants in physical planning and demarcation of the centre.

Availability of water from the River Perkerra was the main reason why people chose Marigat to be the trading location. This was because the water was in abundance and it was near the scheme as well as the river. The river provided water for irrigation in the scheme and it was also the main source of domestic water. Since Perkerra River is a permanent river, inhabitants of Marigat town had a humble time with water throughout the year. It was observed that, Marigat grew due to the water availability in the area and by virtue of Perkerra River being permanent. It was easy to put up shops and repairing them was also cheaper since the distance between the shops and the river was minimal.

As the small structures advanced to better houses and many people joined the trade, government had to step in to set records straight. The centre was subdivided into plots by the County Council of Baringo and the inhabitants were allocated plots to develop.¹⁵¹ During the plot allocation of course some members from the highlands may have infiltrated the system but most owners are the inhabitants of Marigat Valley. The majority numbers of the people occupying the town are IlChamus, Pokot, Turkana, Kikuyu and Tugen. Their existence in the town is closely linked to the existence and growth of the irrigation scheme. Marigat town has taken time to grow and attain its status as it is now. The structures are mostly semi-permanent with a few permanent structures. The planning of the town is well

¹⁴⁹ KNADC/BAR/11/4/2, Annual Report, 1970, p. 12.

¹⁵⁰ KNADC/BAR/25/5/4/1, Annual Report, 1935, p. 37.

¹⁵¹ KNADC/BAR/32/290/1, Annual Reports, 1977, p. 34.

organized and the market place is located near the road to make it easily accessible and convenient for the traders. According to some informants, the town was planned with the close supervision of the provincial administration who wanted to have a clean, well-planned town in the future.¹⁵² The administrators made it their duty to constantly check on the upcoming houses and other infrastructure within the town. There are feeder roads which have been opened up in the town to allow faster movement within the town and efficient supply of goods and services to the traders. Although most of these roads have been encroached on, they were put in place to facilitate easier access to the interior of the town especially during emergencies like fire breakouts. The necessary amenities for the traders have been strategically placed for them to enjoy the town and invest in it more as it is attractive and reasonable to move around.

The growth of Marigat town necessitated the establishment of rental residence. People needed descent houses to settle in as they worked in the town and the irrigation scheme. The town experienced new houses for the increasing population. Good rental houses were put up by traders who invested their surplus on that sector and others sought loans from banks to set up new premises as witnessed by some respondents. There was population increase in the town and people sought better houses to rent and live in. With the advancement in houses, sanitation became a problem. The population increase meant many houses and the area was not properly planned so waste disposal became a problem. The town had to be re-planned for better living conditions.

The irrigation scheme employs many of the area residents. These labourers come from far places. These employees work on the farms from morning to evening and they settle down for the night. The town has acted as a residential area for them since they started working on the farm. Historical records indicate that the Mau Mau detainees who were brought to work on the farms were detained in a camp in Marigat town.¹⁵³ The place accommodated the officers taking care of the detainees and the detainees themselves. The need for goods and services of course widened and thus the growth of the centre was catapulted. There were plans by the ALDEV Engineers to initiate a sewerage plant in the

¹⁵² Kurere, OI, 13.01.2015.

¹⁵³ G. C. M, Mutiso, *Kenya: Politics, Policy and Society* (Nairobi; East African Literature Bureau, 1975), p. 46.

town since it has none but the sources indicate that there were inadequate funds to accomplish the plan.¹⁵⁴ Thus the town has managed to survive for sometime without an elaborate sewage system.

Kenya Power has set up a power substation at Marigat as earlier stated. This has helped boost the growth of the town as businesses are assured of electricity supply all the time. The offices are within the town and so in case of any problem it is easy to rectify and sort out. It takes a shorter time unlike in the past times when the locals had to travel to Kabarnet Town for their electrical issues to be sorted. The town is well light at night and thus cases of insecurity are minimal. The police station set up in the town also acts as a good security provider and promotes growth of the town. Traders are assured of security for their goods and products.

Irrigation farming according to some informant is so reliable and crop yields are realized according to the preliminary activities carried on the farm.¹⁵⁵ There is a reduced crop failure and almost hundred percent guarantee on crop yields. When the crops are on the farm, they are well monitored to avert any crop diseases and ensure maximum yield per acre. Due to irrigation in Perkerra there has been an increase in maize crop harvest from 5 bags to 20 bags per acre.¹⁵⁶ This increase indicates that with a proper management and control on the crops, farmers can reap maximum from their small plots and be able to have a stable food security. This in turn gives the locals time to engage in trade and other activities which promote the growth of their town Marigat.

3.4 Employment opportunities provided by the irrigation scheme

Enterprise diversification from livestock economy to irrigation agriculture meant an increase in income. There was improvement in the livelihoods of the local inhabitants since the introduction of irrigation.¹⁵⁷ Overdependence on unpredictable rainfall was replaced by irrigation. Farmers began to till their lands all throughout the year. They began to experience

¹⁵⁴ National Irrigation Board, Annual Reports, 1968, p. 23.

¹⁵⁵ Adipo, OI, 12.12.2014.

¹⁵⁶ S. Ngigi, *Review of Irrigation Development in Kenya* (Nairobi: University of Nairobi Press, 2002), p. 16.

¹⁵⁷ D. J. Campbell, "Response to Drought among Farmers and Herders in Southern Kajiado District Kenya: A Comparison of the 1972-1976 and 1994-1995," *Journal of Human Ecology*, Vol. 27, pp. 377-416.

double harvesting and thus they abandoned livestock farming or reduced their herd so as to focus on irrigation farming. Cereals, pulses, bananas, paw paws and fodder were introduced in the irrigation scheme. This led to crop diversification, which was more promising than cattle-keeping. Neighbouring communities which stuck to cattle keeping could supplement their cattle products from the farm produce. The farmers no longer needed to sell or slaughter their animals for meat but they came for the farm produce to supplement their diet.

Cattle keepers who bordered the irrigation scheme engaged the scheme management for grazing fields after harvest.¹⁵⁸ Their cattle fed on the crop remains and stalks. This improved the diet of their livestock and their animals were nourished after feeding farmers had to be reduced due to the small grazing fields. Thus it was easy for the farmers to graze their cattle in the farms. Fodder for livestock was planted by the irrigation management along the trenches. These crops helped in strengthening the soil trenches. When it reached maturity, the farm owners were allowed to cut the fodder and take to their cattle. Livestock were not allowed near the furrows with fodder but the grass and all the fodder was cut and given to the cattle by the farmers. This was done to avoid destruction of the water canals which were difficult to maintain.

The establishment of Perkerra Irrigation Scheme in 1954 implied that workers had to be recruited. The colonial government enrolled the services of Mau Mau detainees to work for them.¹⁵⁹ Their number was insufficient and they only provided the manual labour needed. Supervision work and other roles were provided by the colonial prison wardens. The Mau Mau detainees were brought from Central province and they served for sometime in the scheme without pay. Work in the field was abundant and due to the drought and famines experienced in the area, the neighbouring community members sought help from the scheme. Since the scheme was divided into small plots which were located to the locals, neighbouring communities also participated in providing labour in their farms.

¹⁵⁸ *Ibid*, pp. 390-416.

¹⁵⁹ C. Leys, *Underdevelopment in Kenya* (London: Sampac Low Publishers, 1975), p. 15.

Family labour was the norm in the community, but ALDEV introduced wage labour.¹⁶⁰ They recruited the able-bodied men and women to provide the manual labour on the farm. The digging of water canals and farming the banks was done by casual workers who were paid wages. Family labour was limited to individual plots. The Tugen living around the scheme were engaged in other economic activities and therefore did not participate immediately in joining the scheme. The Tugen and Pokot communities living on the highlands came to work on the irrigation scheme since it paid well.¹⁶¹ They abandoned their small local trades in their homes and came to settle at Marigat and earned their wages from the scheme.

The irrigation scheme had workers from the surrounding area and also those who came with the Mau Mau detainees. Those workers who came from around the area set up houses for residence at Marigat town and villages bordering the irrigation scheme.¹⁶² There are small villages with semi-permanent houses at the borders of the Perkerra irrigation scheme. These houses had headmen who ensured they knew each other. They ensured they had a clear database of the community members who lived in the scheme villages. It was their role to report to the chief any intruders or aliens who entered their village without their knowledge. People from the Tugen highlands according to an informant came to work on the irrigation scheme. They worked as casuals repaying loans advanced to them by financial institutions so as to farm the plains during the day and in the evening camped at the Marigat centre.¹⁶³ The many settlements around the scheme formed security surveillance groups who met regularly to exchange information on security. The locality was secured by the teams and it was peaceful and habitable. It was also reported that the irrigation scheme management encouraged workers to live near the scheme and followed the instructions to the letter.

Prior to the establishment of PIS, insecurity cases were many in the area. Cases of cattle raids, resulting in loss of lives were common. Irrigation farming ensured that the number

¹⁶⁰ Mutiso, *Kenya: Politics, Policy and Society*, p. 67.

¹⁶¹ Lepirito, OI, 28.11.2014.

¹⁶² A. Guy, *Modern Kenya* (London: Longman Group Ltd, 1981), p. 35.

¹⁶³ KNA/PC/RV/3/20/4/3, Provincial Labour Report, 1981, p. 39.

of cattle kept was reduced according to each farmer.¹⁶⁴ The number of cattle raids reduced significantly with the destocking. The neighbouring communities did not get a good number of cattle to raid like the pre-colonial period when the valley was a grazing field. The Pokot and IlChamus community members who usually engaged in physical fights during cattle raids were slowly converted to irrigation farmers. They were engaged in the laborious farming in the irrigation scheme and the few who engaged in cattle raiding to replenish their stock were the few at the border with the Turkana.¹⁶⁵

Land adjudication and survey as earlier indicated was done on the main irrigation area and extended to the neighbouring communities. The parcels of land were subdivided according to clans. Every family member with a nuclear family was allocated a sizeable parcel. The area covering the scheme was secured by the colonial government and farmers were restricted from farming without the proper inspection and award by ALDEV.¹⁶⁶ Tugen and IlChamus elders cooperated with the irrigation officials to ensure that there was a peaceful co-existence between the locals and company workers. They sorted all the petty cases involving the inhabitants and the company workers and even imposed fines on some errant members of the community. Records indicate that the state of security in the area improved with the inception of the scheme.

At the inception of the scheme, trenches were dug and channels made for irrigation. Manual labour was used to construct the tunnels and the walls were reinforced with soil. The work was done by the Mau Mau detainees supervised by the colonialists. These dykes supplied water for the farms for a long period of time. They were just repaired overtime as siltation and floods spoiled them. Overtime water could not flow to the irrigation farms since the furrows were silted and so the farmers through NIB dug the tunnels a fresh.¹⁶⁷ Irrigation has been by gravity and when water is low in level in the dams, the company hired a generator to pump the water to the furrows and it flow by gravity. The change from water flowing by gravity to pumping is costly and the farmers have to pay more money to the

¹⁶⁴ KNA/DC/BAR/70/1/1, Destocking Policy, 1956, p. 7.

¹⁶⁵ KNA/DC/BAR/33/52/4/1, Annual Report, 1956, p. 67.

¹⁶⁶ D. M. Nyariki, "Kenyan Position Paper on the Horn of Africa", pp. 2-6.

¹⁶⁷ Chesang, OI, 24.11.2014.

management so as to get water to the channels. These required more funds but the government through ALDEV was not willing to commit more funds. This meant that the irrigation process had to be slowed down a bit.

Human-wild life conflict is the situation whereby human beings and wild animals clash over resources. Wild animals occupied the valley all through the pre-colonial period. They preyed on the small wild animals and the domestic animals found around the area. Irrigation farming as earlier indicated involved intensive clearing and tilling of the land. The valley was cleared and the bushes reduced. Those wild animals which roamed around were also significantly reduced in number. They migrated to the highlands and other thickets leaving the cleared area for farming. The cleared area was not only the scheme but also the neighbouring fields belonging to the local communities. The cases of human wildlife conflicts reported at the wildlife offices reduced so much and the damage done on the crops also dropped. This illustrates that with coming of the irrigation farming, the local communities got a security boost since the animals were chased away from them.¹⁶⁸ The buffaloes and elephants that roamed freely on the valley are reported to have retracted back to the shores of lake Baringo and others to Mochongoi forest. It was also recorded that the irrigation farms were tilled all through the year as the lands were irrigated, this helped the farmers to have well tended lands all the year round. The growing bushes were cleared and burned constantly. Clearing of the lands ensured that the fields were safe and the inhabitants were also secured.

Irrigation technologies have been advancing from time immemorial.¹⁶⁹ The type of irrigation practiced by the indigenous IlChamus farmers was rudimentary has been rendered obsolete by the modern form. Anderson pointed out that the traditional irrigation methods were designed to suit a small-scale farming.¹⁷⁰ He further noted that it was wrong for the Perkerra Irrigation Scheme initiators to copy the ancient farming methods as they were not designed for the modern commercial farming. This shows why the planners at the initial stage of the scheme deviated from using the local inhabitants and brought in Mau Mau

¹⁶⁸ KNA/PC/RV/3/1/368, Confidential Reports, 1981, p. 69.

¹⁶⁹ Anderson, "Agriculture and Irrigation technology at Lake Baringo", *Azania*, Vol.24, 1989, pp. 85-89.

¹⁷⁰ Anderson, *Eroding the commons*, p. 26.

detainees and expertise from the Gezira Irrigation Scheme in the Sudan. They did not want to mix the ancient irrigation forms with new methods which are cost effective and time saving as compared to the old techniques. Introduction of new methods at inception meant hiring more manual labour and training them so as to conform and work with the new methods introduced.

Cases of prolonged droughts have been recorded in the irrigation scheme. Tenants who were regular farmers in the scheme were really affected by the drought and its impacts were severe. Food became scarce and thus they resolved to supplement with livestock meat. It is recorded that relief food and rations had to be distributed in the area in 1957.¹⁷¹ Since Baringo County consists mostly of Arid and semi-arid lands, the central government had to provide relief cereals for the residents.¹⁷² The irrigation scheme as earlier indicated has been the main source of livelihood for most farmers in the valley and its produce is sold to the neighbouring communities so when drought season was experienced there was a gap in food supply. The tenants were left with no food and thus they depended on the government for survival. It is thus noted that, drought is one great challenge to irrigation as the scheme cannot run smoothly when the droughts become persistent. Despite the introduction of drought resistant varieties of crops, there are cases of pro-longed droughts which lead to the drying up of several crops.

The establishment and development of Perkerra Irrigation Scheme was an important gift to the residents of Marigat from the Government of Kenya. It was only hindered by a few factors and one of them was insufficient funds to run the project. ALDEV was underfunded by the colonial government as they realized that it was becoming more beneficial to the locals than to Europeans. In 1963, Kenya attained its independence and all the projects which were funded by the colonial government were halted for some time. An audit was done on the existing projects and many schemes like Perkerra Scheme stalled. They were later handed over to NIB with all assets and liabilities. That is when the scheme saved from imminent collapse.

¹⁷¹ *Ibid.*, p. 34.

¹⁷² M. Leach and R. Mearns (eds), *The Lie of the Land: Challenges Received Wisdom on the African Environment* (London: The International African Institute, 1996), p. 16.

2.5 Summary

This chapter endeavored to make a historical survey of the impacts of the irrigation scheme since its inception to the point when NIB took over after independence. The aim here was to collect information from the locals on how the irrigation scheme was started, employment opportunities that have come with the scheme and the challenges the scheme faced during its inception. From the brief notes, it is possible to see that Perkerra Irrigation Scheme has had much impact on the growth of Marigat town. Land adjudication and allocation was done in the initial stages of setting up the irrigation scheme and even the neighbouring communities had their land surveyed and adjudicated at government's cost. It is noted that the process was done with due diligence and keenness by strict government officials. It is thus noted that, the scheme was set up with the help of several Mau Mau detainees and later taken over by the locals as the NIB also took over from ALDEV in 1968 which became defunct. There were several challenges which made it difficult for the scheme to run smoothly and the government intervened at sometime so as to continue running. Thus issues have been discussed chronologically and in depth in the chapter.

CHAPTER FOUR

PERKERRA IRRIGATION SCHEME UNDER NIB MANAGEMENT, 1968-1993

4.1 Overview

The chapter dealt with a thematic analysis of major factors that shaped irrigation farming from the takeover by NIB to 1993. There were several factors which determined the running of the scheme from its inception to when Kenya Seed Company introduced seed production. ALDEV which was a colonial project stalled and they handed over all assets and liabilities to NIB at independence in 1963. NIB took over and they arranged to see that all systems were up and running unlike in the case previously when funds were limited. It is noted that the government channeled more funds to NIB than its predecessor and thus it was easy to manage the irrigation scheme. The schemes management offered services to the farmers and the neighbouring community. Several challenges are also discussed as well as how they were mitigated to ensure that smooth running of the scheme was realized. There were also several financial institutions involved in the scheme, their role in the advancement of the scheme are also discussed.

4.2 Change from ALDEV to NIB Management

As indicated in the previous chapter, ALDEV handed over all assets and liabilities to a newly constituted body called National Irrigation Board (NIB) five years after independence. This was due to several factors including insufficient funds and also poor supervision in the former institution. NIB took over the management of PIS in 1968. NIB managed and supervised the day-to-day running of the scheme. This meant that a budget was set aside by the government for the running of the irrigation scheme. PIS incurred costs on the salaries and wages of the farm workers who were permanent and pensionable up to Kshs 600,000 per month.¹⁷³ This included allowances claimed by the staff when they worked overtime which they usually did at the beginning of the planting season. Without the aid of financial institutions, these costs were too high for the scheme to be sustainable and if the national government cuts or reduces its funding, the operations at the scheme come to an abrupt halt. This has been the norm in all irrigation schemes in the country. NIB runs the farming calendar on behalf of the farmers.

¹⁷³ Omondi, OI, 23.12.2014.

Through ALDEV, the government of Kenya bought a tractor for the farm.¹⁷⁴ The tractor was bought in 1974 to be hired by the farmers at a subsidized price. NIB took over from ALDEV as the financiers and managers of the scheme and they have a number of heavy machinery for the farm. Although there was an elaborate security system in the irrigation scheme, some parts of the available machines have been disappearing over time. The management intimated that it has been difficult to tame this theft. The theft of some parts lead to grounding of the machinery for a long period of time before they are repaired. With the growing population of Marigat town and the neighbouring villages, cases of theft increased. The management indicates that repair costs to the machinery are costly and a time almost impossible as the spare parts to some equipment are not available locally and have to be imported. It is thus noted that although the security agencies try to guard the machinery, the parts are stolen and the management incur great loses as they repair the machines and bring them back to normal operation and this wastes time and costs more as the farmers hire other machines which are private and more expensive than the company equipment. In sum, insecurity is a main challenge to the farmers and the scheme management. The farmers incur a lot of expenses as a result of insecurity as they struggle to mitigate its effects. It injures the spirit and will of the farmers and the management of the scheme also. The farm could do better if a proper security system was in place and the area peaceful always.

The mechanization of various activities in the irrigation scheme necessitated the establishment of an electricity sub-station in Marigat town. Electricity has been supplied to the town courtesy of the several running activities in the irrigation scheme which require electric power. This is one of the contributions of growth of the small town to a larger one as most activities depend on electric power. Kenya Power and Lighting Company provided electricity to the town so as to cover the power deficiency. Solar power is also harnessed in the area but in small scale as compared to mains electricity consumption in the area. The solar power is reliable but expensive to harness so few individuals have tapped it in the area. The number of people living in Marigat area before the inception of Perkerra Irrigation Scheme was about 200 households.¹⁷⁵ The inhabitants of the area were nomads who stayed in

¹⁷⁴ Anderson, *Eroding the Commons*, p. 16.

¹⁷⁵ KNA/DC/BAR/3/5/1, Baringo District Political Record Book, 1978, p. 56.

that place for a short period of time before they moved to another place with greener pastures. The only time when there were many people in the area was during the livestock market day and when there were public barazas. This was because there was a central place in the locality where many people preferred to come and exchange their produce for what they did not have. It was only that they came, traded and left for their destinations.

Due to the increased food security in the area, farmers were stable and they increased the number of children born. The farmers increased the number of children born per family as they were assured of food.¹⁷⁶ The farmers increased their population with a vision to expand family labour also. Famines and droughts ceased as the farmers no longer depended on rain fed agriculture and livestock products only. Irrigation farming had ensured that food was available throughout the year, thus they increased their children without any fear of starvation. Children in the area got a balanced diet due to the availability of variety of food crops from the irrigation scheme and thus they increased in number.¹⁷⁷

NIB thus being the main controller of PIS controls all the daily activities of the farm. But there are those institutions which help the farmers acquire money to plant and tend the crops before they sell them. KCB, HCDA, KARI and Kenya Seed Company are the main subsidiary institutions that work hand in hand with the farmers to ensure all round production. These institutions offer credit to the farmers and NIB at the end links farmers to these institutions so as to payback their debts. Loans are advanced to the farmers by these institutions and at the end recovered when the farmers sell their produce. Some of these institutions have set base in Marigat town for easy access to the farmers and proper coordination of activities. Financial institutions have transformed farming in that the farmers are able to produce the best quality of produce in large quantities due to the strong financial base they have. Farmers spend the right amounts of money on the farm production because they have loans.

¹⁷⁶ Anderson, *Eroding the Commons*, p. 45.

¹⁷⁷ R. Obudho and J. B. Ojwang (eds) *Issues in Resource Management and Development in Kenya* (Nairobi: East African Educational Publishers, 2000), p. 29.

4.3 Contributions of Financial Institutions

Irrigation farming is financially demanding and the yields depend on how much money one allocates to the crops. The more the funds assigned to a farm, the higher the yields at the end. This is informed by the fact that almost all the functions in farming require money for execution. From tilling the land to buying seeds, planting them, watering, weeding and harvesting. PIS farmers have had a long history with shortage or insufficiency of funds to increase production. The growth of the irrigation scheme has thus experienced encouragement of financial institutions to set base and provide the crucial services in the area. Farmers who depended on cattle keeping only have a difficult time during their farming. Therefore, there are several financial institutions that help the farmers secure loans so as to do good farming.

Horticultural Crops Development Authority (HCDA) is a government parastatal that develops and regulates the horticultural industry.¹⁷⁸ It was established to oversee the promotion and advancement of horticultural products either for export or local consumption. Its mandate is to facilitate the development, promotion, coordination and regulation of the industry. HCDA also offers technical advisory services and loans in small amounts to smallholders in the industry and at the end market the produce for the farmers. Its other main role is to educate and train growers on production, record keeping, harvesting and post-harvest handling. The body advises farmers especially on maximum residue levels and European Union Regulations since most European countries are the main consumers of Kenya's horticultural products. The authority has branches in many parts of the country and one is in Marigat town. They work with research and training institutions to generate new technologies and develop a curriculum for farmers training. They are working with farmers in PIS in the production of tomatoes which meet the required standards. HCDA records show that over 200 farmers work with them in Marigat and that farmers are currently repaying their loans. Since HCDA also offers advisory services, it is its duty to register and monitor exporters, handlers and processors of horticultural produce. This is to ensure that the farmers are not disadvantaged as to ultimately be unable to pay back their loans. HCDA also monitors market prices of export and local produce so as to gauge when and how to sell their produce.

¹⁷⁸ Ngigi, *Review of Irrigation Development in Kenya*, p. 26

Farmers cooperatives are those businesses owned and controlled by the farmers themselves. Marigat Farmers Co-operative Society is one such business found in Marigat town and with members from the irrigation scheme. The members are economically empowered by the society and they elect a board of management to make decisions affecting the current and future activities of the cooperative. Membership to the institution was by pooling shares together and one should be a farmer at the scheme to be a member.¹⁷⁹ According to sources in the cooperative, the current membership is 2000 members.¹⁸⁰ All these members are active and till their lands every year. They own shares in the cooperative according to the returns they made when joining. Members can increase their shares in the institution so as to raise the loan limit they are entitled to. Farmers are advanced loans by the cooperative at very low interest rates. The loans are processed within the shortest time possible so long as all the records of the farmer are in good condition. Those farmers with good credit statements are given a priority and they get their financial requirement at a good time and do their farming without many hurdles. Perkerra irrigation scheme brought together these farmers to form the cooperative society in 1977 so as to gather for them. They had experienced problems when the government stopped funding and subsidizing through ALDEV.¹⁸¹ Farmers decided to form a cooperative so as to boost their activities and save them during times when all did not go as planned.

Kenya Commercial Bank (KCB) is a registered financial services provider with a majority shareholding by the government of Kenya. KCB has branches in many towns in East Africa and has grown to be one large financial institution. KCB has a branch in Marigat town which was opened in 2000 and works with farmers in the Perkerra scheme. NIB and KCB have partnered to boost crop yield in the scheme. Due to crop failures in the scheme possibly due to crop diseases, KCB provides farmers with a crop insurance policy.¹⁸² This is an insurance cover which ensures that in case crops fail the farmer is compensated and will

¹⁷⁹ R. Chambers, *Learning from Project Pathology: The Case of Perkerra* (Nairobi: East African Educational Publishers, 2005), p. 48.

¹⁸⁰ Kator, OI, 30.11.2014.

¹⁸¹ E. Aseka, "Urbanization" in W. R. Ochieng (ed.), *A Modern History of Kenya: 1895-1980* (London: Evans Brothers, 1989), p. 10.

¹⁸² Chepkurgat, OI, 30.11.2014.

be able to meet other commitments. In the year 1974, KCB provided 20 farmers with loans amounting to two hundred thousand and the farmers refunded the money in record time.¹⁸³ KCB since 1974 has been providing loans to PIS farmers based on their previous financial records. KCB has field officers who have to ascertain that the crop failure was purely accidental and deserves compensation. The farmers claim that the insurance cover helps them a lot in case of drought or crop disease outbreak.

KCB sometimes sponsors farmer training so as to educate them on the available funds for farming. Records indicate that KCB offers grants to the farmers during such training sessions. Grants are free and are not repayable like loans. In general, the bank offers grants to the farmers as an incentive for keeping up as its clients. Intervention of banks is necessary during planting season when farmers have insufficient funds. KCB offers loans to the irrigation farmers at a discounted interest. NIB has an agreement with KCB and they offer the loans to farmers in consultation with the NIB management clearance team. They recover their loans after harvest when the produce is sold by NIB for the farmers. These loans assist farmers to plant all through the year as they remit the other previous loan balances. Farmers expressed appreciation for the loans availed by KCB and claimed that they are of essence since they repay in small amounts and do not feel much pinch. It is noteworthy that KCB which is located near the irrigation scheme has customers from the farm who invest in it due to availability of money from the farm produce.

At the beginning of the crop season, farmers need to acquire seeds for planting their portions. In PIS, the farmers are restricted to buying certified seed so as to avoid infections and to achieve a desired crop yield. NIB coordinates and manages the water availability in the furrows with the help of its water engineers. They control the amount of water and duration of watering. Due to this, the farmers are allowed to plant certified seed from the recognized distributors so as to have the desired harvest at the end of the season. Kenya Seed Company (KSC) is the main supplier of seeds to the farmers in the scheme.¹⁸⁴ This company was incorporated in 1956 and its certified seeds have been used in the scheme since that time. Its main mandate is to research, develop, market and avail certified top quality, high yielding

¹⁸³ NIB Annual Report, 1975, p. 28.

¹⁸⁴ NIB Annual Report, 1980, p. 39.

seeds of various varieties within Kenya and beyond. This mandate is implemented in PIS where NIB just orders seeds for the farmers to use in the fields. The quality of the seeds from KSC has been improving over time and their yields are also high as compared to other companies.¹⁸⁵ The maize seed varieties produced at PIS are for the medium and low altitudes and include H513, H515, H516, PH1, PH4, DH01 and DH04. The seeds have had a good germination record and success.¹⁸⁶

The other main benefit farmers get from the seed company is that it offers seeds to the registered farmers on credit then at the end of harvesting KSC buys the produce and deducts the loan at a percentage acceptable to the farmers. In case the seeds fail to germinate, the company is willing to compensate the farmers. Interviewees confirmed that the company compensates them when its seeds fail to germinate. It is also noted that the company offers high quality seeds to the farmers so as to get a good yield during harvest and store them to be distributed to the many other parts of the country and beyond. The seeds are available to the farmers at the KSC depot in Marigat town. These seeds are certified and their officials check them to ascertain that the seeds are not tampered with. They ensure all these processes are adhered to so as to ensure the best harvests are achieved.

4.4 Corporate Social Responsibility (CSR)

The Parastatal running the irrigation scheme is also involved in CSR. This is a company's or institution's efforts that go beyond what may be required by the regulators or environmental conservation groups that protect the rights of the communities. NIB is mandated by the government of Kenya to run the daily activities of PIS and since it is a parastatal it has several programs under it that help give back to the community. This involves incurring short-term costs that do not provide an immediate financial gain to the parastatal but instead promote positive social and environmental change. NIB has a lot of power in the communities around the scheme and in the agricultural economy nationally. They control a lot of assets and may be having billions in cash allocated nationally, some of the money is channeled to Marigat branch and some are there for disposal to the community. Real time and money has been committed by NIB to environmental maintenance in the area and also various social welfare initiatives to benefit employees, customers and the surrounding

¹⁸⁵ Limo, OI, 21.12.2014.

¹⁸⁶ Omondi, OI, 23.12.2014.

community at large.¹⁸⁷ It is thus noteworthy that all these activities undertaken by NIB, which is in charge of day to day running of the scheme, do not benefit the scheme directly despite the huge expenses met. It does benefit the workers, neighbouring communities and traders who in turn later do good business with the scheme and promote its products. The community benefits as well as the parastatal also.

Marigat Sub-District Hospital on the fringes of Perkerra Irrigation Scheme is the major hospital in the area. The hospital was established in 1955, but it became fully operational in the 1980s. It has several medical equipment but due to the high number of patients who visit the facility, it is a times overwhelmed by the numbers. It is reported that almost all the employees in the irrigation scheme including the neighbours depend on the hospital for medical purposes. Since this is the main medical facility, the NIB has been supporting its operations over the years by giving the management some funds. It is indicated that between the year 1978 and 1990, NIB has supported the hospital to a tune of Kshs 6 million. This did not include equipment donated by NIB to the hospital.¹⁸⁸

A mobile health care service is provided also around the scheme to benefit the neighbouring communities. These are those people who many work in the irrigation farms but live outside the scheme. Informants report that the medical clinic was provided once every two months and NIB facilitated the clinics. This was aimed at eradicating easily managed communicable diseases in the community and at the end increase productivity of the workers when they are healthy and active in work. The long term impact is the guaranteed workforce from the health workers, happy neighbouring community members and a guaranteed market for the PIS farmers' goods. There is also a centre in Marigat which was established for the purpose of training and advising mothers on basic nutrition skills to address the malnutrition problem that was prevalent in the area. Marigat Community Capacity Support Programme (CCSP) has been supported several times by NIB. This centre offers its services to the spouses of employees and casual labourers who work in the irrigation scheme.¹⁸⁹

¹⁸⁷ Omondi, OI, 23.12.2014.

¹⁸⁸ NIB Annual Reports, 2001, p. 19.

¹⁸⁹ Limo, OI, 21.12.2014.

Due to the large population of workers on the scheme, there was need for establishment of a school for their children.¹⁹⁰ As Rodney pointed out, education is crucial in any type of society for the preservation of the lives of its members and maintenance of the social structure.¹⁹¹ This informed the idea by NIB to establish Perkerra Primary School in 1984 to cater for the pupils of the tenants and their neighbours.¹⁹² This institution was funded by NIB for sometime before it was officially handed over to the central government to run it. This primary school has been instrumental in ensuring that all school going children of the workers get primary education cheaply since it is a public institution. The school has helped reduce the number of idle underage children and empowered them with knowledge.¹⁹³ They also participate in co-curricular activities while in school and they excel most of the times.

During the field research, it was reported by some informants that specialized team games sponsored by NIB in the 1970s influenced the upcoming football and volleyball games in the area but funded are now funded by the Baringo county and national government. The current teams are based on the old teams which were established by the scheme. It is thus noted that the intervention by the government saved the games and sports which had been set up by NIB but lacked funding. The setting up of their irrigation farming was thus in a big way contributing to the advancement of games and sports in the area.

Marigat primary school which is situated near the scheme was started in 1956 and has benefited from the NIB a number of times. Classrooms have been constructed with the funds provided by the parastatal to the school and this has promoted education standards in the area around the irrigation scheme.¹⁹⁴ This was a shift from the indigenous African education which was considered outstanding in its close links with social life, both in material and spiritual sense. It also had a collective nature and it was progressive in development in conforming to the successive stages of physical, emotional and mental

¹⁹⁰ Kiptoon, OI, 12.12.2014.

¹⁹¹ W. Rodney, *How Europe Underdeveloped Africa* (Harare: Zimbabwe Publishing House, 1981), p. 263.

¹⁹² Thiongo, OI, 22.01.2015.

¹⁹³ Kabutie, OI, 25.11.2014.

¹⁹⁴ G. Ledec, "Effects of Kenya's Bura Irrigation Settlement Project on Biological Diversity and other Conservation Concerns", *Conservation and Biology*, Vol. 1, Issue 3, 1995, p. 26.

development of the child.¹⁹⁵ NIB helped to expand this scope by the expansion of modern formal schooling in the area. During educational forums also, the branch manager is available to offer guidance to the learners and the public. This is a great investment by NIB and it proves how much they are committed to the wellbeing of the community living at the periphery of the irrigation scheme.

River Perkerra is the only permanent source of water for the people living around the irrigation scheme. This is a permanent river but its level goes down during the dry season to a point where the locals cannot access the water. Water from the river also, is not good for human consumption as it is dirty. Thus, during drought, which affects the area often, there is no way the community can stay without water. Thus, a dam was constructed to supply the farms with water always. This dam comes in handy during prolonged droughts and cows are allowed to drink from it with close supervision from the company officials. This saves the few herds held by the community members. The cows are restricted so that water is not contaminated and the level is sustained.¹⁹⁶ NIB has a water engineer who inspects and ensures that availability of water is guaranteed and its quality maintained for human consumption. Informants indicate that the engineer also offered advice to the farmers on how to preserve water and ensure they are safe for human consumption. They also offered clean water for consumption by the farm workers and also by neighbours.

Availability of health workers in the area ensured that proper sanitation was adhered to. Proper waste disposal in villages has been a practice. Informants indicate that meat for human consumption is never slaughtered without proper inspection by health workers.¹⁹⁷ The meat should be given a clean bill of health before consumption and this has reduced health related deaths to a large extent. The mortality rate of children in the area has reduced significantly, which means the population of young ones has increased and thus the number of people in the area has gone up too. All children in the neighbouring villages have been immunized against communicable diseases as the parents are aware of the dangers. They have been taught a lot by the health workers who conduct mobile clinic days as earlier indicated. All

¹⁹⁵ Rodney, *How Europe Underdeveloped Africa*, p. 377.

¹⁹⁶ Chepkurgat, OI, 30.11.2012.

¹⁹⁷ Limo, OI, 21.12.2014.

these are funded by the Perkerra Irrigation Scheme management. Thus there has been a population increase in all the area bordering the scheme due to awareness and food availability. The population has increased and the area is now more populated than when it was inhabited by pastoralists only.

Irrigation farming in Marigat brought together several communities who were previously living far apart. Irrigation farming is labour intensive and thus required the services of many people. The Tugen, Pokot, IlChamus, Turkana and Kikuyu communities all converged in Marigat to farm. The Tugen and Ilchamus communities are the main owners of the farms and therefore influenced many of the decisions in the farm. They are the ones who welcomed the other communities to the area and inducted them in to the norms and cultures of the area.¹⁹⁸ They accommodated the other communities and embraced some of their traditions.

The process of intermarriage happened in the area when the many different communities intermingled with each other. The Tugen and IlChamus did not normally intermarry with other communities. But after staying with other communities for a period, they became accustomed to them and began to intermarry. The communities initially viewed each other as enemies but with time they saw the benefits of intermarriage and embraced it wholly.¹⁹⁹ There are many children now who are the results of two different tribes but they intermingled and live well with other children. There are children of Kikuyu descent but have lived in Marigat since the time they were born. In sum, the intermarriage has closed the gap of tribal suspicion among the communities and has promoted peaceful coexistence among them. This has helped the communities to focus on development issues rather than the usual intertribal cattle raiding and wars. The young children and old members of the communities living in Marigat relate well and live in harmony. The only major problem is the conflict with the herders from the vast Pokotland who attack the settled small scale farmers in Marigat.

Tugen and IlChamus communities who occupied the Marigat valley were traditional worshippers. They practised African Traditional Religion. The locals had several sacred

¹⁹⁸ M. A. Ogotu, *A Introduction to African History* (Nairobi: University of Nairobi Press, 2007), p. 22.

¹⁹⁹ Marigat, OI, 25.11.2014.

shrines but they were located at the hills surrounding the valley.²⁰⁰ They consulted their gods especially during times of disasters and when there was inadequate rainfall. The communities according to informants respected their shrines so much and up to now they still value those sites. They even preserve the shrines and if one messes with them they are met with severe punishment from the elders irrespective of their origin. The shrines are holy and are still maintained although not frequently used as they were in the past.

Missionaries and explorers like Thompson passed through the valley but due to the harsh climate and terrain, it is recorded that they did not settle there or establish any institution. The missionaries reported sighting the indigenous irrigation systems but they did not settle in the area. During the colonial period, Mau Mau detainees were used in the farm and upon independence they were released. Nubians who engaged in trade with the local communities on their farm inputs settled at Marigat. They were Muslims and in 1974 they established the Marigat Mosque.²⁰¹ This mosque serves all the Muslim population in the area and the land which is established on was provided by the community. The mosque supports several initiatives in the area. The mosque has more than 400 regular worshippers. These worshippers have lived in Marigat for a long period of time and help in finding solutions to the many problems arising in the scheme.

As soon as the irrigation scheme was established, the workers in the scheme sought a way out for worship. They established churches to help them in spreading the gospel and converting the locals to Christianity. By 1980, there were branches of three churches in the town: Full Gospel Churches of Kenya, African Inland Church, and Roman Catholic Church.²⁰² They conducted their services in Kiswahili so as to accommodate all the congregants without leaving out any tribe which could not understand the local dialect. The churches have continued to be in service up to now in the town and perform other roles in the community. Thus it is worth noting that the community embraced the churches after the inception of Perkerra Irrigation Scheme which brought in many people together. The churches also acted

²⁰⁰ Kaputie, OI, 10.12.2014.

²⁰¹ A. Hazlewood, "Economics of Religion" in A. Hazlewood (ed) *The Economy of Kenya: The Kenyatta Era* (New York: Oxford University Press, 1979), p. 80.

²⁰² Bowen, OI, 25.11.2015.

as catchment areas for the locals. Officials of the churches gave permission to visitors from PIS to educate the locals after church services on Sunday.

Another critical social development was the establishment of many competitions organized by the scheme for its workers and the community. Although there were indigenous competitions like wrestling, the games were not well organized and there was calendar for traditional games in the community. The establishment of the irrigation scheme led to the formation of several sporting teams to refresh and reward their workers. The scheme's management funded tournaments to be competed for by the villagers and the workers. Prizes were put in place for the locals and teams were formed. NIB funded some of the tournaments from 1974 to 1990 when they had financial constraints and they temporarily stopped their funding.²⁰³ Among the games played were football, volleyball and athletics. These games were fully funded by the NIB and the winners were rewarded accordingly. According to an informant, the teams which participated were not only those within the scheme but also the neighbouring communities.²⁰⁴ This helped a lot in bringing harmony and socialization within the community. Those youths who could be idle and indulge in crime were made busy through the games and they also earned.

4.5 Factors Affecting the Scheme's Development

There are several factors that act as a hindrance to smooth running and growth of irrigation schemes, especially PIS. They can be mitigated but some recur after a short period of time. During the period 1968 to 1993, PIS experienced several problems and most of them were mitigated.

A pest is a plant that causes damage to crops by feeding on them or competing with them for basic nutrients. They cause problems by damaging the crops and affecting its expected yield. Rodents are the most dangerous as they gnaw on the seeds of plants while underground and when the crops harvested they destroy them in the temporary store. PIS has the main problem of pests from plants more than the animals. Plants which grow and compete with the planted crops are the main problems of the irrigation scheme.

²⁰³ M. M. Oludhe, *The Story of Kenya: A Nation in the Making* (Nairobi: Oxford University Press, 1986), p. 12.

²⁰⁴ Lengiya, OI, 25.11.2014.

During the ploughing of the farms, there are those shrubs which even after being left to dry and sprout again after the rainy season and also when the irrigation begins. These plants are so resistant to drought and even with the intense spraying by the farmers using herbicides do not dry up.²⁰⁵ They compete with crops for the nutrients and if not detected and removed early, they can cause the crops to dry up. Some weeds can lead to the abandonment of parts of the scheme as they have deep roots and spread so fast they not only become unmanageable but cause crops to dry.

Prosopis juliflora is a plant native to South America but is now a common weed in the Perkerra Irrigation Scheme. It is commonly known as *Mathenge*.²⁰⁶ According to informants, the plant is named after the local administrator who popularized its growing in the area. The spread of the plant was spearheaded by the government through the provincial administration. It was introduced to Baringo District in the 1960s and 1970s to curb erosion which was so rampant.²⁰⁷ Erosion had become a great challenge in the area heavy downpour that washed away the top soil and created gulleys. These gulleys were prevented through the introduction of the drought resistant *mathenge*. This tree was initially suitable for curbing soil erosion as it was evergreen and its roots spread fast, holding the soil together.

The scheme management now categorises the plant as a threat because it has spread so fast and covered almost all the available farmland. Informants claim that the weed is very invasive.²⁰⁸ The seeds of the plant hardly fail to germinate when they fall on the ground. They have a long life and a high germination rate. It is also rampant in the area because the seeds are dispersed by wind and the plant has a rapid maturation to seed producing stage and strong vegetative growth which is a threat to other plants growing in the area. Cases of animals losing teeth have been reported by the farmers. The farmers are reported to have complained

²⁰⁵ Cheptoo, Chepkonga, OI, 14.12.2014.

²⁰⁶ Chambers, *Learning from Project*, p. 56.

²⁰⁷ T. J. Basset and D. Crummey, "Contested Images, Contested Realities: Environment and Society in African Savannas", in T. J. Basset and D. Crummey (eds), *African Savannas: Global Narratives and Local Knowledge of Environmental Changes* (Oxford: James Currey, 2003), p. 35.

²⁰⁸ Limo, OI, 21.12.2014.

and even filed a court case due to the impacts of this plant on their animals.²⁰⁹ The tenants as earlier indicated depend on animals and plants for their basic survival so if the plants destroy their animals it lessens their economic ability to plant crops in the farm and this affects the growth and sustainability of the irrigation scheme. Informants also indicate that the weed has poisonous thorns which if it pricks, it leads to amputation of the pricked organ. The pricked organ has to be amputated as it becomes rotten. This causes distress to the farmers and forces them to incur unnecessary cost of treating the affected and this funds could have been used to do other farming activities.

When land is tilled over and over again, it loses its fertility and becomes dependent on fertilizers. PIS has been farmed continuously since 1954 and thus the soil quality has degenerated. Crops planted on the farm continue to drop in yields year after year due to the soil losing its fertility. Farmers have to apply more fertilizer as seasons change and change the type of fertilizers so as to add nutrients to the soil. According to some informants, they experience reducing crop yield every year as the soil becomes too low in nutrients as farming continues. The crop yield in 1965 was approximately 10 bags of maize per acre without use of artificial fertilizer but by 1980 it was compulsory to use synthetic fertilizer so as to harvest any crops.²¹⁰ It was realized that as tilling continued, the farms deteriorated and needed further fertilization and new approaches to farming.

There have been cases of flooding in the scheme and they have affected the expected crop yield. Flooding is the overflowing of water that submerges land that is usually dry. This also implies to the overflowing of rivers which covers all the land that was usually arable making it to be water logged and not suitable for the usual planting.²¹¹ Since 1966, Perkerra Irrigation Scheme has experienced several cases of flooding on the lower parts of its irrigated land. This is due to the fact that the land is slanting to the lower part. During the rainy season, there is much rainfall at the highlands and the tributaries of River Perkerra accumulate its water to the main river Perkerra. This water flows in a larger volume and it breaks the river banks. The burst river banks allow water into the farms at a higher speed and cannot be controlled since

²⁰⁹ Chemjor, Rose, OI, 22.01.2015.

²¹⁰ National Irrigation Board, Annual Report, 2001, p. 69.

²¹¹ Ngigi, *Review of Irrigation Development in Kenya*, p.78.

they do not go through the usual sluice gates. According to informants, the river bursts its banks during the rainy season between May and August every year. The water causes a lot of damage to the furrows as they sweep away the soil banks and embankments. According to archival sources, availability of graders for draining the flooded areas.²¹² This points out that this problem of flooding has been persistent. In the year 1964, the scheme's management is recorded to have requested for graders to help deal with the menace. During the rains the problem was prevalent. The scheme had no grader to deal with the situation. It was thus recommended that the manager was to approach the County Council of the Central Rift with a view to hiring one of their heavy duty graders. They did the hiring for many years until when the national government in 1980 intervened and bought several graders for the scheme.²¹³ The graders were used to repair the dykes and to drain stagnant water from the farms.

During this period, under NIB, there are cases of insecurity reported which are deemed to hinder proper farming. This is the state of being open to danger or threat. It may be a threat from you or from external forces which include neighbours and those from far with an ulterior motive. Apart from the District Security Committee headed by the District Commissioner Baringo there was a security committee set up for monitoring the Mau Mau detainees and caring for their welfare. This committee comprised of prominent people in the society and the warders. Its main mandate was to ensure that the detainees worked as required and did not escape the manual work. This committee was so powerful and it was respected by the locals because it made recommendations on various issues to the government officials.²¹⁴ It was mandated with ensuring peaceful coexistence between the local inhabitants of the area and the workers who came to the scheme from far and wide. The locals point out that when the detainees were released and casuals used on the farm, the committee still functioned but now as a liaison committee between the NIB and the community members. It promoted the peaceful and positive interaction with the local communities.

²¹² KNA/DC/BAR/4/2, Annual Report, 1964, p. 13.

²¹³ B. Derman, R. Odgaard and E. Stajaad (eds) *Conflict over Land and Water in Africa* (Oxford: James Currey, 2007), p. 13.

²¹⁴ Yusuf, OI, 12.01.2015.

The sole purpose of the scheme is to produce yields for the farmers and earn the maximum income. Irrigation farming was introduced to the valley so as to transform the economy of the residents from pastoralism to farming which was more reliable. However, not all farmers abandoned pastoralism. They combined the two practices and sub-divided their herds and had them herded by neighbours. Informants indicate that the cattle were sold during the seasons when maize and other crops harvest was low and the debt incurred on farming cleared from the proceeds.²¹⁵ The cattle thus acted as a security asset to the farmers. If the cattle were disturbed or attacked by wild animals and affected, it is intimated that most farmers were affected a lot and their economy was at stake.

Cattle rustling is a new form of cattle raiding. Initially, cattle raiding were practised by Tugen, Pokot and IlChamus communities living in the valley against their neighbours. The raids were carefully planned and executed with the blessing of community elders. It was a common practice aimed at replenishing their herds and all the communities participated in the act. In Tugen community, warriors carried the raids after getting permission from village elders gathering *Kokwo* and they were blessed by the community elders.²¹⁶ They attacked neighbouring communities like the Pokot, IlChamus and Turkana and purposely stole cattle from them. According to some informants, it was a taboo to kill human beings during the raids unless there was a strong resistance.²¹⁷ Also men only were killed and for that matter armed men who defended their herd. Women and children were never targeted as they were considered helpless. It was a common practice among the communities not to involve women and children in any raid or war. They were protected by the taboos and traditions and this was accepted and practiced by all communities. The cattle's raiding was practised after long droughts to enable the young men start families and the older ones replenish their stock. There were cases of cattle raids which were successful without any deaths reported and when the other communities revenged the Tugen lost cattle and went back to farming. In 1970, the Tugen community raided their neighbours the Pokot and made away with 6000 heads of

²¹⁵ Yusuf, OI, 12.01.2015.

²¹⁶ Kandagor, *Rethinking British Rule*, p. 107.

²¹⁷ Kipkosiom, OI, 28.11.2014.

cattle.²¹⁸ There was no case of casualties reported and the Pokot retaliated with an attack the same year although they were not successful since the Tugen staged a tough resistance. Tugen elders again allowed their youth to carry out an attack on IlChamus the next year 1971, the Tugen youth were successful and came back with 2000 heads of cattle but lost two warriors.²¹⁹

Due to the population increase and the rampant reports of crime, some committees recommended the establishment of a fully pledged police post in Marigat. The government reviewed their concerns and in 1975, Marigat police post was established. It was a small police post with four police officers only.²²⁰ They were engaged in combating crime in the growing Marigat town and their duties were limited due to the vast area covered. The police post's capacity was increased over time. The implications of this police post were many and the cases of insecurity were reduced and managed at most times. Accordingly, cases of farm produce theft were stopped and farmers kept their produce in safe stores due to the presence of police officers. The police post was now upgraded to a police station and currently it is a police division with a large number of police officers. The upgrading of the police station was done in 1992 after cases of insecurity increased in the area.²²¹ They are now fully equipped to man the entire district and the Perkerra Irrigation Scheme is now safe more than in the past before its full operation.²²² With the growing number of traders there is also a possibility of introduction of thieves who swindle the farmers. This is experienced after harvest of which many farmers are paid their dues and they are swindled by thieves. In sum, the Marigat Police Station was established to boost security in the scheme and the neighboring communities and it has expanded to help most of the farmers secure their income.

Basin Irrigation is used for the plants to nourish all through the planting season.²²³ This method of irrigation is possible and easy to use in the valley as the water use gravity to

²¹⁸ Kandagor, *Rethinking British Rule*, p. 20.

²¹⁹ *Ibid*, p. 21.

²²⁰ KNA/PC/RV/3/1/368, Confidential Reports, 1964-1974.

²²¹ *Ibid*, p. 27.

²²² KNA/DC/BAR/27/5/4/1, Annual Report, Marigat Irrigation Scheme, 1954, p. 37.

²²³ H. G. Blank, *The changing fate of irrigation in Kenya: opportunities for anticipating change in eastern and southern Africa*, (Nairobi: International Management Institution, 2000), p. 16.

flow. The land is slightly slanting so there is no need to pump water as it flows to the farms effortlessly. The channels which water flows through are maintained by NIB and the water use also determined by their water engineer. Casuals are employed to ensure that there are no logs, twigs or barriers which block water from flowing through the furrows to the farms. There are sluice gates which are the control towers for the water flowing to their farms. During the rainy season which is short in the valley, the farms are left without irrigation water and it is rain fed. This is the time when the sluice gates and the furrows are now repaired. The inhabitants are contracted and farm tools like shovels are also used.²²⁴

Planting is mostly manual but at times plants like maize need seed-planters since the farms are large. It is worth noting that most farmers own small farms and thus they use family labour as earlier indicated. Kenya Seed Company (KSC) contracted the NIB and they accepted to do seed production for them. They always breed maize and it is labour intensive so the farmers are given money and seeds for them to employ casual workers to plant and then at a later stage weed for them the maize. During harvesting season, NIB provides tents. These tents are provided by NIB for farmers to store their produce temporarily as they await transportation to KSC depots or as they are waiting for market. For the maize seeds, farmers dry the maize to a required moisture content then they are shelled to separate the cob from the seeds. The Sheller belongs to NIB and the farmers shell their produce at a fee. The machine is efficient according to the informant as it shells up to 5000 tons of maize per month.²²⁵ The casuals who work at the sheller, those who spread and pack the maize in sacks are locals and they are paid by the parastatal.

Marigat branch of the NIB has offices in the farm which coordinate and run the daily activities of the expansive irrigation scheme. These offices have staffs that are on permanent and pensionable terms. The workers in the offices are mainly the local inhabitants since they were employed to try and help liaise with the locals. This required individuals with good geographical and traditional knowledge of the area. NIB employed the locals and in their office the ratio of locals versus the employees from other parts of the country is

²²⁴ NIB Annual Reports, 1980-1991.

²²⁵ Omondi, OI, 23.12.2014.

high.²²⁶ Thus, the irrigation scheme has done its best to employ many locals who were herders or even professionals in other fields. It has provided job opportunities to many people who could otherwise be not so well off as compared to now when they are working at the irrigation scheme and are able to sustain their families. During the peak season, approximately 300 people work as NIB cashuals and 8 locals are always on permanent and pensionable basis in the farm.²²⁷

4.6 Summary

In this chapter, an analysis was drawn on the irrigation scheme from the time of ALDEV handing over to NIB through to when Kenya Seed Company introduced maize seed through an agreement with NIB management. ALDEV, which was established by the colonial government to reclaim arid and semi-arid lands, became financially unmanageable as the Mau Mau Emergency set in. It was therefore dissolved and its activities including management of Perkerra stalled for some time. It was after independence that the Kenyan government now funded NIB and through an Act of Parliament, it took over the Perkerra Irrigation Scheme. From the study, it was noted that the management of the scheme participates in community activities through Corporal Social Responsibility. They offer services which are outside their requirements so as to benefit the community. These services are extremely necessary for the community and due to poverty they cannot afford themselves, so they are helped by the scheme management in cooperation with other organizations. It was also realized that several financial institutions are established in the area to offer funds to the farmers at an interest. But there are several challenges which affect the scheme daily running which are not a strange phenomenon but solutions are always available though damage may have been caused earlier and hard to recover. Thus, these have been thematically analyzed in this chapter.

²²⁶ Chepsongol, OI, 12.12.2014.

²²⁷ Ibid.

CHAPTER FIVE

KENYA SEED COMPANY AND PERKERRA IRRIGATION SCHEME, 1994-2013

5.1 Overview

This chapter deals with the several factors that led to the advancement of the Perkerra Irrigation Scheme from a horticultural dependent scheme to an advanced Kenya Seed Company production farm. It provides an analysis on how the scheme was slowly transformed into one of the best breeding grounds for seeds in the country. The advantages of the company and the challenges that came with it are analyzed and discussed in depth. These factors are discussed in depth and elaborations drawn from them as their roles in the development of the county and the country at large are reflected on. The roles of KSC and the scheme management as well as the tenants have been reflected on thematically with a view of advancing irrigation farming which is more dependable than the other farming methods.

5.2 Emphasis on Seed Production by KSC on the Scheme

The KSC has made PIS one of its main seed production zones. They plant the seeds in the farm as they try to experiment on some new varieties.²²⁸ The main change was in 1994 when they introduced maize seed breeding in the scheme. Perkerra is one of the pilot schemes for the company. The company experiments on the different kinds of plants in the farm and the farmers are given that opportunity to plant them for the company. Certificate of breeding to the farm was issued in 1996.²²⁹ With the certificate the scheme was fully pledged to produce KSC seeds and be allowed to distribute in the market. For a company or institution to be allowed or awarded this certificate, it has to prove that it can produce quality seeds. Seeds from the farm should be free from contamination and viable in the required region for them. Maize seed production in the farm was introduced in 1996 and the plants flourished in the farm. This farm was established as the main area for maize seed multiplication. Seeds were now produced in bulk.

²²⁸ J. Carlsen, *Economic and Transformation in Rural Kenya* (Uppsala: Scandinavian Institute of African Studies, 1980), p. 76.

²²⁹ *Ibid*, p. 27.

Consumer satisfaction according to informants has been positive since then up to now.²³⁰ The quality has been maintained and even raised for the farmers to realize high yields when they plant them in different locations. During planting the farmers are given the male and female seeds. They are instructed on how to plant the seeds and ensure that the female plants will be effectively fertilized by the restricted male variety. When the crops are almost mature, the male crop is harvested earlier than the female ones are harvested to be stored as seeds. Planting is restricted so that at the time of harvest all the male maize are cut down and the farmers allowed to take them to their homes while the female ones are collected and sold to the company. It was generally agreed by informants that introduction of maize seed reproduction in 1996 was a turning point in the scheme. These seeds fetch good money for the farmers and are more profitable than the other produce. Cash is availed to the farmers immediately after delivery of the seeds and proper inspection. It is known in the farm that during maize seed harvest all cooperatives will get enough money and the farmers will be able to settle all their debts. In 1996, the crop yield was 25 bags of maize per acre but with use of several varieties of fertilizer to boast the crop yield. In the year 2010, the crop yield per acre was 20 bags of maize.²³¹ This drop has been experienced for long and according to the NIB officials, it is because of the soil degradation. The soil can no longer support planting of many crops without application of fertilizer and it also reaches a maximum intake whereby the soil no longer takes in fertilizer but the crop yield just drops down.

KSC has certified the scheme as a seed breeding zone. They establish and test new varieties of seeds on this land. The company plants one type of seed in the land for a longer period of time and in the process the soil is degraded. Proper soil management is not observed in which the types of plants to be planted on a land ought to be rotated from season to season so as to ensure proper soil aeration and nutrient circulation.²³² Cereals should be planted one season on a farm and the next planting should be leguminous crops so as to encourage nitrogen fixation. It is thus

²³⁰ Kator, OI, 30.11.2014.

²³¹ Ibid.

²³² K. Borgin and K. Corbet, *The Destruction of a Continent/ Africa and the international Aid* (New York: Harcourt Brace Jovanovich, 1982), p. 12.

noted that farmers in Perkerra Irrigation plant only the one crop required by the company and follow the regulations which restrict planting to one crop and no intercropping is allowed at all. Maize is the main crop in Perkerra so the land is under its farming for almost the whole year and this is the main reason for the degradation of the soil.

The crop yield has been declining over the years because of mono-cropping. The farm has been yielding below the expected yield and despite the farmers investing heavily on the farm, they realize low yields. The yields become low the years and also the quality of the seeds. The seed quality deteriorates so much with the period in which plants are cropped and thus the farmers are paid less money as compared to the initial times when the soil was under the natural fertility or without even use of artificial fertilizer.²³³ It is no longer possible to plant crops in the scheme without use of synthetic fertilizers. The farmers have to apply all types of fertilizers on the land. They begin with planting the seeds with fertilizers then apply top dressing fertilizer on the crops when they germinate and also spray the crops after sometime so as to prevent pests and at the end the soil is degraded with the introduction of all those chemicals on it.

Due to the consistency in KSC's purchasing power and NIB management, there was a sense of food security in Marigat area. Food security is achieved when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life.²³⁴ This has been almost achieved in Marigat area after the introduction of irrigation farming. Crops which used to dry up before harvest due to insufficient rains now grow to maturity. Food is now in abundance and the farmers get to enjoy a balanced diet unlike the past times when they depended on one variety of crop. They can now access various types of foods all through the year at a smaller cost than when they used to wait for market days only. This is the ability of an area to be peaceful and sustain itself without any disturbance. It is achieved by having no conflicts and also by the local communities having enough resources to avoid the unnecessary competition which can bring conflicts. Food security and the peaceful coexistence make up a good habitable environment. The irrigation scheme now is a major source of balanced diet to the inhabitants.

²³³ Ibid. p. 18.

²³⁴ J.E.G. Sutton, "Editors Introduction: Fields, Farming and History in Africa." *Azania*, Vol. 24, pp. 6-11.

This is achieved in that crops with vitamins, proteins and carbohydrates are produced in the scheme.

Throughout PIS' history, KSC is the only company which has supplied seeds to the farmers despite existence of other seed companies. This is supported by the fact that KSC seeds have a higher germination rate than the seeds from other companies.²³⁵ KSC seeds are also cheaper as compared to the other brands and they are offered to the farmers on credit. Farmers are allowed some time to plant and harvest the crops before repaying the seeds. This is an added advantage as compared to the other companies who demand cash on delivery. Another contributing factor is that in case germination rate falls below the normal level, KSC do evaluations and reissue seeds a fresh to the farmers free of charge. KSC also have a depot within Marigat town and thus access to the facility is guaranteed and farmers are attended to promptly. Therefore, the introduction of scheme irrigation brought changes to the planting styles of the farmers and the crops introduced to the farm which Kenya Seed Company controlled and monitored.²³⁶

Horticultural crop production was introduced to the farmers by HCDA which provides loans to the commercial farmers.²³⁷ These loans are pegged on a farmer's level of production in the preceding season. So the farmers do not get substantial amounts of money since they try to avoid the horticultural crops which have a lot of conditions to be met. The fluctuating foreign and local market for the horticultural crops makes it also challenging for the farmers to accept to grow horticultural crops. They fluctuate at a higher rate and most of the farmers prefer to grow KSC crops since they are reliable and have no stringent conditions like the HCDA ones. Thus it is a great challenge for the farmers trying to balance accessing loans from these institutions and at the end repay them without getting tied up with many unpaid debts.

The tenants are limited to borrowing loans from the four financial firms available in Marigat with two being financial lending firms and the other being government parastatals which

²³⁵ E. Boserup, *The Conditions of Agricultural growth* (London: Allen and Unwind, 1965), p. 16.

²³⁶ Adolemew, OI, 21.12.2014.

²³⁷ Lesaris, OI, 22.12.2014.

provide small loans only. This is a great challenge, which, coupled up with other issues can bring the irrigation scheme to an operational stop like in the previous times. Between 1999 and 2001, the scheme stopped its operations for sometime due to many problems.²³⁸ One main reason was the limited access to credit facilities and it took the intervention of the Ministry of Agriculture to restore it to full operation. It is noteworthy that credit facilities play a great role in the scheme and its limitation has a great impact on the productivity of the scheme and its importance to the tenants and the country's economy at large.

In 2006, rice varieties were tested on the scheme.²³⁹ Cereal farmers with plots near the river were issued with rice to plant and at the end of the harvest were paid for the production and the produce weighed. The plots were provided with adequate water and a keen observation by agricultural experts was placed in the project since it was a first time. The results of the period were excellent as targets set were achieved. Since this was the first time rice was introduced on the farm and the farmers reaped better yields than the company expected. The rice variety is rated among the best varieties in dry and humid lands by the company. Production of the rice seed in the area has been continued since 2006.

Kenya Wine Agencies Limited (KWAL) set up a small factory at the border of the land which operated up to 2006 when the company stopped planting paw paw and engaged in rice. Paw paw was planted by the farmers in the farm and the seeds were provided by KSC in plenty for the farmers to germinate them in small polythene papers before planting them. This variety of paw paw was drought resistant and did well in the scheme. It required to be watered well in the initial stages then less amounts of water as it matures. The variety was suitable for the area until when a crop disease infected it destroying the entire crop.²⁴⁰ The agency had to stop its operations in the area since there was no produce to process and it became economically unsustainable to maintain workers at a nonoperational factory. It is probable that the KSC incurred some loses as most

²³⁸ NIB Annual Report, 2001, p. 29.

²³⁹ C. Kabutha and C. Mutoro, "From Government to Farmer-managed small holder Rice schemes: The Unresolved Case of Mwea Irrigation Scheme", *Journal of Human Ecology*, Vol. 24, pp. 34-50.

²⁴⁰ Rotich, OI, 14.12.2014.

farmers shifted to production of water melons for ready market at town and tomatoes which were in demand throughout the year. Onions also according to archival sources was one of the chief crops which the farmers reverted to instead of the paw paws which had dried up and the factory closed down.²⁴¹ This was a major setback to the scheme and the locals as many jobs were lost and the economic activities of the area drastically declined.

Irrigation farming has water as its main component. This is the pillar of the daily running of irrigation schemes. Proper water management means satisfying harvests at the end of the season. Most irrigation schemes set out clear rules on water management for it to have a smooth running of the irrigation scheme.²⁴² These rules are emphasized and the tenants are educated on them constantly to ensure they are aware. PIS was established and its main source of water is the rivers. With an arable irrigation land of approximately 2500 acres, water is a great challenge to the scheme.²⁴³ Thus water availability and management is a great challenge and balancing it requires the water engineers in the scheme to provide a clear program to be followed and adhered to by the farmers. As opposed to rain-fed farming, irrigation farming is reliable or intensive and since furrows are dug to supply water, the water has to be well measured and proper planning put in place.

The Scheme depends on River Perkerra for its water. This river flows from the Tugen highlands and is seasonal. It is fed by several tributaries. These tributaries are all seasonal. This means they are in full flow during the rainy season and when rains stop they too cease to flow. These tributaries are the main feeders of Perkerra River and once they dry up that means the water volume at Perkerra too drastically reduces. All the tributaries overflow with water during the rainy season between May and August.²⁴⁴ From September onwards they are dry since they depend on the rain. Due to their seasonal nature, the water volume at River Perkerra goes low and the farms are not well irrigated.

²⁴¹ National Irrigation Board, Annual Report, 2001, p. 49.

²⁴² J. E. G "Engaruka: Farming by Irrigation in Maasailand c. AD 1400-1700", in G. Barker and G. Gilbertsen (eds), *The Archaeology of Drylands: Living at the Margin* (London: Routledge, 1998), pp. 201-219.

²⁴³ Anderson, *Eroding the Commons*, p. 13.

²⁴⁴ Kaputie, OI, 21.12.2014.

The tributaries which flow into Perkerra River include, Endao, Waseges, Chebinyiny, Korios and Molo.²⁴⁵ River Endao for example flows from the Tugen highlands with a large volume of water from the beginning of the rainy season but it takes just a short time before it dries up. This means the main river gets less water during the dry season and it shows that the farms will have to get restricted volumes also for irrigation. These seasonal rivers affect the quality of produce from the farms. This is because when the plants are growing and in need of water, the irrigation board controls the water flowing to the farms. Seasonability of the rivers thus affects the irrigation scheme. The water available at the dry season is restricted to small number of farms and domestic use only. The farmers have to ensure that they get parcels to farm near the river but as they are restricted in ownership, it takes time for one to be allocated a piece for the season and thus the farm yields reduce always and the income the farmers earn is greatly affected.²⁴⁶

Rivers in the valley flow towards a certain direction. They flow from the Tugen highlands and to the valley. Most of the tributaries flow to the Lake Baringo. They join the Perkerra River and form the big river which was diverted by the scheme's initiators to provide water for the scheme. The tributaries have changed courses from time to time due to the soil formation and the amount of rain.²⁴⁷ At times there is high rainfall which causes the rivers to overflow and change course. They flow towards a fairly low part and these changes the usual course of the river. River Kapkoi used to flow to the Perkerra River but in 1994, the river changed its course and flowed in to Lake 94, which is so called because it formed in 1994 when the area experienced heavy rains. Water accumulated and a lake was formed. This reduced water in the Perkerra River.²⁴⁸ The effects of the river changing course are experienced by the farmers at the scheme. The water level in river Perkerra drops down below the normal level and this requires limiting water flow to farms so as to ensure availability throughout the year.

²⁴⁵ Kiptoon, OI, 12.12.2014.

²⁴⁶ Tengecha, OI, 15.01.2015.

²⁴⁷ Chumar, OI, 30.11.2014.

²⁴⁸ A. Ojwando, *White Highlands No More* (Nairobi: Pan African Researchers, 1970), p. 16.

Before irrigation was started in the Marigat area, the farmers depended on rain-fed farming. They were subsistence farmers and planted just for home consumption and to supplement their livestock products. Historically, the communities at the valley depended on the rain fed grass for their cattle and when droughts occurred they lost a substantial number of cattle. This led to most farmers losing hope in herding and always migrated to at least save some of the livestock. Irrigation scheme introduced the better way of living to the farmers. Water was available throughout the year and farming was practised all through the year. Pasture was available on the farms for the cattle to cushion them during dry seasons. The communities inhabiting the area were semi-pastoralists so they depended on the valley for pasture and the rain could sustain the pasture till the next season. Irrigation introduced required more water as the farming was intensified and the crops depended on irrigation.²⁴⁹ The irrigation initiators then had to construct a dam to hold the water and act as a reservoir. This dam has silted overtime and thus the water volume has reduced drastically and the farmers have to regulate the water into their farms in order to at least last the season. Thus this irrigation scheme elevated the status of the community in that they had a constant source of food and income not the over dependence on rain as in the initial times.

Temperature in Marigat valley is always at 40°C. This means there is a high evaporation rate. Water is lost in the rivers and when drained at the farms. The water uptake is high as compared to the water distribution in the area. NIB has a water engineer in charge of the water distribution and he asserts that water shortage is a great challenge to the scheme. The available water has to be rationed most of the times so as to ensure that all the farmers at least plant something for the time. Immediately after the rainy season, the farmers are advised to plant early maturing crops so as to be watered quickly when water is still in plenty.²⁵⁰ This is a hindrance to farmers as they are restricted to one crop or few varieties yet the farmers could have planted their choice crops and yielded the maximum which translates to higher income.

²⁴⁹ Kiptoon, OI, 12.12.2014.

²⁵⁰ Kipkemei, OI, 22.12.2014.

It is also worth noting that Marigat town has grown due to mainly the establishment of PIS.²⁵¹ It is the activities which revolve around the scheme that have led to the growth of the town. The town in a way has enabled many of the locals to live a decent life and has encouraged the emergence of some rich merchants. Farmers have also had the chance to sell their farm produce all through the year due to the weekly market days and also the travellers who make a stopover at the town. Water for domestic use in the neighbouring villages and the irrigation scheme is drawn from the established dam. During the dry season people use motorbikes and donkeys to draw the water from the dam. This contributes to the low water levels and thus the limited times the land is irrigated. Livestock and wild animals depend on the dam during the dry season. As earlier indicated in the other chapters, the animals in the valley are many. It is thus noted that ultimately water in the scheme is not that well distributed and cannot be sufficient irrigate the plants throughout the year.

The continuous operation of Perkerra Irrigation Scheme has advanced several cases. Poverty alleviation in the area is one of them. Poverty is defined as the state or condition of having little or no money, goods or means of support. This condition also defines when people's basic needs such as food, shelter and clothing are not adequately met.²⁵² In the Marigat valley where an irrigation scheme has been set up, there was absolute poverty as people living there did not own adequate resources. This was replicated all through the valley as people depended on exchange for goods with others since they themselves could not sustain their daily needs without help from their neighbours. There was scarcity of some produce as there were plenty of others. The manifestations of poverty include hunger and malnutrition, limited or no access to education and other basic needs. All these conditions were evident in pre-irrigation Marigat Valley and with the introduction of NIB there was a gradual turnaround from the problems.

Poverty along the Valley was so rampant but due to the pooling together of resources by the irrigation farmers there has been a decline of the problem. The introduction of the irrigation

²⁵¹ KNA/DC/BAR/27/5/5/2, Marigat Irrigation Scheme, Annual Report, 1954, p. 27.

²⁵² J. Illife, *Agricultural Change in Modern Tanganyika* (Cambridge: Cambridge University Press, 1971), p. 28.

scheme gave the District Committee on poverty eradication all the will and support they needed to stop the problem.²⁵³ A social perspective on development was put in place so as to end poverty and fight it in all dimensions. The committee promoted people-centered approach to poverty eradication and advocated the empowerment of people living with or in poverty through their social life, especially in the design and implementation of policies that affect the poor and most vulnerable groups in the valley. These approaches were supported by the scheme in a way as they empowered them.

According to the 2009 population census, Marigat town had a population of 7000 people.²⁵⁴ These were 3300 males and 3700 females.²⁵⁵ These were the numbers of people captured to be in the town at that time. This indicates that when there are market days or when there is plenty of harvest the number of town inhabitants can hit up to 10,000. This shows how far the town has grown from a small centre to a large populated one with many economic activities. It is also worth noting that, most of the occupants of the town are traders in agricultural products which directly come from Perkerra Irrigation Scheme. The traders have a constant supply of onions, water melon, carrots and tomatoes which they sell to travellers at a fair price lower than what the travellers buy in towns like Mogotio and Kabarnet.

An idea worth noting is that as per the integrated economic plan for Baringo County 2013-2017, the county is ranked position 15 out of 47 with a 60% poverty index.²⁵⁶ This is the case even in Marigat Valley as most people live below the required standards. Introduction of the irrigation scheme brought changes to how people lived and their modes of income generation. There was the availability of manual jobs to the poor community members who now could afford to sustain themselves after being given a salary. This also meant there was availability of market for produce and in turn the farmers got their income after selling their produce. Currently it is

²⁵³ M. Widgren and J. E. G. Sutton, *Islands of Intensive agriculture in Eastern Africa* (Oxford: James Currey, 2004), p. 16.

²⁵⁴ Central Bureau of Statistics, *Kenya Population Census, Vol. 1, Analytical Report* (Nairobi: Government Printers, 2009), p. 108.

²⁵⁵ *Ibid*, p. 109.

²⁵⁶ Kenya Population Census, 2009, p. 25.

estimated that over 4000 traders depend on the scheme for farm produce and sell them to earn a better living.²⁵⁷ Poverty levels are reducing due to the scheme's sustainability. Employees of the irrigation scheme now live a better life after securing jobs there and their children attend school without fail.²⁵⁸ This shows that the scheme has tried to alleviate poverty in the area. There is a cooperative firm which the NIB supports and it provides credit facilities to the farmers at affordable rates. The farmers can engage in their daily activities with a guarantee that they will have a low interest loan for their seeds and implements.

5.3 Challenges Experienced by the Scheme during the Period 1997-2013

The irrigation scheme since introduction of KSC as the main seed producers has had several challenges. The challenges have contributed a lot towards diminishing crop production and reduced markets. The irrigation scheme does not reach optimum production due to several factors. Most of these problems and challenges are sorted as they reemerge. Some are not detected early and cause major losses to the farm.

In the year 1997, there was a prolonged rainy season.²⁵⁹ The rains were named *El nino* and there was plenty of water in the Perkerra River. The river burst its banks and the water spilled into the farms at a higher speed than the usual watering. This caused losses for the farmers as they lost their crops. According to the farm owners, they lost crops worth approximately 5 million SHS.²⁶⁰ All the lower irrigation plots were submerged in water for more than two months. Water melon, onions and tomatoes had been planted on the strips of land thus during the flooding all the crops were submerged and destroyed. These crops eventually dried up when the water levels declined and the farmers had encountered a worst natural disaster. There was a food shortage in the area during the time as onions and tomatoes were not harvested at all and the usually available demand was there.²⁶¹ The aftermath of the floods was a low harvest and losses incurred to the farmers. The soils became deteriorated in fertilizer content and it took the irrigation management

²⁵⁷ Baringo County Intergated Development Plan (2013-2017), p. 20.

²⁵⁸ Chumar, OI, 30.11.2014.

²⁵⁹ National Irrigation Board, Annual Report, 2001, p. 67.

²⁶⁰ Chumar, OI, 30.11.2014.

²⁶¹ Ibid.

and the farmer's time before the land was returned back to its productivity state. Accordingly, the frequent floods are a great challenge to the scheme's management and the farmers. They incur numerous losses due to crop failure and at the end also should look for other funds to restore the land to maximum productivity. Flooding is thus one of the greatest challenges experienced at the Perkerra Irrigation Scheme though they are far apart in occurrence. Only a few farmers who have their farms at the higher grounds of the scheme harvested their crops but the yield was small as compared to the other years since water was insufficient.

Another main challenge faced by the scheme is poor infrastructure. Infrastructure is the basic facilities and installations needed for the functioning of an establishment. These are the main facilities which keep the scheme running and ensure it achieves its results as expected by the donors and funders. These include roads and building serving the irrigation scheme. Most of the infrastructure at PIS are either half-functional or out of service as the few others are not enough or able to handle the productivity rate of the scheme.

The irrigation Scheme has no warehouse to store the farm produce which is harvested annually. The only available store can accommodate up to 1200 bags of maize yet the current crop harvest exceeds this by almost 5 times. According to the management, the warehouse only has a small capacity since it was not designed as a storage facility but a temporary shelter after shelling of the farm produce as they awaited transportation. The warehouse serves as a store and it is not well spaced. The farmers have to look for private stores to store their produce or leave the maize in the farm for long until available store is available for them.²⁶² Since the scheme was designed in the 1930s, a provision for a store was not considered. At the inception of PIS, the small store could accommodate all the produce and be left with a space for farm machinery. But this was during 1960s when the farm's potential had not been exploited as farmers do now. The farmers are left with no option than to set up tents at the scheme's offices by KSC and they are transported to their stores. Due to the pathetic conditions, most of the times the farmers lose as the buyers reject their crops as the crops are contaminated during storage. It is thus a great challenge and farmers experience the worst since it is the NIB which is supposed to provide

²⁶² National Irrigation Board, Annual Report, 2001, p. 49.

storage facilities but no plans have been put in place. The storage capacity is still minimal and seems to be the same for a longer period and the farm produce will go on to waste at the expense of NIB managing the farm.²⁶³

Roads are the main access points to the irrigation scheme. The main road from Nakuru or Kabarnet to Marigat is a tarmacked all weather road. This can be used all through the year although it has potholes which hinder transport. This tarmacked road ends at Marigat town. The road leading to the irrigation scheme is a murrum and during the dry season, the roads are good to use but challenging during the rainy season. Given the heavy weight of produce in the farm, many heavy commercial trucks carrying produce to and from the scheme get stuck and waste a lot of time and fuel as they access the scheme.

Feeder roads from the town to the irrigation according to the informants are impassable during rainy seasons which at times coincide with land tilling season. The tractors which are supposed to access the plots get stuck on the way and most times the farmers take time trying to push the tractors to the small farms from the impassable roads. In 2002, the irrigation board contracted the services of a road constructor who introduced pebble technology to the road and this has improved the condition a bit.²⁶⁴ The pebble technology involved using stone pebbles on the road instead of the usual murrum. The heavy farm produce transported did not damage the road easily as was the case. The farms can be accessed when there is less rainfall but with heavy rains, the farms are inaccessible by machines unless use of manual labour to carry the produce. The roads have to be maintained every year to make them passable. According to some informant, NIB contracts a road contractor every year to try and fix the roads for them to be accessed by the tractors during tilling and harvesting.

The bridges at the farm are washed away during floods and this makes the management to incur costs repairing the bridges. The costs on the bridges could have been used in establishing other farm sectors. It is thus worth noting that road infrastructure is poor in the scheme. This

²⁶³ Omondi, OI, 23.12.2014.

²⁶⁴ NIB, Annual Report, 2001, p. 49.

contributes to poor access to the scheme and produce is not harvested in time or the crops are destroyed thus the farm incurs losses which could have been avoided if the scheme had better road networks.

Due to the high operational costs, between 1999 and 2001, the irrigation scheme came to a halt.²⁶⁵ There were no operations going on due to large debts which had not been settled and it took the intervention of the government of Kenya through the Ministry of Agriculture to revive it. The department of irrigation under the Ministry worked out a plan to bail out the scheme which was collapsing. The debts were repaid and tenants were given financial credit so as to resume farming. It was then agreed that every tenant at the scheme was to pay Kshs 2000 every beginning of the planting season to NIB for operations, infrastructure and maintenance of machinery. This money since then has been channeled to the irrigation management so as to supplement the funds from the national government.²⁶⁶

Rainy seasons come with added maintenance costs as the furrows require repairs immediately. The tenants have to be charged for the maintenance of the tunnels. Since the tunnels are made of soil banks, they are usually washed away by rain water, and thus at the beginning of every planting season require the management to service them for the smooth flow of water to the irrigation farms. This is a costly job as it involves use of heavy machinery and human labour. The machines are fueled by the management and the casual labourers paid by the scheme management also. These are costly undertakings and the irrigation management has no way out other than engaging in the routine exercise every beginning of a planting season.

Machinery in the scheme require servicing and maintenance every beginning of the season.²⁶⁷ These operations are undertaken by NIB which hires mechanics from private firms to come and perform the repairs. Most of the times the machines require spare parts which are not available in

²⁶⁵ Ibid, p. 29.

²⁶⁶ Baringo County Intergrated Development plan, 2013-2017, p. 37.

²⁶⁷ G. Ledec, "Effects of Kenya's Bura Irrigation Settlement Project on Biological Diversity and other Conservation Concerns" in *Conservation and Biology*, vol. 1, issue 3, pp. 23-46.

the local market. These spare parts are imported at the cost of the scheme management and this is costly. But the scheme's operations have to run and they are then forced to undertake these measures. The few machines are hired from private firms but most of the other workers are employed by the scheme. Between the year 1997 to 2001, NIB used 7 million Shillings in maintenance and repairs in the irrigation scheme.²⁶⁸ It is thus noted that the irrigation scheme management and daily running is costly affair. It takes the scheme management time before they recover the costs which they incur in maintenance and operations. It is a practice by the employees of the scheme to try and help the scheme run smoothly at a cost friendly way but since most of the operations require finances it is hard for the costs to come down. In sum, the high cost of operations and maintenance is one big challenge to Perkerra Irrigation Scheme which can bring it to non-operational status if not well checked and managed.

Tenants at PIS tend their plots and most of the production is for commercial purposes. Since from the beginning it is resource spending, most of the farmers take seeds, farm implements and pesticides on credit. KSC provides the farmers with seeds which they pay for after the harvest. So any other operations in the scheme which all require money are undertaken by the farmers using their own other means. Some of the tenants auction their cattle so as to finance the farming activities but majority of the farmers rely on loans from credit firms which are very few around the scheme.²⁶⁹

The farmers have only the services of Kenya Commercial Bank (KCB), Marigat branch and Marigat Farmers Co-operative Society. These two advance loans for the farmers which they pay with high interest rates, since there is no competition and the farmers have no option. According to the informants, farmers who access loans at KCB repay back at an interest rate of up to 20% which is on the higher side.²⁷⁰ Farmers have to pay back despite the high interest rates since they require the finances so much so as to be able to farm and yield produces. The financial institutions advance the loans at that rate since there is no competition within the town. The farmers' co-operative is still young and not able to cater for all the financial needs of the farmers.

²⁶⁸ NIB, Annual Report, 2001, p. 23.

²⁶⁹ KNA/DC/BAR/135/2/1, Annual Report, 1980, p. 19.

²⁷⁰ Kipkosiom, OI, 28.11.2014.

It is able to handle only a few farmers and the others seek funds from other sources. The cooperative society is insufficiently funded and issues short-term loans to the tenants at a lower rate though but the funds are not enough for the all activities the farmers require to be done.

The tenants do not insure their crops also against catastrophes like pests and diseases so most of the times when they lose the crop in the farm loan are repaid using other means like cattle auction and thus the farmers fear raking from the loans from commercial institutions. They prefer taking from the cooperation society which advances less loans and this limits the productivity of the farmers. Access to credit is a major challenge to the farmers as indicated by an informant who pointed out that it is hard for the farmers to operate with only one commercial bank in the area.²⁷¹ There are a few banks which have expressed interest in funding farming the area. The challenge is that the farmers do not get the funds in good time for tilling the land and thus their productivity is curtailed. At times some tenants skip a season as they take time to look for funds elsewhere and they lease their parcels to other third parties since they are unable themselves to do the farming. This third parties do not produce to the capacity required by the schemes management. They also plant their crops which they feel has a market within the area as compared to the tenants who stick to the management rules for fear of repression.

Insecurity is one major problem in the scheme. The tenants and the management are affected by the vice so much. Although this has been a persistent problem with perennial solutions, it seems the vice is advancing and mutating with time. For example, the traditional cattle raids involved a carefully planned and blessed raid. Traditional weapons were used and the raiders were instructed to use the weapons only when attacked. The raids have transformed into rustling which is more so advanced and dangerous than the traditional raiding.²⁷² Advanced weapons like guns are used and the raiders are well trained for combat in contrast with the traditional ones. Cases of raiding have been reported and recorded which have been of high loses. The rustlers are well-coordinated bandits who strike and paralyze the economy of a community. In

²⁷¹ Baimet, OI, 14.12.2014.

²⁷² Partenew, OI, 28.11.2014.

the year 2006, cattle were stolen from the neighbouring villages of Kapkamburia, Lobo, Kiserian and Arabal. According to the sources, the raiders stole all the strong animals and left the weaklings. According to police records, four people were killed during the raids.²⁷³ 5000 heads of cattle were driven away from the community and this paralyzed the farming activities at the scheme as most of the farmers pursued the raiders in an endeavour to recover their herds.

Cattle rustling has forced more than 20 schools to be closed in the neighbouring communities as the inhabitants flee from the area for their safety. The communities living in Arabal, Ngaratuko, Loruk and Rugus have been displaced. They have moved their cattle to the farms near the irrigation scheme. They graze their cattle in the scheme due to fear of the cattle rustlers and these herds often destroy the crop in the scheme but they have no option because all the grazing land which they used to depend on has been occupied by Pokot raiders.²⁷⁴ Pokot are the aggressors and they attack all the other communities. They expand their grazing territory during the dry season and have no taboo anymore to restrict them from killing women and children so long as they get the animals they want. *Ngoroko* raiders from the Pokot have conducted the raids for long and up to date they have made the farming at the scheme not a priority but pose a great challenge to it.

The farm produces from PIS since its inception has been exported and some of it consumed by the local communities. Marigat Town has been one of the major consumers of the crop yields as the market traders sell the produce to travellers and the residents. A cattle market or auction has been conducted every Wednesday and traders from as far as Nairobi come for the cattle sale and at the end of the day all the farm produce is sold to the community members who have sold their livestock.²⁷⁵ Traders indicate that onion, water melon and tomatoes are sold in plenty during the day. The case is different when cattle raids have been carried out. All the cattle are restricted from being sold and that means the trade for farm produce is also stopped until when the auction

²⁷³ Kipkosio, OI, 28.11.2014.

²⁷⁴ Kandago, *Rethinking British Rule*, p. 66.

²⁷⁵ Partnew, OI, 28.11.2014.

is cleared to take place. This affects the farmers as most of the crop yields go stale and go to waste. Thus, cattle rustling is one big challenge to farming at PIS as it affects the farmers economically and to some extent psychologically as they live in fear of imminent attacks. They cannot practice their farming in peace as they fear possible attacks at any moment. These problems have been a great challenge to the maximum production of the irrigation scheme and if not addressed will lead to further losses and also damage the reputation of the scheme.

Security of produce at the scheme has been a major concern to the management. There have been cases of theft in the scheme and the management has employed three security guards to ensure the entire 607ha scheme is guarded and when maize and other crops are at the scheme, the farmers themselves also help in guarding the produce. There are groups of people who depend on stealing the farm crops when they are almost ready for harvest. This reduces the yield for the farmers and leaves most of them in debts as they cannot be able to pay their loans. The NIB therefore insists on all farmers watching over their crops as they grow with the help of the guards so as to ensure a maximum harvest. Theft cases are still rampant and are a threat to the profits which would have been made by the farmers.

In 2004, rice was introduced in the irrigation scheme.²⁷⁶ KSC began a program of planting rice seed and this was different from planting maize and the other cereals. This crop required more water and instead of using the normal furrow irrigation required the basin irrigation. This required the farmers to construct strong barriers around the parcels of land to hold water for the rice seedlings as they needed to be completely submerged in water. The water flow had to be controlled to ensure the plants had sufficient water all through the growing season and thus this was a complete change in technology. The tenants were asked to raise their monthly subscriptions so as to sustain the water flow.²⁷⁷ The farmers were also required to be around the farm all the time or at least have an attendant present so as to ensure there was no water spillage from the farm. This was a change from the normal farming technology

when the tenants planted maize and it required less supervision and it was less costly as compared to the rice tending which was more costly.

New methods of irrigation come with added costs as the equipment also changes. This implies that new equipment had to be purchased or leased so as to perform the new techniques.²⁷⁸ Drip irrigation was introduced when horticultural products were planted in the scheme. This meant that distribution pipes were purchased, plumbers hired to lay the pipes and supervision was increased to ensure that all the crops were watered. All these costs were provided to the farmers based on their ability to repay loans and thus it was so hard to get good satisfactory results at the end of the season. Those farmers who had the ability to repay their loans got good harvests while others who were not able got less harvests as it was with the open cost irrigation.

Irrigation methods used in other model irrigation schemes like Mwea Tebere and Gezira may be successful but when introduced to Perkerra Irrigation Scheme may not work as expected. In 2006, there was an experiment to use overhead sprinkler irrigation in the scheme. This was done when fodder was introduced in the scheme and the scheme's management wanted to test the ability of mixing pesticides and the water for irrigation. This was successful in Tana Delta Irrigation Scheme due to high volumes of water from Tana River.²⁷⁹ The results were opposite in PIS and it almost caused a complete collapse of the scheme. Marigat area experiences high rates of evaporation as compared to the Tana Delta and thus the water needed for its sustainability is higher than that which Perkerra River can sustain. Thus the technology was abandoned and it was a great loss to the NIB and farmers who had installed the equipment. It is thus worth noting that changing of technology in irrigation can be so costly and can lead to closure of the scheme if it does not get financiers. It is a challenge which PIS has tried to struggle with for a long time since its inception in colonial time to now 2013 when it is expected to feed the whole of Baringo County and the Country at large.

²⁷⁸ Lengiya, OI, 25.11.2014.

²⁷⁹ W. M. Adams, "Definition and Development in African Indigenous Irrigation" *Azania*, Vol. 24, 1989, pp. 21-27.

Droughts, pests and diseases are some of the other challenges farmers face. These are natural calamities and problems which are associated and they have history of happening together. These problems happen almost simultaneously in the farm and cause a lot of damage and losses to the tenants. Pests attack the farm when the plants are still growing or plant diseases are detected on the farm and drought follows. This has been the situation in subsequent years and the tenants lose their crops completely.

PIS has experienced droughts in some years. In 1996, 1999 and 2005 there were severe droughts in the scheme. The dry season is prolonged and the green vegetation dries up. Instead of the normal dry season which takes at most four months, droughts are reported when the dry season takes more time and most sources of water dry up and the water level in rivers drop. This condition is reported to have occurred severally in the pre-colonial period in the scheme area and since the land was just for grazing, it had no effect on the farming sector at first.²⁸⁰ According to informants the irrigation scheme has suffered several droughts since its inception and the droughts have always led to losses which the farmers take long time before they recover and get back to normal farming conditions.²⁸¹

In 1996, there was a severe drought and famine. There was no rain the whole year and the following year thus the whole population in the area that depended on rainfall suffered.²⁸² It is reported that River Perkerra, which had been a perennial river, almost dried up as there was no rainfall in the highlands. Water levels in the river fell below those required for irrigation and the schemes management had to decide to stop irrigation farming for the whole year. The neighbours who depended on the irrigation farm for food and employment were affected as there was no source of employment anymore. The impacts of droughts were many. Farmers who were practising irrigation as well as having several herds in the neighbouring area lost their cattle. The number of their cattle was diminishing. Pasture and water for their cattle was becoming rare as the drought persisted. Accordingly, most of them began to cull the livestock or sell them to

²⁸⁰ KNA/DC/BAR/1/5, Annual Report, 1968, p. 19.

²⁸¹ Kipkosiom, OI, 28.11.2014.

²⁸² Campbell, *Response to Drought*, p. 38.

livestock traders as there was no hope for rainfall soon. Tenants in the irrigation scheme had no crops to sell to the traders in the markets and thus the economy of Marigat depended on crops brought in from other regions.²⁸³

There are several crop diseases which have plagued schemes in Kenya for a long period of time. Viral and Bacterial disease affect the crops in the scheme.²⁸⁴ These diseases are either spread by wind or when new seeds are introduced in the scheme. It is reported that several crop diseases have affected Perkerra irrigation scheme leading to loss of crops but the problems have been sorted by crop experts who are brought in by KARI and NIB. Common crop diseases are curbed faster but with time, the tenants have reported strange cases of new diseases which affect the crops and thus researchers still work on the cure for some of the diseases. A few incidences of trips infestation in the lower part of the scheme were reported in 1996, 2000 and 2008.²⁸⁵ The cases were few but where it was reported all the maize plants dried up. This was curbed by cutting down the stalks and burning them then buried so as to avoid spreading of the disease. This was a loss to the tenants who had invested in their plots and the crops were almost approaching maturity. *Chaufer grub*, another crop disease was reported in the same period in the upper part of the scheme. This disease leads to branches of the plants yellowing. The disease is spread by wind and if not detected early can lead to massive loss of the plants. NIB branch manager highlighted that all the diseases and pests control measures are taken in the scheme. There is an expert employed to monitor the crops as they grow and report with immediate effect any signs of diseases can be dormant for some time and when they become active can cause severe damage.

5.4 Summary

This chapter has attempted an analysis of the impact of introduction of Kenya Seed Company's breeding program in the Scheme. The advantages of the prompt payment as opposed to the long awaited process of traders who were not reliable were analyzed. The company provided ready

²⁸³ Kaptum, OI, 24.11.2014.

²⁸⁴ A. Guy, *A Modern Kenya* (London: Longman Group Limited, 1981), p. 25.

²⁸⁵ Omondi, OI, 23.12.2014.

market for the produce and they provided loans to the farmers in the form of seeds. The employment rates in the area also soared up as workers were promptly paid unlike previously. Although with the onset of seed farming, new technologies were introduced, rendering past ones obsolete, financial institutions were available to bail the farmers and later charge them a commission. The discussion on several challenges is highlighted also in this chapter, it is identified that most challenges have been solved and are still being addressed as the scheme continues to advance. It can be deduced from this chapter that the schemes management has worked over time with the tenants to save the situations which could otherwise have led to collapse of the scheme. Also, the government has come in most of the times to save the situation and encourage irrigation farming as a reliable source of food during hard times and a shift from rain-fed agriculture.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The research on a history of the Perkerra Irrigation Scheme in Baringo County, was an attempt to analyse the significance of the irrigation scheme and its impacts on the growth of the county and the country at large. This was examined from its inception to 2013. It was realized that the irrigation scheme transformed lives and has been the main economic, social and political contributor of the county since its inception. The development and advances made by the irrigation scheme from its inception to 2013 is tied to the daily decisions made by government officials in both national and county governments.

A history of the Perkerra Irrigation Scheme has been studied thematically and chronologically. The first portion is covering the activities which the indigenous communities who lived at Marigat valley engaged in before the inception of the scheme, the challenges they experienced and its impacts on the communities. The second theme is on the social, political and economic contributions of the scheme during the time of ALDEV from 1954 to 1966. The third portion deals with the period when NIB took over from ALDEV and all that took place during the period from 1966 to 1993. Finally, the last chapter deals with when Kenya Seed Company took over the area and made it as a breeding zone and made a drastic turnover. This was from 1994 to 2013.

Before the establishment of PIS in 1954 by the colonial government, there was indigenous irrigation practised by the traditional IlChamus community in the valley. The methods used to irrigate the scheme and the tools used were crude. They were not adopted for the modern project but they introduced techniques from Gezira Irrigation Scheme in the Sudan. The communities which were predominantly semi-pastoralist were introduced to irrigation farming. This was more sustainable than the rain-fed farming which was not reliable as such.

Indigenous irrigation was practised by the inhabitants at a small scale and the crops produced were for subsistence use only. They were just for supplementing the livestock products they had depended on for many generations. The labour used in the indigenous irrigation schemes was

limited and was provided by the family members. Farmers focused on livestock farming and supplemented with hunting of wildlife and gathering wild fruits. These were their main economic activities which sustained them for long without many problems except when droughts, diseases and famines were experienced in the region.

In the traditional Tugen and IlChamus communities, cattle was a main part of their daily living. They equated all their wealth with the number of cattle they had. Trade was paramount in the area. They engaged in trade amongst themselves in the valley and also with neighbouring communities. Leather, hides and skins were the main trade items and traders from as far as Mombasa came to sample the original leather products in Marigat Centre. Specialization of clans in certain forms of trade was also noted. One clan was known for honey harvesting and bee keeping. It was also a taboo to sell adulterated honey so they traded in pure honey and preserved it for use by the community and also external trade. IlChamus community who practised indigenous irrigation also traded in fish and its products. This was unique in that most communities in the area considered eating of fish a taboo. The community advanced the trade and was successful. Cottage industrial goods produced in the Marigat region by the locals were also sold to the farmers and to the neighbours as the community had good smiths who produced goods for domestic use and trade. The trade in livestock and its products was the main economic activity of the inhabitants and established traders were respected and consulted in any community decision.

Introduction of irrigation farming seems to have revolutionized the lives of the residents of Marigat and the Kenyan economy at large. Its impacts were felt and have continued to be seen by the communities living around the Perkerra Irrigation Scheme. Land adjudication, survey and allocation were done in the scheme and neighbouring areas. This has helped put issues of ownership in order for a long period of time since the exercise was done with due diligence ensuring that all the farmers were satisfied. Another impact is the growth of Marigat town which is closely associated with the scheme's products and the workers of the scheme. The organization running the scheme has also initiated corporate social responsibility activities in the

area. The inhabitants benefit in terms of funding from the scheme. This has given the inhabitants a reason to embrace the scheme.

Poverty eradication was identified as one of the core missions of the establishment of the scheme. The scheme has tried to alleviate the poverty in the area by ensuring food availability, employment and provision of clean water. Food security in the area and the country at large has been boosted by the establishment and running of the scheme. The research also established that the locals can now stay safe within and without the scheme since security has been enhanced by the government in the area. There has been social improvement as populations have increased; intermarriages have been witnessed among communities. These have happened because the locals and the visitors who come to work on the irrigation scheme or to trade have established a good rapport and they have engaged in marriage. Mosques and churches have been established to cater for the inhabitants and tournaments and games are funded, by the schemes management for the locals to take part.

The establishment of financial institutions at Marigat has made farming easier and affordable by the tenants in the scheme. These institutions came up due to the establishment and growth of the irrigation scheme and the main roles are to try and meet the financial needs of the tenants at a discounted interest. The impacts of the scheme on the area have been established to be many during the period under study. The interest on irrigation farming, which the Jubilee government driven to, is seen to be guided by the fact that irrigation farming has revolutionized the lives of many families from pastoralism to irrigation farming which is more reliable and profitable as compared to the later.

Irrigation farming has not been without challenges. There have been several encounters which Perkerra irrigation Scheme has overcome for it to be the successful scheme it is now. These challenges are still experienced and solutions are sought for in the day to day operations. Water resource availability has been one of the greatest challenges. The water in rivers keep on fluctuating and a times flooding occurs so it affects effective farming in the scheme. Land degradation is a major challenge as the continuous tilling of land leads to loss of nutrients which

makes the soil less productive. Yields realized at the end of the subsequent farming seasons cannot be equated with what was got in the previous season from the same parcel of land. This is all due to the deteriorating quality of the soil.

It is also noted that, insecurity is a great problem. Cattle rustling and crop theft among other cases of insecurity lead to a small harvest and this may eventually lead to the collapse of the scheme. Poor infrastructure leads to poor yields. Roads and storage facilities are not up to standard thus leads to unproductivity of the scheme. Insufficient government funding and lack of enough credit facilities are a challenge to the farm also. Irrigation technology is constantly changing with time, these equipment are costly and without enough funding, the new technologies cannot be implemented and the obsolete ones are used. As the scheme struggles with the man-made problems, natural calamities like pests, crop diseases and droughts are also a challenge to farming. Plant pests like *Prosopis Juliflora* are so hard to tackle and it drains the resources from the scheme and causes a lot of damage to the scheme.

Indications from the research findings are that, a history of the Perkerra Irrigation Scheme would help to provide the current government and coming generations with lessons on irrigation farming as well as avert the challenges from it for the development of the country. It was also established that irrigation farming in Baringo County can be sustained and made better if the several challenges are seriously tackled and mitigated. From the observation, the irrigation farming revolutionized the lives of the locals from dependence on cattle to a stable farming which is affordable and reliable.

It was observed that the irrigation scheme contributed to the wellbeing of the communities inhabiting the area and their neighbours as well as earning the country foreign exchange. Kenya Seed Company also serves almost the entire region with the seeds tested and multiplied at the irrigation scheme. The maize seed varieties produced are for the medium and low altitudes and include H513, H515, H516, PH1, PH4, DH01 and DH04. These varieties have proved to be the best and do well according to feedback from the farmers. The importance of the irrigation scheme in the area cannot be ignored as it is paramount.

It was established that Perkerra Irrigation Scheme and its environs was surveyed and given good ratings by agricultural officials for irrigation farming. It has 810 ha of potential land but only 607 ha is currently irrigated. The government should invest more on irrigation in the already surveyed area through the devolved system of government or also involve NIB more in the expansion of the irrigated land so as to increase crop yield.

Kenya Seed Company assists farmers in only loaning the seeds and transporting them to their depot. The farmers have to transport the seeds to their respective farms and also after harvesting they transport the produce to the driers. It has proven to be expensive and tedious to the farmers. KSC should help in transporting the produce and it will increase the crop harvest and act as an incentive to the farmers.

The Marigat Farmers Cooperative Society was established by the irrigation farmers so as to cushion them with loans at a lower interest rate. The cooperative has a small holding capacity. The loans the cooperative issues are always limited since it has a small capital base. It is thus important if the government and other donors chip in and increase the funds. This will go a far way in increasing the money lend to the farmers and will increase the yields at the end of the season.

It is also the author's sincere hope that this historical study will serve as a basis for understanding the irrigation dynamics in the country. A knowledge of the past successes and failures in irrigation farming will be of prime importance in policy formulation for further irrigation farming in Baringo county and will still serve very useful purposes in the farming traditions and the economic importance in life and history.

SOURCES

A Informants

Name	Gender	Age	Occupation	Location	Interview Date
Adipo, Michael	M	81	Farmer	Marigat	20.12.2014
Adolemeu, James	M	81	Business Man	Loboi	21.12.2014
Baimet Salim	M	60	Extension Officer	Marigat	14.12.2014
Barkwang, Peter	M	60	Farmer	Sandai	06.01.2015
Bartonjo, Michael	M	75	Driver	Marigat	22.01.2015
Boiwo, Chesang	M	75	Farmer	Koriema	24.11.2014
Boiwo, Laban	M	60	Farmer	Marigat	23.12.2014
Bowen, Chesire	M	72	Auctioneer	Marigat	25.11.2014
Bungei, Solomon	M	72	Farmer	Marigat	05.01.2015
Chemitei, Chesire	M	81	Farmer	Marigat	20.01.2015
Chemjor, Cheptarus	M	40	Banker	Marigat	08.01.2015
Chemjor, Rose	F	61	Trader	Marigat	22.01.2015
Chemjor, Rose	F	50	Teacher	Loboi	15.01.2015
Chepkonga, Esther	F	70	Retired Teacher	Marigat	23.12.2014
Chepkonga, Maria	F	48	NIB Staff	Marigat	13.01.2015
Chepkurgat, Ngetich	M	55	Engineer NIB	Marigat	30.11.2014
Chepsoi, Joseph	M	80	Farmer	Loboi	22.01.2015
Chepsongol, Cherop	M	55	Doctor	Marigat	12.12.2014
Cheptoo, Chepkonga	M	69	Retired Police Man	Marigat	14.12.2014
Cheptoo, Hellen	F	42	Nurse	Sandai	06.01.2015
Cheptoo, Joshua	M	40	KARI Staff	Sandai	27.11.2014
Cheptoo, Linah	F	46	Teacher	koriema	09.01.2015
Cherop, Elijah	M	60	Cook	PPS	10.12.2014
Chesaro, Stephen	M	70	Farmer	PPS	21.01.2015
Chumar, Simeon	M	62	Pastor	Marigat	30.11.2014
Kabutie, Samson	M	65	Trader	Marigat	25.11.2014
Kaptum, Charles	M	60	Nurse	Loboi	24.11.2014
Kaputie, Hafsa	F	36	Teacher	PPS	10.12.2014

Name	Gender	Age	Occupation	Location	Interview Date
Kaputie, Salinah	F	71	Farmer	Loboi	21.12.2014
Kandagor, David	M	60	Chief	Marigat	05.01.2015
Katikit, Samuel	M	60	Farmer	Koriema	09.01.2015
Kator, Kabon	F	65	Manager MFCS	Marigat	30.11.2014
Kelwon, Richard	M	46	KARI Staff	Marigat	12.01.2015
Kelwon, Samuel	M	59	Veterinary Officer	Marigat	12.12.2014
Kibet, Gideon	M	46	NIB Staff	Sandai	06.01.2015
Kimoi, Elizabeth	F	42	Trader	Koriema	24.11.2014
Kipkemei, Elijah	M	61	Farmer	Marigat	22.12.2014
Kipkoech, Yusuf	M	47	HCDA Staff	Marigat	23.12.2014
Kipkosiom, Joseph	M	55	Farmer	Loboi	28.11.2014
Kiptoon, Samuel	M	47	NIB Staff	PPS	10.12.2014
Korir, James	M	59	NIB Staff	Marigat	25.11.2014
Kurere, Hellen	F	53	Agricultural Officer	Marigat	13.01.2015
Lechuma, Zephaniah	M	68	Farmer	Marigat	12.12.2014
Lengiya, Kirimaticho	M	81	Farmer	Marrigat	25.11.2014
Lepirotto, Joel	M	46	MFCS Staff	Sandai	27.11.2014
Lesambicha, Kosiki	M	81	Farmer	PPS	21.01.2015
Lesari, Moses	M	59	NIB Staff	Marigat	22.12.2014
Limo, Caroline	M	69	MFCS Staff	Marigat	21.12.2014
Lochuu, Charles	M	54	Farmer	Marigat	05.01.2015
Lokesh, Joseph	M	46	Driver	Salabani	23.12.2014
Ngetich, Philip	M	44	Chief	PPS	10.12.2014
Olekoima, Vincent	M	50	Farmer	Marigat	09.01.2015
Olemayan, David	M	50	Trader	Sandai	27.11.2014
Omondi, George	M	56	Manager NIB	Marigat	23.12.2014
Parkebo, Hellen	M	56	Farmer	Marigat	08.01.2015
Parkolwa, Joseph	M	50	KARI Staff	Salabani	23.12.2014
Partenew, Ezekiel	M	60	Farmer	Loboi	28.11.2014

Name	Gender	Age	Occupation	Location	Interview Date
Tengecha, Catherine	M	70	Farmer	Loboi	15.01.2015
Thiongo, Faith	F	61	Pastor	Marigat	22.01.2015
Rotich, Susan	F	75	Farmer	Marigat	14.12.2014
Rutto, Harun	M	82	Trader	PPS	21.01.2015
Yusuf, Zubeda	F	50	Trader	Marigat	12.01.2015

B. Archival Documents

Colony and Protectorate of Kenya, Annual Report on Native Affairs, Kenya, 1937.

Kenya National Bureau of statistics, Baringo, 2012.

Kenya Population Census 2009, Central Bureau of Statistics, Nairobi, 2010.

National Irrigation Board, Annual Reports, 1968.

National Irrigation Board, Annual Report, 1975.

National Irrigation Board, Annual Reports, 1980-1991.

National Irrigation Board, Annual Reports, 2001.

KNA/DC/BAR/1/1, Baringo District Game offences, 1980.

KNA/DC/BAR/135/2/1, Baringo District Annual Report, Livestock, 1980.

KNA/DC/BAR/1/5, Baringo District Annual Report, Veterinary, 1968.

KNA/DC/BAR/2/281, Baringo District Annual Report, Livestock, 1956.

KNA/DC/BAR/3/5/1, Baringo District Political Record Book, 1978.

KNA/DC/BAR/3/281, Baringo District Annual Report, Livestock, 1965

KNA/DC/BAR/4/2, Baringo District Annual Report, Agriculture, 1965.

KNA/DC/BAR/11/2, Baringo District Annual Report, Agriculture, 1964.

KNA/DC/BAR/11/4/2, Baringo District Annual Report, Livestock, 1970.

KNA/DC/BAR/27/5/4/1, Baringo District Annual Report, Livestock, 1935.

KNA/DC/BAR/27/5/5/2, Annual Report, Marigat Irrigation Scheme, 1954.

KNA/DC/BAR/32/290/1, Baringo District Annual Report, Trade, 1977.

KNA/DC/BAR/33/1/2, Baringo District Annual Report, Agriculture, 1957.

KNA/DC/BAR/33/16, Baringo District Annual Report, Trade, 1954.

KNA/DC/BAR/35/52/1, Baringo District Annual Report, Livestock, 1956.

- KNA/DC/BAR/59/1/1, Baringo District Annual Report, Fishing Industry, 1964.
- KNA/DC/BAR/60/1/2, Baringo District Annual Report, Livestock, 1974.
- KNA/DC/BAR/70/1/1, Baringo District Annual Report, Destocking Policy, 1956.
- KNA/DC/BAR/281/2, Baringo District Annual Report, Livestock, 1956.
- KNA/PC/RV/1/12, Rift Valley Province Annual Report, Destocking Policy, 1956.
- KNA/PC/RV/3/1/8, Rift Valley Province Annual Report, Confidential Reports, 1981.
- KNA/PC/RV/3/1/368, Rift Valley Province Annual Report, Confidential Reports, 1964-1974.
- KNA/PC/RV/3/20/4/3, Rift Valley Provincial labour Report, Livestock, 1981.

C. Theses and Dissertations

- Kipkulei, B. K. "The Origins, Migration and Settlements of the Tugen People from the Earliest Times to the turn of 20th Century." BA Dissertation, University of Nairobi, 1972.
- Mugatsia, E. A. "Simulation and Scenarion analysis of water Resources Management in Perkerra Catchment using WEAP Model", MSc Thesis, Moi University, 2010.
- Wasonga, V. O, "Linkages between Land-use, Land degradation and Poverty in semi-arid rangelands of Kenya: The case of Baringo District." PhD Thesis, University of Nairobi, 2009

D. Journal Articles/ Research papers

- Adams, W.M, "Definitions and Development in African Indigenous Irrigation", *Azania*, Vol. 24, 1989, pp. 21-27.
- Adams, W. E. Watson, and E. Mutiso, (eds), "Water, Rules and Gender: Water Rights in an Indigenous Irrigation System, Marakwet, Kenya," *Development and Change*, Vol. 28, 1997, pp. 45-69.
- Anderson, D. M. "Agriculture and Irrigation Technology at Lake Baringo" *Azania*, vol. 24, 1989, pp. 85-98.
- Blank, H. G. "The changing face of irrigation in Kenya: opportunities for anticipating change in eastern and southern Africa, A SWIM Concept Paper," Nairobi, International Water Management Institute, 2000.

- Campbell, D. J., "Response to drought among Farmers and herders in southern Kajiado District, Kenya: a comparison of the 1972-1976 and 1994-1995," *Journal of Human Ecology*, Vol. 27, pp. 377-416.
- Kabutha, C. and C. Mutero "From Government to farmer-managed small holder Rice Schemes: The Unresolved Case of the Mwea Irrigation Scheme," *Conservation and Biology*, Vol.24, pp.34-50.
- Ledec, G. "Effects of Kenya's Bura Irrigation Settlement Project on Biological Diversity and other Conservation Concerns," *Conservation and Biology*, Vol.1, Issue3, pp. 23-48.
- Nyariki, D. M., "Kenyan Position Paper on the Horn of Africa: An initiative on Tackling Food Insecurity," *Journal of Human ecology*, June 2007, pp. 2-9.
- Patterson, K. D. "The Pokot of Western Kenya 1910-1963: The Response of a Conservative People to Colonial Rule" Occasional Paper No. 53, Maxwell Graduate School of Citizenship and Public Affairs, Syracuse University, 1969.
- Roba, A and K. Witsenberg, "Conflicts among Kenyan Pastoral Communities over Water," in B. Derman, R. Odgaard and E. Sjaastad (eds.), *Conflicts over Land and Water in Africa* (Oxford: James Currey, 2007.)
- Sutton, J. E. G, "Editor's introduction: Fields, Farming and History in Africa," *Azania*, Vol.24, pp. 6-11.
- Sutton, J. E. G, "Engaruka: Farming by Irrigation in Maasailand AD 1400-1700", in G. Barker and G. Gilbertan (eds) *The Archaeology of Drylands: Living at the Margin* (London: Routledge), pp. 201-209.
- Yazan, A, D. Nyaraki and D. Wasonga, "Popular Cash crops in Kenya" *African Crop Science Journal*, Vol.20, Supp 1, 2012, pp. 113-122.

E. Books

- Anderson, D. *Eroding the Commons: The Politics of Ecology in Baringo, Kenya, 1890-1963* (Nairobi: East African Educational Publishers, 2002).
- Austen, A. *African Economic History* (London: Weiden Field and Nicholson, 1976).
- Basset, T. and D. Crummey (eds) *African Savannas: Global Narratives and Local Knowledge on Environmental Change* (Oxford: James Currey, 2003).
- Blaikie, P. and Brookfield, H. *Land Degradation and Society* (London: Methuen, 1987).

- Boesen, J. J. Kjell J. Havnevik and R. Odgaard, (eds), *Tanzania Crisis and Struggle for Survival* (Uppsala: Scandinavian Institute of African Studies, 1986).
- Borgin, K and K. Corbett, *The Destruction of a Continent/ Africa and the International Aid* (New York and San Diego: Harcourt Brace Jovanovich, 1982).
- Boserup, E. *The Conditions of Agricultural Growth* (London: Allen and unwind, 1965).
- Carlsen, J. *Economicand Transformation in Rural Kenya* (Uppsala: Scandinavian Institute of African Studies, 1980).
- Chambers, R. *Learning from Project Pathology: The Case of Perkerra* (Nairobi: East African Educational Publishers, 2005).
- Creswell, J. W. *Qualitative Inquiry and Research Design: Choosing Among Five Traditions* (Nairobi: East African Educational Publishers, 2001).
- Derman, B, R. Odgaard, and E. Stajaad (eds.) *Conflicts over Land and Water in Africa* (Oxford: James Currey, 2007).
- Ehret, C. *The Civilizations of Africa: A History of 1800* (Oxford: James Currey, 2002).
- Guy, A. *Modern Kenya* (London: Longman Group Ltd, 1981).
- Hazlewood, A. (ed), *The Economy of Kenya: The Kenyatta Era* (New York: Oxford University Press, 1979).
- Heine, B. *The Non-Bantu languages of Kenya: Languages and Dialect Atlas of Kenya* (Berlin: Dietrich Reamer Publishers, 1980).
- Hempel, L. *Environmental Governance: The Global Challenge* (Washington D C: Island Press, 1996).
- Hyslop, J. *The Sudan Story* (London: The Naldrett Press, 1952).
- Illife, J. *Agricultural Change in Modern Tanganyika* (Cambridge: Cambridge University Press, 1971).
- Kandagor, D. R. *Rethinking British Rule and the "Native" Economies in Kenya* (Nakuru: Pangolin Publishers Limited, 2010).
- Kanogo, T. *Squatters and the Roots of Mau Mau* (Nairobi: East African Educational PublishersLtd, 1987).

- Karina. F and A. W. Mwaniki, *Irrigation Agriculture in Kenya: Impacts of the Economic Stimulus Programme and Long term Prospects for Food Security in an era of Climate Change* (Nairobi: Heinrich Boll Stiftung East & Horn of Africa, 2011).
- Kjekshus, H, *Ecology Control and Economic Development in East African History* (London: James Currey, 1996).
- Leach. M and R. Mearns (eds), *The Lie of the Land: Challenging Received Wisdom on the African Environment* (London: The International African Institute, 1996).
- Lilienthal. D. *TVA: Democracy on the March* (New York: Harper & Brothers, 1944).
- Little, P. *The Elusive Granary: Herder, Farmer and State in Northern Kenya* (Cambridge: Cambridge University Press, 1992).
- Maloba. W. *Mau Mau and Kenya: An Analysis of a Peasant Revolt* (London: James Currey Publishers, 1993).
- Marriam. W. *Rural Vulnerability to Famine in Ethiopia, 1958-1977* (London: Intermediate Technology Publications, 1986).
- Massam, J. *Cliff Dwellers of Kenya* (Nairobi: Evans Brothers, 1968).
- Mohamud, A and P. Ruto (eds), *Closed to progress; An Assessment of the socio-economic impact of conflict on pastoral and semi-pastoral economies in Kenya and Uganda*, Nairobi: Practical Action Publishers, 2005.
- Mutiso, G. C. M. *Kenya: Politics, Policy and Society*, (Nairobi: East African Literature Bureau, 1975).
- Ngigi, S. *Review of Irrigation Development in Kenya* (Nairobi: University of Nairobi Press, 2000).
- Obudho, R et al (eds.), *Issues in Resource Management and Development in Kenya* (Nairobi: East African Educational Publishers, 2000).
- Ochieng', W. R. (ed) *A Modern History of Kenya: 1895-1980* (London: Evans Brothers, 1989).
- Ochieng', W. R. *Themes in Kenyan History* (Nairobi: East African Educational Publishers, 1990).

- Ochieng, W.R. and R. M. Maxon (eds), *An Economic History of Kenya* (Nairobi: East African Educational Publishers Ltd, 1992).
- Ogutu, M. A. *An Introduction to African History* (Nairobi: University of Nairobi Press, 2007).
- Ogutu, M. A. *Sedentary hunting and gathering among the Tugen of Baringo District in Kenya* (Nairobi, University of Nairobi, 1986).
- Ojwando, A. *White Highlands No More* (Nairobi: Pan African Researchers, 1970).
- Oludhe, M. M. *THE STORY OF KENYA: A Nation in the making* (Nairobi: Longman Group Limited, 1981).
- Piers, B. *The Political Economy of Soil Erosion in Developing Countries* (New York: Longman Publishers, 1985).
- Postel, S. *Pillar of Sand: Can the Irrigation Miracle Last?* (New York: Norton Company, 1999).
- Rodney, W. *How Europe Underdeveloped Africa* (Harare; Zimbabwe Publishing House, 1981).
- Spencer, P. *The Pastoral Continuum: The marginalization of tradition in East Africa* (Oxford: Clarendon press, 1998).
- Walliman, N. *Your Research Project*, 3rd Edition (London: Sage Publications Ltd, 2011).
- Widgren, M. and Sutton, J, E.G, *Islands of intensive agriculture in eastern Africa* (Oxford: James Currey, 2004).
- Zezeza, T. *A Modern Economic History of Africa* (Dakar: CODESRIA, 1999).
- Zwanenberg, R. M. Van, and A. King, *An Economic History of Kenya and Uganda, 1800-1970* (London: The Macmillan Press Limited, 1975).

APPENDICES

INTERVIEW SCHEDULES

APPENDIX I

My name is **Symon Barkachai Keitany**. I am a postgraduate student at Egerton University-Njoro currently conducting a research on, **"A History of the Perkerra Irrigation Scheme in Baringo County, Kenya, 1954-2013"**

You have been selected by the researcher as a respondent in the study, kindly answer the following questions to enable me complete my study. I undertake to treat any information you provide in strict confidence and it shall be used strictly for academic purposes.

Name.....Age.....Sex.....
.....Occupation..... Place of Interview.....
Date.....

This list of sample questions were administered to the PIS Neighbours.

1. When did you settle here?
2. How was the settlement Process?
3. Do you farm here?
4. Which crops were first cultivated here?
5. How was the reception of the colonial officers who introduced farming here?
6. How was the reception by the locals on alien crops?
7. What was done to the semi-pastoralists who depended on this plan for grazing?
9. What was the scheme main source of labour?
10. What impacts has the scheme had on the livelihood of the neighbor?
11. How are the NIB, KARI and KEFRI contributing to the scheme?
12. What are the challenges that the scheme has faced?
13. How is life after the introduction of the scheme?
14. Comment generally on how you view Perkerra Irrigation scheme?
15. Is there anything else you want to add?

APPENDIX II

My name is **Symon Barkachai Keitany**. I am a postgraduate student at Egerton University-Njoro currently conducting a research on, **“A History of the Perkerra Irrigation Scheme in Baringo County, Kenya, 1954-2013”**

You have been selected by the researcher as a respondent in the study, kindly answer the following questions to enable me complete my study. I undertake to treat any information you provide in strict confidence and it shall be used strictly for academic purposes.

Name.....**Age**.....**Sex**.....
Occupation..... **Place of Interview**.....
Date.....

This list of sample questions were administered to the PIS Residents.

1. When did you settle here?
2. How was the settlement Process?
3. Are you the owner of the plot you farm?
4. How frequent do you farm here?
5. Which crops were first cultivated here?
6. How was the reception of the colonial officers who introduced farming here?
7. How was the reception by the locals on alien crops?
8. What was done to the semi-pastoralists who depended on this plan for grazing?
9. How is the management of the Scheme after the departure of colonialists?
10. Which crops are the best here by your observation?
11. How has the scheme impacted on your live?
12. How are the NIB, KARI and KEFRI contributing to the scheme?
13. What are the challenges that the scheme has faced?
14. How is life after the introduction of the scheme?
15. Is there anything else you want to add?

APPENDIX III

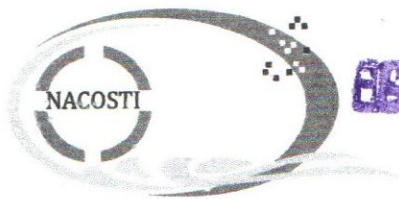
My name is **Symon Barkachai Keitany**. I am a postgraduate student at Egerton University-Njoro currently conducting a research on, **“A History of the Perkerra Irrigation Scheme in Baringo County, Kenya, 1954-2013”**

You have been selected by the researcher as a respondent in the study, kindly answer the following questions to enable me complete my study. I undertake to treat any information you provide in strict confidence and it shall be used strictly for academic purposes.

Name.....Age.....Sex.....
Occupation..... Place of Interview
Date.....

This list of sample questions were administered to KARI, KEFRI and NIB Employees

1. Which organization do you work for?
2. How long have you worked here?
3. How frequent is this Scheme farmed?
4. Which crops are cultivated here?
5. How is the Scheme’s management after independence?
6. How is the reception of the inhabitants of new crops and techniques?
7. What is the scheme’s main source of labour?
8. What impacts has the scheme had on the livelihood of the neighbors?
9. How are the NIB, KARI and KEFRI contributing to the scheme?
10. What are the challenges that the scheme has faced?
11. How is life after the introduction of the scheme?
12. Comment generally on how you view Perkerra Irrigation scheme?
13. Is there anything else you want to add?



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Ref: No.

Date:

28th January, 2015

NACOSTI/P/15/7119/4630

Symon Barkachai Keitany
Egerton University
P.O. Box 536-20115
EGERTON.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*A History of the Perkerra Irrigation Scheme, Baringo County, Kenya, 1963-2013,*" I am pleased to inform you that you have been authorized to undertake research in **Baringo County** for a period ending **30th June, 2015**.

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

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


DR. S. K. LANGAT, OGW
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Baringo County.

The County Director of Education
Baringo County.



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