THE CHANGING LANDUSE PATTERN IN A MILLION ACRE SETTLEMENT SCHEMES AND ITS IMPLICATIONS ON HOUSEHOLD INCOME GENERATION FROM AGRICULTURE: A CASE STUDY OF NAITIRI SCHEME IN BUNGOMA DISTRICT.

BY

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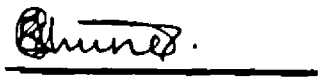
This Thesis is submitted in part fulfilment of the requirement for the degree of Masters of Arts (MA) in Urban and Regional Planning in University of Nairobi.

SEPTEMBER, 1997

DECLARATION

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



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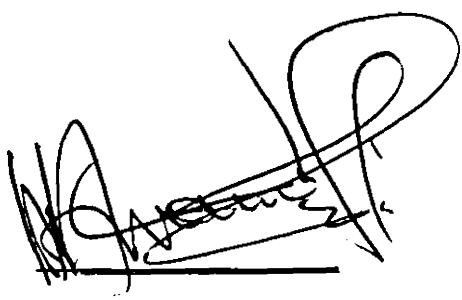

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DEDICATION

This Thesis is dedicated to my Mum Priscilla, my Sisters Branice and Joy and, Brothers Noah, Evans, Fred and Roy and, my son Mike.

I thank all of them for their love, kindness, support and encouragement over all the years of my study. They all had something special to offer.

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To all who participated and showed interest in my work i say God bless you.

ABSTRACT

More than 80 percent of kenyas population relies on small scale agriculture for their livelihood. This population is disproportionately located in rural areas and constitute the majority of the poor in Kenya. Experience has shown that traditional administrative approach in community development that was inherited from colonial era led to the economic structure where the rural are the majority and very poor. There has been a disharmony in identification of local requirements and planning needs and in identification, mobilization and allocation of local resources.

The end of reservation of white highlands as scheduled areas in 1960 opened up high potential land for African Settlement. The independent Kenyan government embarked on various programmes of allocating this land to Africans. The unpreparedness of the government to handle the process of land transfer could be seen in the haste, the number of many uncoordinated settlement programmes and the unviable financial packages that characterized the process.

Besides peasant and Yeoman settlement schemes, A million acre settlement scheme was the most publicised and the largest in terms of the acreage of land involved. A million acre scheme was initiated in 1962 to allow for purchase of 1 million acres of European mixed farms over a period of five years and transfer the land to African farmers. Other objectives of a million acre settlement scheme were economic, thus to create employment on the farms and generate sufficient income to the farmers. The architects of the programme came up with strategies that were universally applied to other settlement schemes such as land budget, annual expenditure and income, and loan repayment schedules.

Thirty years since the completion of the programme in 1966, the objectives of adequate income generation and creation of employment have not been achieved as most peasant farmers can no longer generate enough incomes from their farming activities neither can farming absorb all the available labour in this regions leading to widespread poverty.

Based on the objectives stipulated during the settlement programme in 1962, this study identifies the various changes that have taken place in the settlement scheme and how farmers have responded to a rather dynamic situation hence coming up with their own methods of generating more income

While looking at the above changing scenario, the study adopts a sociological approach to poverty alleviation, that in order to impact a last solution to poverty, rural development should be understood in a wider perspective founded on the philosophy and principles that aim to ameliorate poverty and stimulate a process of long term change. The objectives should be concentrated on poverty alleviation, necessity for community participation and need to take account of multi-sectorial linkages in rural economy.

The study identified several changes which have taken place in the settlement scheme. They include an increase in population; a decline in average size of land available to a household and introduction of new crops and methods of generating more income. The study also identified factors that are beyond farmers control, but have a great influence on the amount of income earned from each farming activity. Such factors include product prices, methods of marketing and climatical.

Based on the finding of the research, several policy measures are recommended to encourage the development of farmers activities that have more potentials of raising

more income. Dairy farming, maize cultivation, Tobacco growing, and coffee planting are identified as some of the lucrative sources of income.

In conclusion, the study reveals that there exists enormous potential for agricultural improvement in Naitiri scheme and before turning to non-agricultural income generating activities, there should be an effort to move towards agricultural intensification and diversification supported by enabling national policies.

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A.I - Artificial Insemination

ALDEV - African Land Development

BNS - Basic Needs Strategy

ECF - East Cost Fever

IBRD - International Bank for Reconstruction and Development

ILO - International Labour Organisation

KCB - Kenya Coffee Board

KPCU - Kenya Planters Cooperative Union

LDSB - Land Development and Settlement Board

MTK - Mastermind Tobacco Kenya

MLS - Ministry of Lands and Settlement

RSSE - Rural Small Scale Enterprise

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CHAPTER ONE

INTRODUCTION.

1.0 Introduction.

The year 1960 marked an end to the reservation of the "white highlands" as areas meant exclusively for European settlement in Kenya. The subject of Land ownership emerged as one of the most emotional ones for political discussion after lifting the ban on political activity and the seven years of state of emergency in Kenya.

With the intention to relieve political tension that had been building up on account of land shortage in many African communities, the new independent government in Kenya entered into negotiations with the British Government for financial assistance to purchase the land under European Ownership. The Africans were allocated this land under a programme of settlement scheme.

1.1 Background to Settlement Schemes

The idea of settlement scheme was couched to settle 6000 families on small peasant land holdings designed to produce a net income of £100 per annum and a further 1800 families on Yeoman schemes designed to produce a net income of £250 per annum (Goldsack and Nottidge, 1966). The scheme was also intended to facilitate orderly land transfer from European to African ownership without loss in agricultural productivity.

Since this would not quench the land hunger then, New Settlement schemes were initiated in other parts of Kenya. The New schemes doubled the acreage for peasants/Yeoman to

be transferred and provided for a higher density of land holdings and lower income target per family and had the intention of settling 12,000 more families.

In 1962, during the second constitutional conference, it became clear that investment by European and Asians had virtually stopped and would be unlikely to resume until a stable independent government emerged. Land hunger was still a potential for political instability while the economy was largely dependant on European farming (Haberson, 1966). This economy was bound to collapse leading to further unemployment. It was therefore necessary to embark on large settlement schemes to facilitate the transfer of more land ownership from European farmers to Africans.It was expected that this would increase incomes of smallholder and peasant Africans,beside the move would create jobs.

A "Million Acre" settlement scheme was initiated between 1962 and 1966. The programme allowed for the purchase of one million acres of land in European dominated mixed farms at a rate of 200,000 per annum over a period of five years. Plantation land and ranches were excluded from the million acre programme.

It is now argued that the Million acre settlement scheme achieved its political objective of allocating land to Africans thus allowing peaceful coexistence of European and African leading to a more stable political system (Leo, 1984)[1]. The objective of employment creation and income generation was not achieved as most peasant farmers no longer can generate enough incomes from their farming activities. This problem cuts across all the farming communities in all million acre schemes.

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[1] C 1984 Land and Class in Kenya. University of Toronto Press, Toronto

Naitiri settlement scheme started as part of the one million acre scheme in 1962. The scheme is located in Bungoma District, Tongaren Division and the scheme occupies one administrative sub-location. Naitiri covers a total area of 9516 acres of land. This was initially sub-divided into three hundred and twenty six plots of an avarage of 28.6 acres each. Each allottee farmer paid an average fee of ksh 1220 there after each farmer received a development loan of Ksh 3990 to be repaid in a period of thirty years. All plots had been allocated by the end of 1967.

The economic potential for farming activities in the scheme is high due to fertile soils and high rainfall. The scheme was therefore earmarked for maize, beans, and sunflower cultivation and Dairy products which include butterfat that would be produced from processed milk.

1.2 Statement of the Problem

While creating the "Million Acre" settlement schemes, the Kenyan government had specific objectives to be achieved. Besides the political goal of transfer of land ownership from the european farmers to Africans, the farmers were expected to produce enough food for subsistence on the farms, and generate income to offset personal expenditure from the farms after repaying their loans (Killick, 1981;167). Goldsack and Nottidge, (1966). In 1970-74 development plan the government noted that farming in the schemes had become economical at the farm level (Kenya, 1970). Farm produce from schemes found their market in the world market then and the future for commercial farming were assured (Kenya, 1970:166).

In the 1990s, the situation has changed as noted in economic survey carried out in 1996. The survey revealed that maize, dairy and sugar sub-sectors were hardest hit by the adverse effects of liberalization. This was mainly due to unfetted importation of dairy products,maize and sugar respectively. The National cereals and produce board exported a record 403,000 metric tonnes of maize in a bid to offset outstanding debt owed to farmers (Kenya Economic Survey, 1996:8)

Adverse climatic conditions have also affected arable agriculture. The 1984-1988 Development Plan shows that Kenya's agricultural production was at crossroads. Before then, in 1970s it was extremely successful with rapidly growing and increasing monetized smallholder base backed by a well developed physical infrastructure, a dynamic commercial network and a well staffed system of governmental agricultural services. There were massive food importation in 1979-1981 due to drought. This caused policy makers to become acutely aware of the incipient imbalance between food supply and demand caused by the pressure of a rapidly increasing population on Kenya's limited area of high potential arable agriculture in kenya (Kenya, 1984: 92).

1.2.1 Naitiri Settlement Scheme.

When Naitiri settlement scheme was opened for settlement , the projected income for each farmer was k£25 - £70 per annum (Goldsack et al, 1966).

Table 1.1 : A typical Land Budget for a Household with an Average Farm Size of 25 Acres.

Activity	Amount of Land in Acres
Homestead	0.25
Subsistence	2.00
Maize	2.00
Passion Fruit	0.5
Grazing	20.25
Total	25

Source : Goldsack and Nottidge, 1966.

Table 1.2: Projected Income at the year of maturity.

Source	Units	Price/Unit	Total in Ksh
5 Dairy cows	120 lbs	2.50	1500
Cull cow	1		300
One calf	1		30
Yearling	1		150
2 Acres (maize)	16 Bags	29	464
passion fruit	40 lbs	15	600
		TOTAL	Ksh 3044

Source:Nottidge and Goldsack, 1966.

Table 1.3: Total expenditure per year:

Activity	NO. of units	price/unit	Amount (Ksh)
Livestock units	6	70	420
Livestock units	2	35	70
Maize cultivation	2 Acres	35	286
Udersow maize	1	60	60
Land loan			420
Development loan			412
		TOTAL	1688

Net income per year of maturity.... 3044-1688=1376
= £68.16 s od
Source: Nottidge and Goldsack, 1966.

As seen from the typical household budget in Table 1.2 and Table 1.3, all family income in Naitiri was to be generated from the farming economy. The objective in the farm production was to use the land to produce products that it was ecologically suitable to support. Naitiri scheme farmers concentrate on Maize, beans, sunflower, and butterfat products. However, the situation has drastically changed due to high population growth which has implications on food requirement. The pressure has also led to excessive land subdivision due to the cultural practice of land inheritance.

The falling levels of incomes has also seen some farmers dispose off pieces of their land so as to meet domestic requirements such as to pay school fees, dowry and offset the loan arrears that might not have been serviced for a long period.

This situation has in turn translated itself into high incidence of land sub-division as shown by map 5.2, very low incomes and low productivity in 1980s and 1990 (Killick,

1981:169). The Structural Adjustment Programme (SAPs) adapted in 1990s has exacerbated the problem by liberalizing maize marketing (Kenya, 1996). In the year 1995, the price of selling 90 Kilograms of maize fluctuated between Ksh 950 - Ksh 400. Maize production was estimated at 26.33 million bags of 90 Killogrammes. The National Cereals and Produce Board (NCPB) bought maize from farmers at Ksh.950 per bag in the first half of 1995 down to 665 in the second half of 1995 . The NCPB finalised export contract of 403,000 metric tonnes to pay outstanding debt owed to farmers. Farm gate prices for maize went as low as Ksh.300 per 90 Kgs bag during the peak harvest period. In the last quarter of 1995 as farmers attempted to off load the bulk of their produce onto the market (Kenya, 1996:122).

In 1979 the population for the whole location with an area of 194 Km^2 was 27,652 people with 13,682 males and 13,970 females. There were a total of 3,388 households. During this time, the density had increased to 142 people per kilometre squared (Kenya, 1979).

By 1989 and the total population for the sub-location was 6,561 people with 3,233 males and 3338 females. The total number of households was 1,003. This time the population density had further risen to 156 people per kilometre squared (Kenya, 1989) as shown in the table 1.4.

Table 1.4: The population for Naitiri Location /sublocation.

Year	Population	Density/km^2
1969	3993	99
1979	27652*	142
1989	6561	156

Source: Kenya population census, 1969,1979, 1989.
*The figure represents the entire location.

The increase in population density implies that increased land pressure, high dependency ratio and high food requirement. The high number of households also results into more land being put under high settlements, reduced household per capita output and dependency ratio and land fragmentation. This means that the original allocation of land for particular uses is invalid (as in 1966) hence alternative income generating activities other than arable fed agriculture have to be sought.

1.3 Theoretical Framework

The One Million settlement Acre settlement scheme is part of rural development programme adopted and pursued by Kenyas government in the 1960s and 1970s. While writing about the wider subject of rural development in 1970s, Chambers notes that

"For those who are neither rural nor poor to know the priorities of those who are both is not as easy as it sounds. An indirect approach may help, drawing on social research especially case studies on social anthropology and social work, agricultural and political economy. On the basis of evidence from these sources, what people want can be inferred from what rural communities actually do even more, from what they say" (Chambers, 1983:142).

The establishment of the settlement schemes in Kenya did not draw from this argument since the farmers priorities were not considered.

Lefaver (1878) remarks that planners must understand that rural development problems need to be defined in their own context; policy tools to solve the problems are to be found from the rural context of development problems. Rural planners seek conceptual solace in Green's rural approach. They differentiate urban and rural regions, arguing that each is to be managed drawing different strategies. The emphasis here is the concept of rural regions and planning separatism (Cloke & Park, 1985)[2]. Zimmerman on the other hand, views rural resource management as a functional relationship between human wants and human abilities to appraise and use the environment. In these relationship, opportunities to use the resources relies on perceptive power of the user, recognition of their capacity to satisfy particular wants and provision of the means to develop desired utility. Resources are thus created to satisfy human wants. Many factors influence the process of creation and includes the identification of opportunities, and on the deployment of organisational and technological abilities (Zimmermann, 1951).

Zimmerman concludes that utility desired from the use of a particular resource is more important than mere physical presence of the 'resource'.

It is clear that the rural development models now popular in development literature lack the means to measure impacts created from relationships between conflicting resource users. Neither do these models have in built mechanisms for conflict resolution. More balanced

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paratism is a planning concept whereby rural issues are dealt with differently from

models are required so that they can provide the very much needed framework of continuous development that forms a social and economic basis of practice in resource use.

Planners should rely more on priorities of poor people in rural areas and less on the theoretical abstraction on what the poor want. There are two categories of rural poor, first there are those who make their living from a repertoire of on-farm and off-farm petty enterprises. Farming and business activities of the people in this group has low productivity in terms of quantity of goods and services, and monetary value. Rural households engage in the category of economic productivity because both rural men and women turn their hands on so many things to insure failure of one source of income against the other.

Secondly there are those who are involved only in one enterprise or activity as the principal source of livelihood. They include subsistence farmers, and single-species pastoralists and rural commercial trading entrepreneurs (Chambers, 1983:143). This character of rural economy is propelled by many operational factors. Most poor rural households seek foremost a secure and independent source of food and income. A sustainable means of livelihood is highly valued. Often this households are desperate and if they mine steep forest lands or fragile savannah to secure their livelihood for a time at a cost of longterm loss of valuable resources, they do not merit constant condemnation.

It is against this background that the rural development issues have arisen in the One Million Acre Settlement schemes since they were opened for settlement by the small African farmer, are assessed and with view to suggesting policy recommendations .

Agricultural change in rural areas operates within a tightly interwoven fabric of interrelated constraints. The sector is influenced by several factors at the household economy.

First there is the phenomenon, this include the natural physical climate, type of vegetation, type of soils and, pests and diseases within the partiular habitat.

Second factor is the farming systems. this include the relationships between the farm, land labour, capital and management. Their impact on agricultural production can determine the amount of output and hence the cost of production. Most small scale farmers use little or no machinery on their farms and employ mainly human and animal labour.

The household composition, subsistence needs, individual preferences and future requirements affects the level of agricultural production in variuos ways. Households with large families need more food, based on this, they strive to grow mainly subsistence crops on their small pieces of land to fulfil their most basic need as a first priority. The excess produce can be sold to acquire money for fees and and other family requirements. Very few farmers grow cash crops due to limited land and expensive inputs.

The socio-cultural environment which include personal attitudes, social structure and system of land tenure is the fourth factor with a great influence on agriculture. Land ownership is an exclusive right for the male members of the community. Due to individualisation of land tenure, land is sub devided into percels each with a tittle deed under the name of the bearer, this kind of cultural orientation gives way for the practice of land inheritance by male members of the society.

Other factors are Demography where one has to consider population density, growth and composition, ethnic affiliation and sex ratios among other dynamics. The governments macro economic policies and planning influeces agriculture through taxation, subsidy and, the marketing system. Research, extension material, infrastructure, levels of education and water

supply influence the type of farming techniques applied. Overall national economy interacts with world market system which affects foreign trade.

1.4.0 Goal of the Study

The goal of the study is to identify the potential for alternative income generating activities in Naitiri settlement scheme by assessing the changes in socio-economic factors that have influenced income generated from farming activities since the scheme was opened for settlement in 1966. The specific objectives of the study are derived from broader and more general objectives, while specific objectives will be achieved through collection of data in the field, general objectives will be assumed explained as the former reconcile distortion in general rural development issues described in the literature review.

1.4.1 Objectives.

The objectives of this study are four and would:

1. Analyze the changes in agricultural productive regimes as income generating activity in Naitiri. Both household data and information from government offices will be used to achieve this objective.

2. Identify and evaluate the most influential factors affecting income generating activities in the scheme.

3. Identify and evaluate alternative income generating activities already adopted by farmers in the scheme.

4. Recommend income generating activities that are more promising and strategies and policies that support alternatives which have more potential for enhanced rural income generation.

1.5. Assumptions of the Study.

1. Farmers are engaged in other non-farm activities to raise extra income to meet their household consumption needs.

2. Over the years most of the food crops produced has been consumed by the family household and hardly do farmers have a surplus for sale to earn money.

3. The population will continue to increase in Naitiri Settlement Scheme. This will eventually lead to small size of land units per household and a fall in agricultural productivity.

1.6 Scope of the Study.

The household will be the main unit of analysis. This will not necessarily focus on the original plot holders as set out in 1962. The newly created and existing households will also be considered in data collection. The variables to be considered will be the household size, age and their sex, land sizes, the type of farming activities practised, any other non-farming activities, sources of income, and average annual expenditure. Money generated over the years from farm produce will be used as a measure of land productivity.

Specifically, the study will focus on how specific households generates income to meet their requirements by engaging in both agriculture and off farm activities and problems they face.

1.7 Justification of the study

According to 1997 National Development Plan eleven million Kenyans out of a total population of 28 millions live in absolute poverty, The plan also notes that 80 percent of Kenyans population live in rural areas and depend on agriculture for a livelihood (Kenya, 1997:17,49).

The most important question about poverty is not how the degree of inequality has changed, but how the incomes of the poor have been changing in an absolute way. There are no sources to provide easy, direct answers to the question, but of great relevance is the way that the smallholder agriculture has been developing because the vast majority of the poor depend on this sector. By and large then the alternative to farming does not offer the poor a secure escape from their condition.

It is a difficult task to raise rural living standards at a satisfactory pace. Population growth is a contributor to rural poverty through its impact on land fragmentation, on landlessness

and in pushing people to marginal areas. Hanin draws attention to the fact that rapid population growth diverts large resources away from alternative, more directly productive investments in future productive capacity [3].

When we enquire into the effects of settlement programme on rural poverty, and income inequality, it is important to avoid exaggerating the importance of the programme in national

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n Killick 1981:195 *The characteristics and Development implications of a Fast growing Population.*

context. About 1.7 million hectares of mixed farm land have been transferred compared with a total area of all agricultural land of over 50 million hectares or 6.8 million hectares of high potential land. The land transfer affected only a quarter of best areas amounting to about three percent of nations total stock of agricultural land. The number of settlers relative to total rural population was even smaller (Killick, 1981:168).

Naitiri, as part of the million acre programme provides a nice case for the study of the effects of population on income generation and possible methods the poor have adopted to improve their living standards.

1.8 Study Limitations

The researcher was faced with various difficulty in the field; One of the problems was that in some cases the real household head could not be accessed for interview, in this case the elder available member of the family was interviewed. In cases where there was none the immediate next household was chosen for interview. Second problem was the availability of information on income and expenditure accruing to the entire household. In most cases, by use of the amount of produce and prices and, type of job a real estimate of the income could be established. The government officers don't keep proper records about the production in the Sub-location and therefore Divisional figures were relied upon.

1.9 Organisation of the Thesis

This Thesis is organised in six chapters; chapter one gives an introduction to the study. This chapter includes the statement of the problem, theoretical framework, study objectives, assumptions and limitations along with justification of the study.

Chapter two is a detailed exposition of the methodology used while carrying out the study. This chapter deals with the sampling frame and techniques employed in choosing the sample, types and sources of data, the scales of measurement used to collect data in the field, and methods of data analysis.

The third chapter gives selected literature review about agriculture, rural poverty and development, and settlement schemes in Kenya. Literature review is looked at in a planning perspective comparing the initial objectives of the settlement programme, how the goals were arrived at and indicates some of the sociological approaches that should have been applied to include the wishes of the settlers.

Chapter four begins by giving a detailed background information to the study area as a former white highland. Issues like the physical location of the study area, the type of soils, climate and agro-ecological zones are looked at. Of impotance are the existing infrastructural facilities in the study area and its location in relation to nearby urban centres. This makes it possible to asses the existing potential of the settlement scheme. Several maps are drawn to indicate the spartial location of the study area.

Data analysis is dealt with in chapter five. Because of the type of information acquired in the field, most of the data analysis is in tabular form showing relaionships between various

variables such as land sizes, incomes, money spent for farming, school fees and family upkeep. All this results are output in tables.

The sixth and final chapter gives a summary of research findings, recomendations and conclusion of the study. The study cuncludes that non agricultural activities have very little potential for growth as alternative income generating activities in former while highlands, instead more efforts should be towards intensive methods of utilising land. Its on this basis that the study recommends more research work to be carried out for further land reform programmes. Finally there are three appendices for household and bussiness questionaires, and a list of subdevided plots.

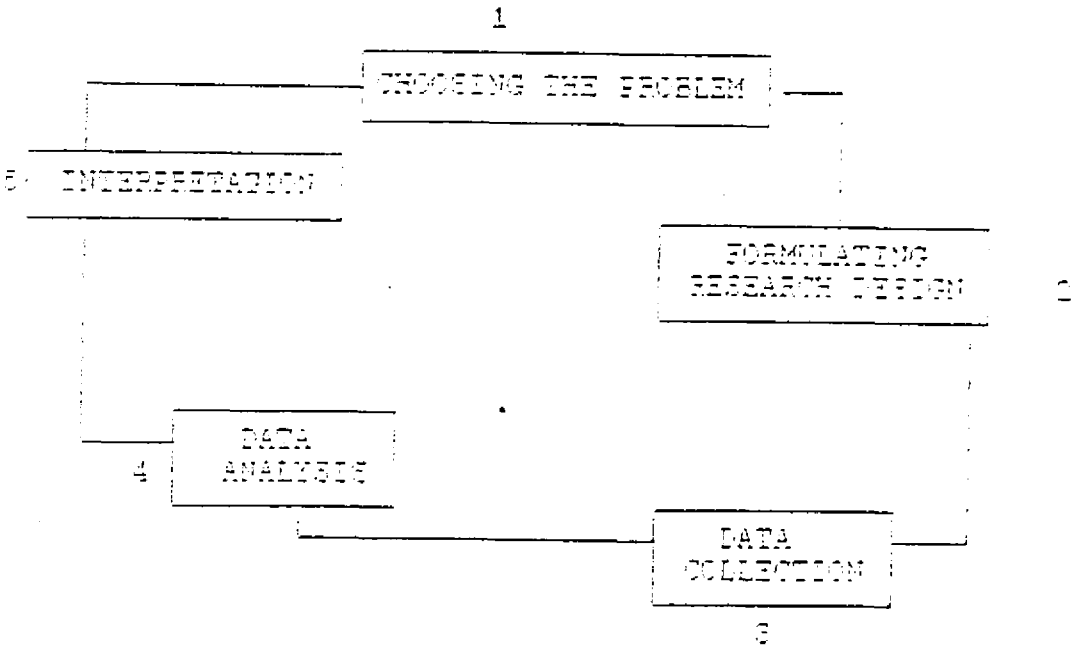
CHAPTER TWO

METHODOLOGY

2.0 Introduction.

This chapter gives a detailed methodology employed during this study. The goal of research employed in this study is to further the understanding of society. The this study share basic stages although there are variations that have been introduced to meet specific needs of this study. Thus in a way this study has employed a research approach that differs significantly from a typical research approach demonstrated in Figure 2.[4].

Figure 2.1 A typical research process.



Source: Bailey, K,D. 1987:12

[4] Bailey 1987 Methods of Social Research Third Edition page 12

The general framework elaborated in this stages was followed in this study, but as pointed out, slight variations were introduced to take into account special needs of this study. Such variations included choosing research problem and stating the hypothesis, formulating the research design, gathering data, coding and analyzing the data and, lastly interpreting the results.

2.1. Data

The type of data in research influences both the method of collection and the instruments utilized. The study collected both secondary and primary data. Primary data was achieved by conducting a field survey by use of standard questionnaires, observation and photography. Prior to the field survey, secondary data was sourced from published research findings, government documents and journals.

2.1.1 Sources of Data.

The major two sources of data collection were direct (primary) and indirect methods (secondary methods). Direct methods involved the administering questionnaires to a sample of ten percent of the population, personal (researchers) observations and holding scheduled interviews with selected key informants. This method exposed the researcher to the respondents personal views about the sought subject.

Secondary method involves the study of any written materials that contain information about the study phenomena. Some documents were primary or eye witnesses accounts written by people who experienced a particular event or behaviour, while others are secondary documents written by people who were not present on the scene but who received information

necessary to compile the document by interviewing eyewitnesses or by reading primary documents. To clarify this distinction, an autobiography is clearly a primary document while a biography is a secondary document.

2.2. Methods of data collection.

The methods of data collection depends on the type of data to be collected. The method that was employed to collect secondary data involved a review of literature on agriculture, development of settlement schemes in Kenya and relevant government policy guidelines. While for acquisition of primary data, field survey through administration of questionnaires and interview schedules, observation and photography were utilized.

2.1.1 Secondary data.

Collection of secondary data involved reviewing relevant literature on agriculture and rural development in Kenya. This approach lends itself to qualitative rather than quantitative analysis. The most comprehensive sources of secondary data reviewed were the National Development Plans, 1966-1970 to 1997-2001. The other government publications reviewed were sessional papers that guide policy implementation. For this purpose, Sessional Paper No. 10 of 1965 *African Socialism and its Application to Planning in Kenya*, Sessional Paper No. 4 of 1981 *National Food Policy*, No. 1 of 1986 on *Economic Management for Renewed Growth* were used. The first paper (1965) sets the framework for planning priorities in Kenya. Sessional paper of 1981 sets the government policy on agriculture and food production which no. 1 of 1986 is the basis upon which structural adjustments are implemented.

Other government publications that were consulted are the Kericho conference of 1966 on Employment, Education and Rural Development, the Ndegwa report on Government Expenditure and Revenue, 1966 report on Socio-economic Performance of Settlement Schemes by Ministry of Agriculture.

In order to understand the factors behind the creation of the settlement schemes, reference is made to published researches by M.P.K Sorrenson 1968 and Haberson and R.S Odingo 1967 on Land settlement in the Kenya Highlands.

The secondary method of data collection has several advantages; First, it is possible for the research to gather information about inaccessible subjects. Most of the original land owners in the schemes are either long dead or have migrated reside elsewhere. Its only through secondary method that the research unveiled some of the past trends. Secondly, this method allows for longitudinal analysis. **Like** observation and **unlike** experiments and survey, document study is suited to study over a period of time. Thirdly, through secondary information, unlike experimentation and observation, the researcher is exposed to a wide range of sample size to choose from a situation that allows him to have access to a lot of information. Lastly there is advantage in that the method cuts down on the cost of data collection.

2.2.2 Primary Data.

This method was applied through administration of questionnaires, observations and carrying out of scheduled interviews and photography.

2.2.2.1 Field Survey.

The survey consisted of asking questions to a representative population sample of the true population of households. There were a fixed number of standard questionnaires administered to households which were selected based on random systematically classification basis so that quantitative analysis could be made. The design of the questionnaire was deliberate to meet this need[4].

One of the major advantage of the interview method is its flexibility. Interviewers can prove for more specific answers and can repeat a question when the response indicates that the respondent misunderstood. Secondly, even persons who are unable to read and write can still answer questions in an interview, and others who are unwilling to expend energy writing out their answers can be glad to talk. The interview also gives an interviewer an opportunity to observe non-verbal behaviour and assess the validity of the respondents answer.

The fifth advantage is that the interviewer can have control over the environment. This can be achieved by making certain that the interview is conducted in privacy, that there is no noise as contrasted to mailed questionnaires where the interview can be completed by respondents in drastic conditions. Its also possible to record the time and date of interview so

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[4] . The questionnaire was to be relevant to the study goals and the questions relevant to individual respondents.

that incase there were any abnormal occurrences, one can assess their influence on the results during data analysis.

The interview method has a weakness since it does not provide the respondents time to consult other family members or to check records. Its also faced by a problem of accessing the respondents either due to their geographical distances from one another as dictated by the sampling method or their commitment with other matters.

2.1.2.2 Observation and Photography

Observation method is a technique for collecting primary data on non-verbal behaviour. Observation method involves sight, visual and data collection via other senses, such as hearing, touch or smell. The use of observation in carrying out research did not preclude simultaneous use of other data gathering techniques, instead, it was used as a complementary method.

There are two main types of observation and were both employed during research period; participant and non participant. In the participant observation the researcher participated in activities being observed, and his dual role was known to the other participants. This method of data collection was employed by attending chiefs Barazas and coffee farmers meetings. A non participant observer, on the other hand does not participate in group activities and does not pretend to be a member. This method was applied through the research assistant who has resided in the study are for over eighteen years. He could therefore record some trends be had observed over the period that were relevant to the study goal.

Photography on the other hand is used to complement all methods of primary data collection. Therefore during observation, thematic photographs were taken to support the

information given about the state of affairs. Some of the photographs taken included Human settlements, Makhanga coffee factory, Tobacco crop, mixed livestock and Nappier grass among others.

2.3 Levels of Measurements

Measurement is a process of determining a value or relative position of an attribute. A measurement can be both qualitative and quantitative. Qualitative attributes have labels or names rather than numbers assigned to their respective categories, while quantitative attributes are measured in numbers. Stevens (1951) constructed a classification of levels of measurement that includes nominal, ordinal, interval and ratio measurements. This study used these four measures of attributes.

2.3.1 Nominal Scale

In nominal scale, we arbitrarily give names to categories as convenient tags, with no assumptions about relationships between categories. This is the lowest level of measurement. The aim of this scale is to sort elements into categories which are as homogenous as possible as compared with differences between categories. All qualitative measurement is nominal regardless of whether the categories are designated by names or numerals. The categories in nominal scale are distinct, mutually exclusive and exhaustive.

In collecting the research data, nominal scale was utilized in identifying sex, villages, names of respondents and family members, and names of crops.

2.3.2 Ordinal scale

In ordinal scale instead of all categories being on the same level and thus equal in value like in nominal scale, categories are ranked in order their value on a discerned property. There is a single continuum along which individuals may be ordered. An ordinal scale is symmetrical in the sense that certain relationship may hold between two variables denoting a difference in value on the property being measured.

During the research, ordinal scale was applied in various cases: First was the question about the respondents age so as to differentiate between the older and younger settlers and how long they have lived in the settlement scheme. Secondly, there was a question on how much land is owned. This helped to rank the land sizes and get the frequencies. The third situation involved cases where the researcher wanted to know how much money the farmers raised from particular different crops so as to know which of the crops is a high income earner.

2.3.3 Interval Scale

With interval measurement, we can determine how many units' difference in age there are form one rank to the next. Thus we may find that there is only one units difference between the oldest person and the second oldest. This unit is consistent wherever it occurs in the scale. An interval scale level of measurement requires the establishment of a physical unit of measurement which can be agreed upon as a common standard and which is replaceable.

This scale was utilized to gather information on age in years, land sizes in acres, expenditures in shillings and incomes in shillings among other attributes.

2.4 Research Design

The design of the research was based on the already existing structure of Naitiri settlement schemes. Four clusters of villages were chosen among all the nine villages and its in this four villages that questionnaires were administered. Random sampling method was used to select the clusters while systematic sampling was used to arrive at the exact households for interview.

2.4.1 Structure of Naitiri Settlement scheme

Primary data collection techniques were designed to suit the existing lay out of Naitiri settlement scheme. The scheme is composed of nine villages namely , Makhanga A, Makhanga B, Shihilila, Sirende, Sango, Nakoba, Nanjala and Wabukhonyi villages. Each of the village is headed by a village head, who assisted in identifying the plots and respondents. This was an easy and efficient method since the local elder introduced the researchers to his villagers which excluded suspicion. The boundaries for the villages are arbitrarily identified by a road, a river, swamp or waterways. All the respondents by knowledge of their village elder know their villages. The research set to interview 10 percent of the total households.

2.5 Sampling Technique

Sampling methods are broadly classified into those that yield probability samples and those that yield non-probability samples. The distinguishing characteristic of a probability sample is that every individual must have a known probability of being included in the sample. If probabilities are unknown, it is impossible to make legitimate use of statistical inference. In non probability samples, the probability of selection is not known. It is the probability sampling that was utilized during the data collection. There are four main types of probability systematic sampling, stratified Random sampling and cluster sampling. These techniques are not mutually exclusive, they can be combined like cluster sampling and then later elements can be drawn by either simple random or systematic procedure.

2.5.1 Cluster Systematic Sampling

Mandenhall, 1971 defines a cluster sample as a simple random sample in which each sampling unit is a collection. Cluster sampling elements are not sampled directly. Instead, samples are drawn from clusters or groups of elements. In the simplest of cluster designs one may use random selection among clusters and then select every individual within those clusters included in the sample of clusters. Such a design is always referred to as a single stage cluster design since sampling occurs only once in the process. In multi-stage sampling, on the other hand, the design may involve first taking a simple random sample of the census tracts within the city, then take a simple random sample of the blocks (small clusters). Finally, the interviewer might be instructed to select every second adult within each of these households

For the purpose of this research, a random cluster systematic sampling was applied. First the villages were identified as the research frame clusters. The villages were assigned random numbers ranging from zero to eight . Then by use of random numbers table, four villages were arrived at for data collection and survey. The numbers in the random table are computer generated and are truly random. There is no descendible pattern as indicated by appendix B. Random numbers are usually printed in five digit blocs. The numbers of digits one needs depends on the size of his/her sampling frame. If a researcher has 99 or fewer units in his or her sampling frame, he or she needs to select only two columns of random numbers. Because there were only nine villages, only one unit was used.

The four villages arrived at for interview were Sirende, Makhanga A and B, Lungai and Nakoba-Sango. In order to arrive at a particular household in each of the Villages, registered plot numbers were used. Because the total number of registered plots in these villages were four hundred yet the research set out to interview only ten percent of the total 782 plots, the systematic method of sampling was applied so that the Kth household was picked for interview with K being a constant. If K were two the sample would constitute one half of the population, if K were 20, The sample would only be five percent of the entire population. In the case of the field data collection, K was five and hence twenty percent of the population in the village was covered as shown in table above. By use of these method, 80 households were arrived at for household interview which represents 10.2% of the entire population as shown by table 2.1 below.

Table 2.1 Sample Frame.

VILLAGE	NO. OF PLOTS	20 PERCENT
Sirende	80	16
Makhanga A and B	165	33
Lungai	85	17
Nakoba-sango	70	14
Total	400	80

Source: Field Survey, 1997.

2.6. Data Analysis

The main task of data reduction is coding. Coding for computer analysis generally consists of assigning a code number to each answer category so that answers may be stored in a computer. Most of the data was postcoded into groups and hence most of the analysis is at group level. Outputs such as table presentation the chi-square values and pearsons were used for data presentation and measure associations.

2.6.1 Coding

It is much easier to set, store and retrieve numbers than it is with letters or other works. Thus it was necessary to change responses from words or sentences to numbers by assigning them a value. Rather than enter yes or no response into a computer, it is much simpler and takes less space to assign each answer a number, for example, Yes equals 1 and No equals 2 and enter the appropriate number. This makes it possible to have frequency print outs and other descriptive statistics results. For this research, response categories were provided in case of closed ended questions. Like yes=1, no=2, male =1 and female =2. For open ended questions,

however, codes that paraphrase the meaning of verbal responses were typically constructed after the data was acquired to preserve the meaning of the data. The numbers assigned include those for no response and not applicable.

Each respondent was assigned a distinct identification or 'ID' number similar to the number indicated on the questionnaire. This provided for verification incase of any suspicious data.

Numerical coding can be conducted either when the questionnaire itself is being written or after it has been administered and the questions answered. Precoding was limited to closed questions while in open ended questions, codes were after going through the questionaires, since the researcher was not sure exactly what answers or how many different answer categories were to be given.

Both precoding and postcoding are a two part procedure involving the choice of a different number for each and every possible answer category and secondly a choice of the appropriate column or columns to certain code numbers for that variable.

Coding was followed by data entry where a data matrix was created. While doing this, variables are assigned names, variable length including number of decimal and also define variable type, and value label. Several statistical instruments were then employed to carry out quantitative analysis.

2.6.2. Quantitative Analysis.

Statistics has two main functions: The first one of these functions is summarizing information in such a manner as to make it more useful. The second function is induction or making generalization about some population on the a sample drawn from this population.

2.6.2.1 The Chi-square method.

The chi-square is the commonly used test of significance for independence for tables containing nominal and ordinal variables. The chi-square, denoted by symbol $X^{2,}$ is a name of the distribution and its not symmetrically shaped but skewed to the right. While using chi-square, the question is whether the relationship is statistically significant from non-zero. The Chi-square determines what a non-zero relationship would look like and compare the data with the independence to see how much the two variables differ.

This is a very general test which can be used to evaluate whether or not frequencies which have been empirically obtained differ significantly from those which would be expected under a certain set of theoretical assumptions. The test has many applications, the most common of which in social sciences are continency problems in which two nominal scale variables have been cross classified, the method can also be used to test the null hypothesis, that sample data have been drawn randomly from a normal population.

The larger the difference between observed and expected frequencies, the larger the value of chi-square turns out to be larger than that expected by chance, then we are able to reject the null hypothesis.

The Chi-square was used to screen the relationship between various variables so as to subject them to further tests.

2.7 Qualitative analysis.

Qualitative analysis summarises data by such measures as percentages, means, standards deviation among the methods. This is also called descriptive statistics.

2.7.1 Percentages

The word percent means per hundred. By using percentages we are standardizing for the size by calculating the number of individuals that would be in a given category if the total number of cases were 100 and if the proportions in each category were unchanged. The percentages must sum up to 100 unless the categories are not mutually exclusive or exhaustive.

During the data printout, percentages were used to give cumulative frequencies of valid cases, missing cases and valid percentages. Percentages are given to the nearest decimal and adjustments made in the last digits so that totals are exactly 100.0. The use of percentages and proportions usually imply considerable stability in numbers. For this reason, two rules of thumb were important during the data analysis (1) The percentages were always reported along with the number of cases, and (2) the percentages were any computed in instances where the number of cases on which the percentage is based is in the neighbourhood of fifty or more. Given that the sample size was 80, this justified the use of percentages.

2.7.2 The Arithmetic mean

This is one of the measures of central tendency use on social sciences research. The mean is defined as the sum of scores divided by the total number of cases involved. The symbol X is conventionally used to indicate the mean although occasionally the later M is used. The mean was algebraic property that the sum of deviations of each score from the mean will always be zero. The second property of the mean is that the sum of the squared deviations of each score from the mean is less than the sum of the squared deviations about any other number. The proof of this property requires calculus.

The mean, also referred to as the average during analysis, was used to compute all numerical data inputs like the average land size, family sizes, income from each type of crop and average expenditure among other variables.

2.7.3 The Range

This is the simplest measure of dispersion used for interval scales. The range is defined as the difference between the highest and lowest scores. This is always indicated by giving the actual figure or by giving the two extreme scores. If the data have been grouped, we take as a range the difference between the midpoints of the extreme categories. The range proves useful if it is desirable to obtain some quick calculations which can give a rough indication of dispersion.

In data analysis the range was used as a basis of categorization of the data into various homogenous groups. By taking note of the highest and lowest figures, the researcher was able to define the intervals between each groups.

2.7.4 Cross Tabulations

In descriptive study, especially an explanatory one, the researcher may be more concerned with describing the extend of occurrence of a phenomenon than studying its correlates. Bivariate presentation places two variables together in a single table in such a manner that their interrelations can be examined. Such tables are called continency tables or cross-tabulations (cross-tabs). In continency tables all combinations of categories all variables are presented.

One variable, called the column variable, is usually labelled across the top so that its categories form column vertically down the page. The second variable, or row variable is left on the left margin, with its categories forming rows horizontally across the page. By convention, the column variable forms the independent variable and the dependent variable forms the row. Cell frequencies or absolute numbers were preferred because the researcher used the tables to conduct statistical analysis. However, in cases where only presentation was needed, the percentages were used rather than raw numbers of cells. By percentaging the independent variable the researcher was able to identify whether change in independent variable results in a difference on the scores of the independent variable.

2.8 Conclusion.

Because of the nature of the data collected from the field survey, the researcher categorized it so as to facilitate analysis. Several categories were achieved hence cross tabulation was the only most appropriate technique that was employed for investigation of the relationship between the groups. The chi-square method was also employed to identify the difference between the actual values and expected results.

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction.

The most salient fact about the structure of Kenyas Economy is that more than 80 percent of the population relies for their livelihood from small scale agriculture (Hazlewood, 1981). This population is disproportionately located in rural areas. This population also constitute the majority of the poor in Kenya. Experience has shown that traditional administrative approach in community development that was inherited from colonial era led to the economic structure where the rural people are the majority and very poor. There has been a disharmony in identification of local requirements and planning needs and in identification, mobilization and allocation of local resources (Mbithi, 1974:171).

In this chapter, the literature on settlement schemes in Kenya and their effect on alleviation of rural poverty is reviewed. The only answer to poverty development. The subject of rural development as a strategy to enhance the standards of living in the rural population is also briefly discussed.

It is argued that Economic growth leads to more inequality and that a trade off involving policies which reduce growth and improve distribution of income would be worthwhile. However, following International Labour Organizations (ILO) Report on Unemployment, income and inequality, Kenyas development planners adopted a strategy of redistribution with growth. This has not seen a great improvement in rural incomes (ILO, 1971)

According to World Bank, Rural Development is a strategy designed to improve the economic and social life of a specific group of people - the rural poor. It involves extending the

benefits of development to the poorest among those who seek a livelihood in rural areas. This group includes small-scale farmers, tenants and the landless (WB, 1975a :3).

The World Bank and other international agencies and institutions did place a lot of emphasis on increasing production, raising productivity and mobilising what labour, capital and land where available. There was also recognition that poverty and inequalities have to be reduced (World Bank, 1975). These matters form the core of this chapter by focusing at the current issues of rural development.

3.1 Settlement Schemes in Kenya.

Settlement schemes have been used in different countries like Bangladesh and Indonesia for various reasons. The two outstanding reasons advanced for settlement schemes are economic development and political solutions. Kenya has not been an exception. Odinga, 1967 notes, white settlement, white government and land alienation went hand in hand in Kenya. About half of the land in Kenya worth cultivating lay in what came to be called white highlands. African reserves had a considerable part of uncultivatable land . This created a landless and poverty stricken peasantry (Odinga,1967:22).

It was this peasantry which agitated all the movements of land reform in 1950s. The agitation was not just a political and security question, but more importantly an economic one. In 1962, after independence, the government started a policy of africanisation of European land. Large farms were bought and split into small holdings with new objectives to settle landless families. According to Mbithi and Barnes, the new kenya government started settlement schemes for the following four reasons, first, to manage rapid and orderly transfer of land from

European settlers to Africans without a drop in agricultural production. Secondly to reduce the number of landless and unemployed Africans in more densely populated areas in Kenya Highlands. Thirdly, to replace European owners of medium size farms with Africans smallholder (Yeoman farmers) and fourtly to facilitate the introduction of better farming methods into a large section of African farmers (Mbithi and Barnes, 1974).

In June 1963, the Department of Settlement in the Ministry of Lands and Settlement (MLS) was formed and took over the functions of land redistribution from African Land Development (ALDEV). By mid 1965, nearly 1.2 million acres of former European farms had been purchased and settled approximately 34,000 families (Ruthenberg, 1966:64).

By 1965 settlement programme was taking place in five of eight kenyan provinces as shown in table 3.1. By 1968,the number of holdings had increased 3728 in 1965 to 32651 in 1967 as shown by table 3.2.

Table 3.1: Acreage and Number of Holdings in Settlement Schemes by Province in 1965.

Province	Settled Acreage	No.Of holdings
Western	102,610	4,713
Nyanza	48,272	2,318
Rift Valley	153,210	4,326
Central	413,807	14,127
Eastern	18,536	432
Total	736,435	25,979

Source:**Odingo R.S** *'Land settlement in Kenyan Highlands'*.In Shiefields J.R. Education ,Employment and Rural Development 1967:146.

Table 3.2: Growth of number of settlement schemes and number of holdings between 1963-1968

	1963		1967/68	
Province	Schemes	Settlers	Schemes	Settlers
R/Valley	13	1613	33	5350
Western	1	402	19	7712
Nyanza	1	54	13	3320
Eastern	1	246	8	1638
Central	13	1416	50	14,737
total	29	3728	123	32,651

Source:Kenya, Department of settlement,*Five year Review and annual report on the state of settlement schemes.*

In demarcating the schemes, an attempt was made to eliminate Islands of European farming surrounded by African settlement. There was also an effort to choose the land which was closer to a former reserve with a high population pressure. All the major tribes bordering the former white Highlands had to be provided with some land. Another criteria was to choose land which was highly underdeveloped (Wilde, 1967:188)

Following this criteria, the department of settlement came up with five types of settlement schemes. First was the high density schemes: These were for the unemployed and the landless. They were designed to raise an annual income of £25-£70. The total number of holdings for high density schemes was 27,687.

The second category was the low density, this schemes had bigger landholding and were meant for people with higher income. A total of 178754 acres of land was put in this category and divided into 35 schemes of 4,967 holdings. Each allottee of a holding had to have an annual target income of £100. In these second category there is a group of farms referred to as 100-acre farms or Z plots. These were formed from high quality farms divided into 100 acres surrounding a house that would attract a single buyer. The buyer was to raise ten percent of total cost of the farm and also raise a total working capital of K£500.

The third category of scheme is the Ol Kalou Salient settlement scheme. This scheme comprised 19538 acres of land. This land was not subdivided into family units because the climatic and soil conditions would make it uneconomical for farming due to its low potential. Farming is practised on large scale basis.

The fourth type of settlement schemes were the large scale corporation farms in Sotik and Machakos areas. Farming in this settlement schemes in Sotik and Machakos was

cooperative farming. Fifth was the Assisted owners and compassionate case farmers. The Department of Settlement helped 140 assisted owners and other individuals to purchase 229 large scale farms (Kenya, 1969:2)

In order to finally settle people in this schemes, and make land productive without delay, the government had to sought funds to buy land from European settlers. There were four main sources of funds as illustrated by the table 3.3 below:

Table 3.3 :Sources of funds for settlement schemes:

SOURCE	LOAN IN K£
British government	19,977,000
IBRCD	
CDC	1,274,000
Republic of Germany	1,218,000
TOTAL	22,169,000

Source: Field Survey 1997.

The Government used this money to purchase land and to pay for administrative costs. By mid 1967, the plan affected approximately 35,000 families, settled on 1.5 million acres of land. The total spending was £25.5 millions whereby £10.75 million on purchase of land, £9 million on land development and £5.75 million on other costs and administration . There were three types of loans given to farmers first there was short term Loans which were given in a spread of five years. Second was middle term loan money was released to farmers in a period of six to fifteen years and finally there were long term loans, this loans cover a period of thirty

years. The repayment period was similarly fashioned. Table 3.4 indicates repayment of Ainabkoi East scheme which is a typical repayment mode for all the schemes.

Table 3.4: Mode of repayment for Ainabkoi Scheme[5].

Type of loan	Average amount advanced	First - Third year	Fourth - Fifth year	Sixth fifteenth year	16 th to30th year
30 year loan for land purchase	5,211	311	412	412	412
15 yr loan for livestock fencing	4,482	291	543	543	
5 year loan for seeds/ fertiliser	1476	96	799		
TOTAL	11 169	726	1754	955	412

Source :**Clough, R.H.** *1965*

In terms of geography, the settlement schemes in Kenya are divided into five major areas namely; Area North, Area East, Area West, Area central, and Ol Kalou salient (Ayiro, 1977). The Luhyia settlement complex is situated in Area North. The complex is adjacent to densely populated areas of Kakamega, Bungoma and Busia with great shortage of land. The schemes therefore provided a relief for land hunger in the area. Most of the area North schemes in the complex have maize as the main cash and food crop. The crop has been improved and in

[5] . Clough R.H 1965 *Some Notes on Peasant Economy. Survey on and settlement in Kenya,* In East African Economic Review Vol 1 No.3 1965:18.

1967/68, some 40,000 acres were planted with improved variety. This improvement has affected the surrounding area too so that most people plant hybrid variety seed (Ayiro, 1977:10)

Naitiri settlement scheme is a high density scheme situated in Area North, of Luhyia complex. Before the farmers took on planting maize as a cash crop, it was earmarked for sunflower, beans, and butterfat production. With sunflower and butterfat grown specifically for income. More income was to be sourced from the sale of extra cattle and the remainder of subsistence maize along with sisal.

3.2 Settlement Schemes and Rural Development

In 1960, the white highlands were opened for settlement by African farmers by revoking exclusive nature of European settlement. To begin with, a scheme of K£ 7.5 million was set aside to settle 1800 Yeoman families and 6000 peasant families as an emergency measure (Sorrenson, 1968)[6].

The Land Development and Settlement Board (LDSB) was set up in 1961, to administer this scheme (Okoth-Ogendo, 1977). Another programme was started aimed to alleviate unemployment and landlessness among the Kikuyu. In this programme 12,000 African families

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[6]. This programme was financed by the British Government, Colonial Development Cooperation (CDC) and the International Bank for Reconstruction and Development (IBDR). The Yeoman farms were designed to produce a net income of K£250 per annum or more, whilst peasant schemes were to produce a net income of K£100 per annum.

were to be settled. In 1963 the LDSB was organised to assist 1800 small holder families earning a net income of £100 and £25- £40 respectively.

In the meantime, in October 1962, a five year million acre settlement scheme was started involving mixed farming land. This land was to be transferred after subdivision within five years from July 1962 to June 1967 to African ownership. Settlement Fund Trustee (S.F.T) was formed in the Ministry of Lands and was to implement this programme in two phases.

Phase one was planned to cover 180,000 acres of land. This was confined to underdeveloped land with high agricultural potential. The settlers were selected by the trustees and were required to have both a substantial amount of money and agricultural experience. The allottees were required to pay ten percent of the value of their land in cash and to make further deposits of their own capital with the trustee. The money to purchase the land was provided by the British government and two thirds of the money for development by International Bank for Reconstruction and development (IBRD) and one third by Colonial Development Cooperation (CDC)[7].

The second phase was a high density scheme covering 987,000 acres. Families were selected solely on the basis of landlessness and unemployment. The schemes were designed to produce net target incomes of £25-£40 per year, families were required to contribute £5-£7 of their money. The money to purchase land was a K£ 1.2 loan from West Germany. The land

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[7] . The British provided a further grant for resettlement development including surveying , planning lay out, soil conservation, administration, advisory and training services.

was subdivided into 135 settlement schemes. Others opened under this programme included (Mbithi and Barnes, 1977).

i) The jet settlement schemes that were initiated in 1962 in central province on land previously under forest reserve, The jet scheme in Kiambu is one of them. The settlers were expected to pay £25 for their land over 20 years in eighteen annual instalment of KSh 28 per instalment. They were given a two year grace period[8].

ii) Nandi salient[9] scheme: The purchase from the European owners of these farms was financed partly from money set aside in the million acre programme and partly from the deposits provided by farmers. The land was purchased by government and then vested in Sirikwa County Council who arranged for settlement of farmers. Farmers had to deposit KSh 30 per acre for medium sized farms and thereafter two instalments of KSh 14.25 to acquire title deed.

iii) Shimba Hills near the Coast region and the Roka Scheme and a new scheme began in Lembus forest area of South Baringo where Tugen families were settled.

iv) Meru District Settlement Scheme: The Department of Agriculture and Meru County Council combined to make arrangements to accommodate landless families in Meru. No development loans were involved.

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[8] . 1721 families especially of landless and unemployed Africans in Kiambu and Nyeri were settled.This schemes were initiated by the provincial administration.

[9] . This term was used to denote the land which was wrongly alienated by the European for settlement.

v) Some settlement schemes for squatters in 1966: Two such settlements were started at Ngoliba and Mamba farms near Thika. The land was acquired in form of gift to the Kenyan Government and by compulsory acquisition. As late as 1970-74 Development Plan, there was a call to settle all the remaining registered squatters on state land in the former large scale farms located in scheduled areas at the Coast (Kenya, 1970).

3.3.0 Rural Poverty

Poverty is a complex phenomenon, both institutional and structural factors. the pace and pattern of economic growth and investment in human capital all interact to determine a societies welfare.

About 75 percent of third world population live in rural areas. The poor are disproportionately located in country side mostly as small farmers and landless labourers; hunger, malnutrition, access to sanitation and clean drinking water, access to health and education facilities are among the indices used to measure rural poverty (Greer and Thorbeck, 1986).

In Kenya, the number of rural poor has continued to increase at an alarming rate. Between the period 1981 and 1992, there was no significant improvement in the incidence of poverty. In rural areas, the percentage of population under poverty line was as high as about 47 percent. The difference between the minimum required consumption and the actual consumption in rural areas worsened. In 1992, there were nine million poor people in rural Kenya, this being a 3 million increase from the 1982 mark. There was an increase in the proportion of the very poor and an increase across board in the depth of poverty (Kenya, 1994).

The bulk of the poor live in rural areas, two thirds of them in high and medium agricultural potential areas in central and western parts of the country. Decades of land settlement and population growth in this regions were supported by rich soils and good rainfall. But overtime, population pressure has taken its toll. This has led to migration to marginal areas where poverty incidence is also high. Arid areas which cover 60 percent of land area, have one million nomads, about one twentieth of the countries population and nearly all of them are poor (Kenya, 1994).

The riches groups in rural areas are public and private (formal) sector employees who account for 13 percent of households, export crop farmers who account for 5 percent are also relatively better off. The rest-food and subsistence farmers and those that derive the bulk of their income from informal sector are the poor of Kenya.

The poor have lower schooling for their children and spent less on health. Together with their children, the poor are likely to be malnourished, the children are likely not to be immunized and face a higher risk of dying in infancy and childhood. They own only small pieces of land and less cattle and consumer durable such as radios and bicycles, cement walls or iron sheet roofs. They have less access to safe water and practically no access to piped water or electricity (Kenya, 1996:193).

The incidence of poverty is significantly higher in households headed by widows, divorcees, separated and unmarried women with children. Together, the female headed households form one third of the households and as much as 60% of them have no male support (Kenya, 1994).

In rural areas, women contribute a major share of family income and in addition are responsible for child rearing and most household chores, including fetching water and fuelwood. An average rural Kenyan woman's day is thus two hours longer than for a man (Smock, 1981).

3.3.1. Causes of Poverty in Kenya

Recent development experience shows that rapid and politically sustainable progress on poverty alleviation has been achieved by pursuing a strategy that has two equally important elements (Kenya, 1994:203). The first is a broad based economic growth that makes use of labour and the second is to provide social services to the poor (Kenya, 1979)[10]. Kenyas development experience in 1980s and early 1990s puts it in a category of countries which have achieved some improvements in social indicators but no growth in income a situation which compromises the achievements. Even though the government commands a large share of the resources, the misallocation of budgetary resources is limiting the funds available for public investment in human capital formation and other essential services that support the poor.

Lack of economic growth is the primary cause of continued income poverty in Kenya. Per capital income growth has been an elusive target in 1980 and early 1990s (Kenya, 1997). Per capital output grew at a trend rate of 0.3% annually. The economic growth was particularly inadequate in terms of absorbing 4 million people who entered the labour force during these years. In rural areas, the average size of the landholding in smallholder declined from two

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[10] . A Report by the Presidential Commission on Employment in Kenya 1979.

hectares to 1.6 hectares during 1982 - 1992 and the percentage of households with little or no land increased. The trend rate of agricultural growth was only 2.2% annually and the yield of staple food crop - maize stagnated (Kenya, 1996).

There are a number of external factors contributing to slow growth: The country is susceptible to natural climatical disasters for example the country was hit by three years of drought in 1984 and again in 1992 - 1993 and now in 1996/97. Value added on agricultural products fell by 3.5 percent and seven percent respectively for the first two period. The external terms of trade declined by 30 percent (Kenya, 1996).

Secondly, there has been a significant progress in market liberalization in recent years as part of the structural adjustment programme for a considerable period in the immediate past. But price incentives for private sector activity - the exchange rate the interest rates, the trade regime and non agricultural commodity prices have been distorted and controlled in varying degree. Further non-price disincentives remain perversive because of the presence of a large public sector in form of parastatals in both marketing and production, from the legal and regulatory framework and from the uncertainty regarding the direction and possible reversal of government policies (World Bank, 1996).

Failure of past development effort in reducing poverty can be largely attributed to the failure to address the question of distribution satisfactorily. It was generally assumed that as investment and production increased, the benefits would accrue even to the poorest segments of the society. This assumption has been disapproved by nearly all countries of sub saharan Africa. The current vogue of development ideology spreading within Kenya is that the best interest of rural producers can be served by the adoption of a market oriented economic system.

This would mean that decisions concerning resource allocation, investment and income distribution would be governed by market forces with government playing a relatively restricted role. This policy may lead to stimulation of private investment and result into increased output, but it may not necessarily result into eradication of poverty. Poverty may tend to worsen as a result of inequalities likely engendered by market forces especially because of the manner in which such forces affect the agricultural sector (Kiros, 1993:188).

Thirdly, Kenya is a land scarce economy; about 40% of the land is arable, only 20% of which is of high and medium potential. Rapid population growth has resulted into migration from high potential to the less well undowered areas and at the same time has reduced land available to a household. The introduction of new technologies and adaptation to conditions prevailing on farmers fields and in semi-arid conditions does not keep pace with this development. the average maize yield even excluding the drought years has been less than two tonnes per hactare in 1980's and early 1990's (Kenya, 1994:113).

Decline in farm sizes has led to a narrow scope for area expanding acreage under farming within a smallholder sector and stagnant yield. This has led to static trends in farm yield per unit area. This two factors interact causing a slow growth in agricultural sector yet the sector is regarded as the highest income earner for over 70 percent Kenyans (Kenya, 1997).

3.3.2 Rural Poverty and Development Strategies

The greatest challenge which confronts Kenya in this last decade of the 20th century and beyond is how to reverse the unremitting historical trends of deepening rural poverty and increasing economic dependency. The only response to this major challenge is development.

The World bank suggested in its 1992 report that the major task of development is to eliminate poverty (World Bank, 1992;29). However, development should as much as possible focus on the distribution of resources and income among various segments of society. This has remained elusive. The question of equitable distribution is one that cannot be answered by economic planners alone on behalf of the society (Nation, June 22 1997:12-13).

3.3.3 Scope of Rural Development

The concept of rural development has proved to be elusive as witnessed by many definitions in use. However, there is a broader agreement on appropriate objectives for rural development than what it is. The primary objective should be to improve the quality of life of the rural poor. In doing so, a special attention should be given to women and children as vulnerable groups. The objective should be concentrated on alleviation of poverty, necessity for community participation and need to take account of multi sectoral linkages. Improvement in conditions of life must ensure adequate food, employment, health, habitat and education as well as recognizing the need for self reliance, a minimum degree of security, participation in decisions that affect oneself and ones family and a sense of purpose in life and work, including the opportunity to be creative (UNDP, 1979).

The approaches to rural development have changed from time to time since 1960. Many activities being carried out now involve what may be referred to as poverty programmes with limited scope and objectives which have increased since 1980's with the advent of non-governmental organisations. While this shows the degree of interest being given to rural

development, it does not necessarily indicate the presence of a planned and coordinated attack on rural poverty (Mbithi, 1974).

In order to impact last solution to poverty, rural development should be understood in a much wider context, founded on philosophy and principles of development that aim to ameliorate poverty and to stimulate a process of long term change. Broadly, rural development would need to be based on two types of activities (Chambers, 1983).

First, those aiming to ameliorate poverty and the rehabilitation of the ravaged rural society at progressively attaining the long term goal of rural transformation. This strategy can be understood as an enabling strategy of rural development. The approach reckons that rural development is a long term process but it can be stimulated and sustained by motivation from within. In essence, this is a strategy which aims to enhance the physical capability of rural people and to stimulate their creative potential so that they are enabled to become themselves the agents of long term development (Chambers, 1983).

The second one pertains to interaction of rural development based on small scale agricultural economy and national development. Basically, this concerns the allocation of investment and resources. In general in most efficient way possible while ensuring that an equitable share of the benefits therefore will accrue to the rural people. Its only under such circumstances that the rural poor can be expected to bare a share of costs and sacrifices necessitated for realizing national development goals (Barnes et al, 1977).

The issue therefore becomes one of how to make possible the extraction of potential surpluses from the rural sector without "killing the goose that lays the golden egg."

3.3.4 Development Issues Relevant to One Million Settlement Schemes.

Development issues facing rural areas are many and intractable. In such circumstances, it is possible that basic ills are confused with symptoms, causes with consequences, and means with ends. There is understandably disagreement about the ranking of the issues of rural development. To the politically minded, main criterion is likely to be the consideration of the present and the immediate future. To others, the students of development planning in future, its particularly the long-term future (Kiros, 1993).

The fundamental issues of rural and regional development calling for primary attention into the next century can be classified in the following categories.

1. Food sufficiency and security

There is an urgent need to overcome hunger and malnutrition. The question of the relationship between food and development is appropriately discussed in the context of the basic need strategy (BNS) of development. The extreme positions of BNS taken may be characterized as being radical and reformist. Bibangambaha expresses the difference between the two succinctly as follows: while the central issue for radical BNS is concerned with redistributing power. Liberal (reformist) BNS is concerned with coping with poverty (Bibangambah, 1985).

However, coping with poverty may not be possible in any sustainable way without some degree of empowerment of the poverty victims. Although the problem of hunger can be regarded as a primary focal area of action, it is not necessary that one can be tackled effectively without at the same time addressing the structural causes of poverty.

However due to the rising poverty in rural areas, the most immediate need is not one of transforming society or meeting all the basic needs at the sometime. There is not a single level of basic needs but a hierarchy. At the lowest level, basic needs are those that have to be met for bare survival. By definition anyone falling below this level dies. At the next level, basic needs can be defined as those that have to be met for continued survival and comprise of a minimum of food, water, protection from fatal diseases, and adequate shelter. At third level, the there is need for continued productive survival and protection from delimitating disease, more food and some education. Finally certain non-material needs may be added like participation in making decisions affecting ones life and work (UN, 1974).

The strategy to increase food supply should combine measures paying attention to chronic and transitory conditions of food shortage, temporal and spatial considerations among others. As the lower needs are met the immediate next levels gain prominence (Kenya, 1981).

2. Empowerment.

There is a necessity to enable the rural people to become effectively in control of the means of production and the fruit of their labour. The success in overcoming absolute poverty and in bringing about a sustained process of long-term development will depend on a strategy of development from below which emphasises popular participation by the stakeholders in development.

Participation is a holistic concept and its normal for some people to confuse it with its own aspects such as attending community meetings, contribution of labour and material resources to meet community undertaking among others. The principal goal of participatory development ought to be to enable the people to rise to the task of development. It calls for organisation and leadership (Batten, 1969).

The participative approach to development and planning offers a better possibility for more effective fulfilment of both the community level needs and the national development goals. The approach is supported by philosophical,theoretical, empirical and strategic considerations (Kiros, 1993:20).

The other side of the picture involves the type of policy which may be adopted in relation to rural or agricultural sector such policies should include taxation, pricing and marketing of agricultural commodities as well as manufacturers would need not result into undue burden on the rural population.

3. Appropriate Strategies

There is need to devise development strategies appropriate for the diverse conditions of the rural sector. No single approach of rural development can be relevant in all rural areas with a variegated landscape, different ecological zones, varied systems of production, and socio-economic circumstances. The overall approach of rural development should seek to respond to the problems and needs in particular regions and communities. Secondly, there has to be a research strategy corresponding to unique agro-ecological and production systems in the country (World Bank, 1992).

4. Utilization of Local resources.

The most important resources of the rural sector are the people, the land, and all animate and inanimate elements emanating from land. There is a requirement for appropriate policies and instruments for the better management and utilization of this resources. The policy should take the approach of conservation of both human and natural resources to avoid such externalities like brain drain unemployment and environmental degradation (Kenya, 1994:223).

There is a basic need to reconcile developmental and environmental perspectives; Environmental propositions often reflect static notions of resource conservation. Such notions not only reflect a simplistic new but may be also counterproductive and lead to absurd outcomes for example the conflict between wildlife and farmers crop.

The key towards an effective conservation based" development is the recognition that changes will continue to take place in the natural environment because of either the process of development or lack of it. In the long run, therefore the environmentalist interests can only be served if they are pursued in a dynamic rather than static context. The use of appropriate

technology offers a possibility of accelerating economic development without increasing pressure on environment because it makes possible inter alia, the more rational and efficient use of resources.

5. ***Appropriate technology.***

There is need for the reorientation and strengthening of research for development of appropriate technology. Technological change play a most significant decisive role in development process because of its influence on all significant aspects of economic and social life. All technology develops in response to particular socio-economic needs and hence the notion of technological transfer is not entirely satisfactory. Home grown technology is likely to be most effective for meeting domestic development goals and for solving development problems. The technological change and indeed development in general is a slow and a long term process. Rural producers can provide both the much needed empirical knowledge and participate in various stages of the process of technological development. In this way, they become agents as well as the beneficiaries of development. The national research system therefore needs to be an open system to succeed (Biggs, 1991).

CHAPTER FOUR

BACKGROUND TO STUDY AREA.

4.0 Introduction.

This chapter gives the background information of Naitiri Settlement Scheme. Since the scheme was part of the White Highlands, there is a brief discussion about the origins of white settlement in Kenya and the various legislative mechanisisms the British colonial power employed to alienate land in scheduled areas. The chapter also gives information about the location, size, soils and climate of the scheme. Socio-Economic factors are also discussed in brief.

Due to lack of information about the sub-location concerning the production trends of major cash crops and livestock products, divisional statistics was used. Finally due to the high population growth, such effects as land subdivision and high population density have resulted into declining agricultural productivity.

4.1. Origins of European Settlement in Kenya Highlands.

The completion of Uganda railway and the costs associated with its construction made the British government to look for a way the new investment would generate money to repay itself. The railway line was completed in 1902 and it costed the British Government £5,550,000 (Sorrenson, 1968). This investment had to repay itself. The total costs of railway construction was as follows: In 1896 the grant in aid was £100,700, by 1902 to 1903, this amount rose to £313,600 largely due to military spending as part of the railway construction. When the

railway reached Caesium, the total cost was £5,550,000 . The investment had lost £49,690 in the first year of its operations, excluding the annual charge of £319 112 for sinking fund and interest payments. It was for this financial problem that made the foreign colonial office encourage European settlement in Kenya so as to reduce the financial burden to the British tax payer.

The only resource for development then was agricultural land. A farming European settler community was encouraged to occupy land at a nominal fee and engage in commercial agriculture.

The Kenyan settlers were mainly drawn from other British colonies especially South Africa[11] . The Kenyan highlands had a temperate climate and provided a scope of high veld pastoralism. These peculiar factors presented the settler community with the opportunity for an economy based on agricultural development. No one was sure whether it was to be a temperate colony of settlement which would be self governing like Australia, New Zealand and South Africa or a tropical plantation colony of settlement with a handful of European planters dominating the economy but remaining temporary residents without political control. This was to remain the situation until the South Africans settlers prevailed on foreign office to create a whitemans country in Kenya citing other colonies as precedent and a basis of justification.

British policy in East Africa until 1898 was based on strategic consideration that had little connection with the territories themselves. Her main objective was to control and protect

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[11] Thus Kenya colonization process was part of the African colonization by the european power who had established other colonies in North America, Australia and New Zealand

the Suez as an alternative route to India. To secure control over the Nile Valley they decided to construct Uganda railway in 1895 linking the coast with Lake Victoria and hoping to use Uganda as a base to control Nile Valley. In 1894 the British government bought the administrative rights from the Imperial British East Africa company (IBEA) to control the East African protectorate. A 10 mile strip at the coast was however left under Zanzibars Sultanate administration. The protectorate hastily assembled a skeleton administration with British consul-general of Zanzibar Arthur Hardigde given additional responsibility as the commissioner of East African protectorate[12] .

In 1902, the then Governor for East African Protectorate, Sir Eliot directed Indian settlement at the lowlands and reserved the highlands for British settlement making it certain for the settlement of the highlands by the British and South African settlers [13].

Eliot pursued his goal with a fanatical zeal and devoted his considerable intellectual ability to arguing the case for European settlers (Sorrenson, 1968). He assumed the role of an immigration agent publicizing the virtues of the protectorate in an endeavour to divert British settlers from Canada and Australia. In 1902, Eliot aided by barely 30 European settlers formed an Association to promote European settlement their most influential spokesman were Hough

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[12] .The protectorate affairs were first handled by African protectorate department in foreign office until 1905 when it was handed over to the colonial office.Hardigde managed the protectorate from Zanzibar, but from 1900, his successor Sir Charles Eliot moved to Nairobi.

[13] . The Europeans were threatened with the proposal for Jewish settlers. This were Jewish refugees from Eastern Europe fleeing from pogmons in Russia and Romania. This proposal was opposed.

Cholmoderley and Baron Delamere who was granted 100,000 acres of Land in Rift Valley in 1903. Once completed as far as Nairobi the railway acted as a magnet attracting European concession hunters, merchants, farmers sportsmen and adventurers to the highlands. Nairobi became a starting point for expansion of European settlement westwards. There was a "South African invasion" to the highlands in 1903 with the help of Sir Eliot. The European colonization of East Africa was therefore more a consequence than a cause of British acquisition of the territory as noted by Sir Eliot in 1905[14].

4.2 Colonial Land policy and legislative Programme.

The history of Land question in Kenya starts from the year 1886. At which time Britain had obtained control over Kenya by way of an international agreement concluded with the Sultan of Zanzibar and Germany government (Sorrenson, 1968). In 1888 a royal charter of incorporation, extending from Wanga Kingdom east of Lake Victoria to Kipini at the coast was granted to imperial British East Africa (IBEA).

The protectorate did not have immediate visible wealth making land alienation very important for agricultural prosperity. The British made this possible through the evolution of "Crown Lands" 5(18)[15]. The East African (Lands) order in council defined crown lands as:

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[14] .` We have found in East Africa a rare experience of dealing with a tabula rasa,an almost untouched and sparsely inhabited country where we can do as we will,regulate immigration and open or close the door as it seems best'.

[15] . By a number of orders in the council and other legal decisions,by 1902 all the `wasteland' in the country had become crownland and could be alienated to foreigners.For immediate governmental purpose the India Land Acquisition

'All public lands within the East African protectorate which for the time being are subject to control of His Majesty by virtue of any treaty, convention or agreement or of His Majestys protectorate and all Lands which have been or may hereafter be acquired by His Majesty under the land acquisition act, 1894 or otherwise whosoever 7(18)'(Odingo, 1968).

Through legislations and judicial decision the protectorate administration acquired power to rule the protectorate and control the use of land. The ordinance also extended the leases for alienated land from 99 years to 999 years and empowered the governor to veto any transfer of land to a person from a different race from that of the transferor(Sorrenson, 1968).

The first wave of settlement was interrupted by the break of First World War but it resumed immediately after the war. There were plans for the allocation of land to ex-soldier settlers under an ordinance to that effect in 1919 and amended in 1920. Thereafter there were a series of legislative measures to ensure exclusive tenure of the land in the highlands to British Settlers.

The ordinance demarcated the highlands while the order in the council made this demarcation invariable. The settlers had also in 1928 set up a land advisory board that was to advise the governor on proposals for alienation on and direct grants of the crown lands. In 1926, there was a demarcation of natives reserves described in government notice number 394 of October 1926. Their boundaries were slightly adjusted as a result of a report by carter commission. This report also led to consolidation of exclusive European rights in the Highlands.

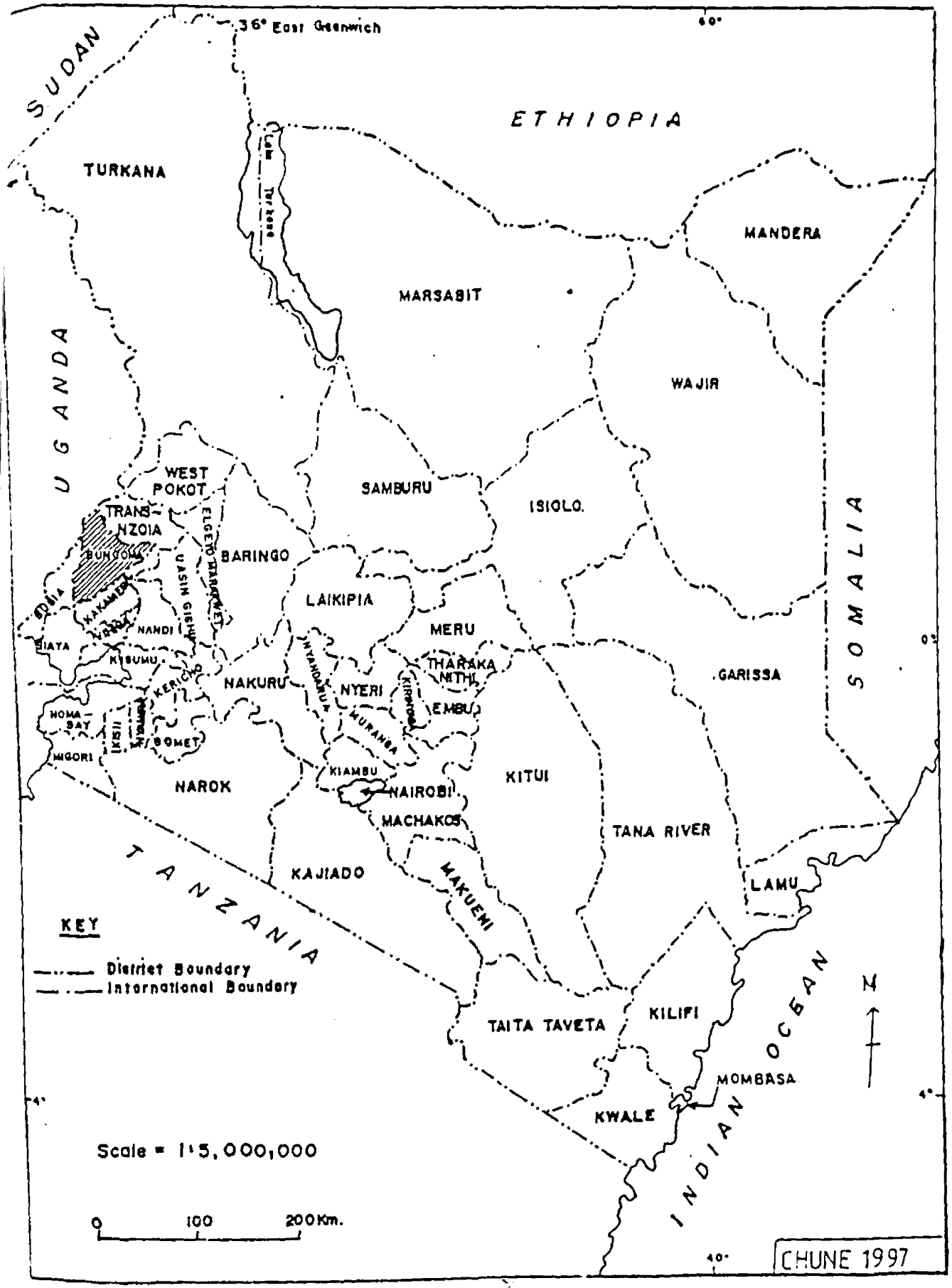
Act of 1896 was evoked allowing for acquisition of land for railway construction,government buildings and other works.

These policy measures were some of the major instruments the protectorate and the colonial states employed to safeguard the economic interests of the British government. The net result of this strategy was that it produced an economic structure based upon large scale capital employing African labour which co-existed with subsistence production in the African reserves. Naitiri is among the land areas in the highlands that were alienated and occupied by the settler community.

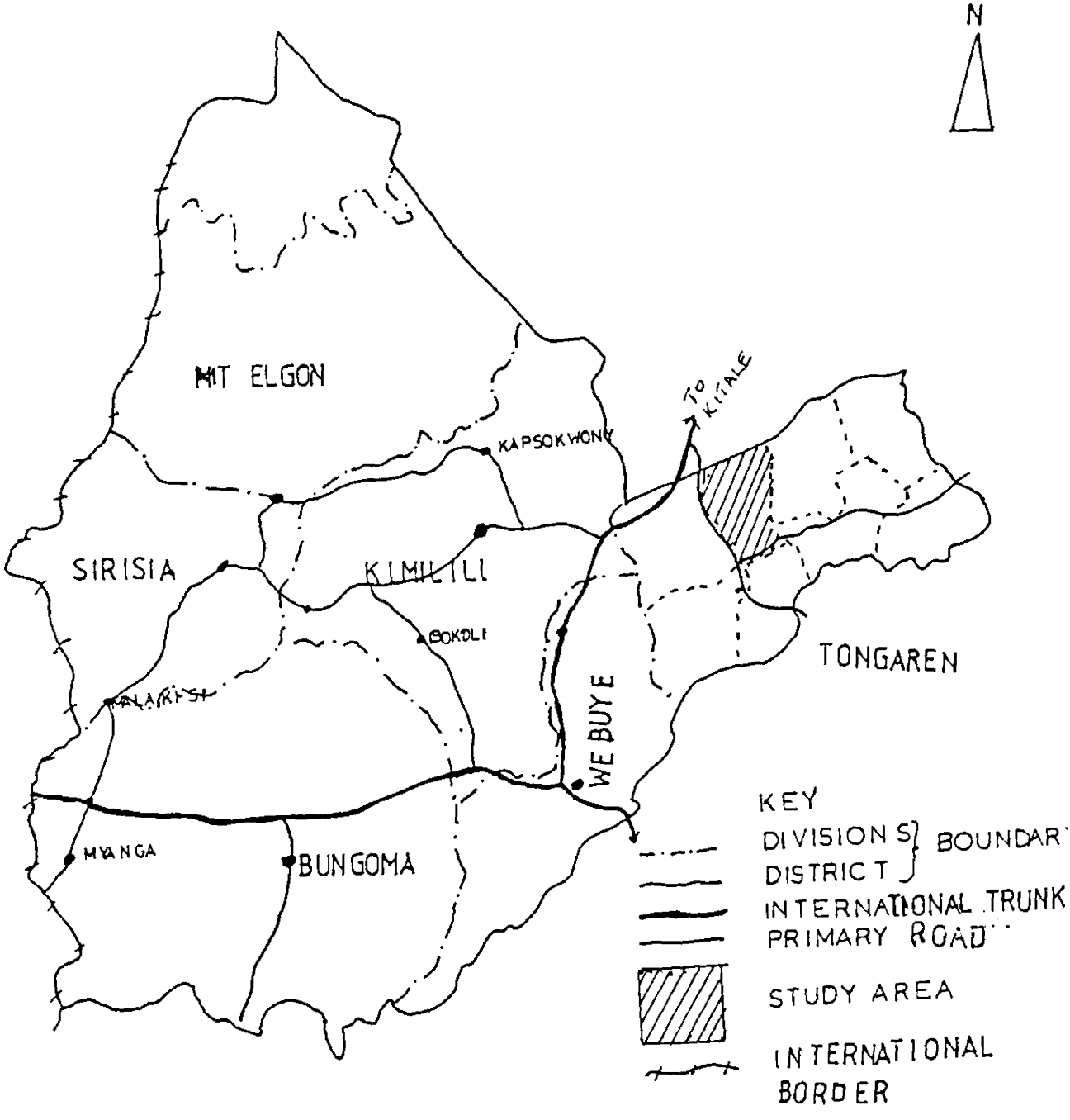
4.3 Location and Size

Naitiri scheme forms Naitiri sublocation within Tongaren division of Bungoma District as shown by Map 1 and Map 2. The sublocation is situated on the extreme East of Naitiri location. It is at an altitude of about 6200 ft (1890m) above sea level. Its situated at latitude 00 45 N and longitude 35 59 E.

MAP 4.1: LOCATION OF THE DISTRICT IN NATIONAL CONTEXT.



MAP 4.2: ADMINISTRATIVE BOUNDARIES OF BUNGOMA DISTRICT.



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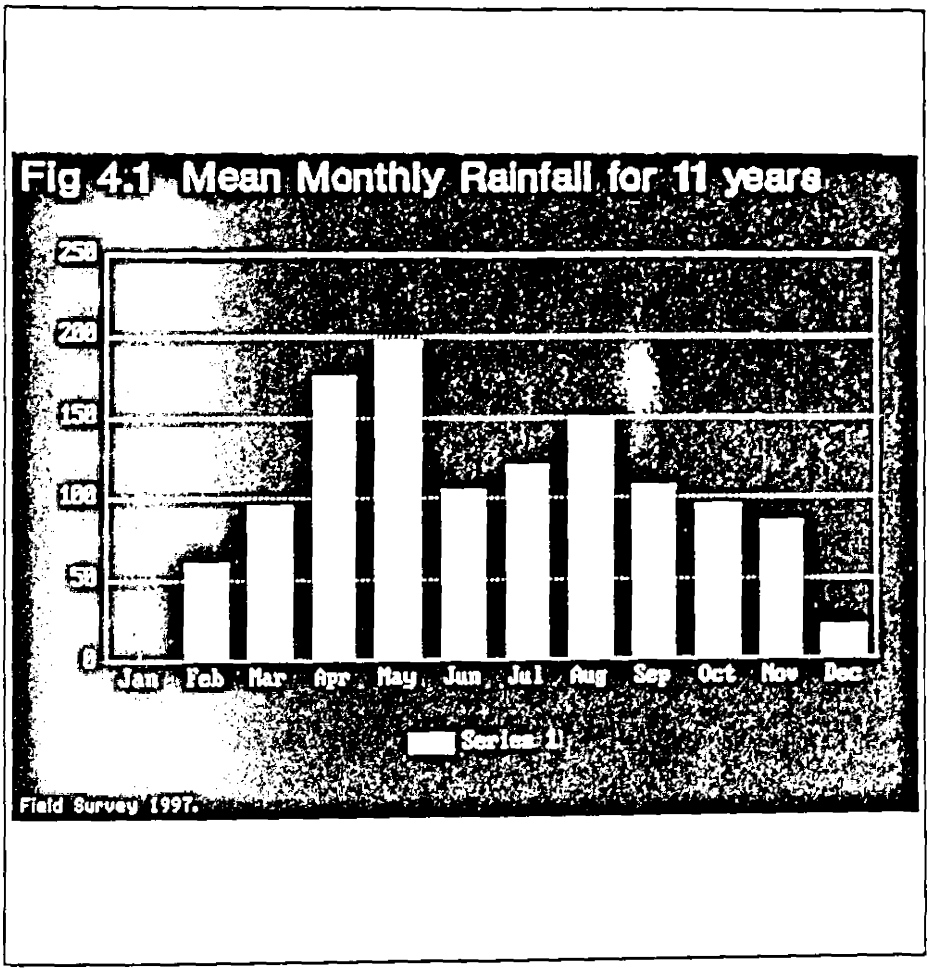
There are two distinct landforms within the sub-location: The slopes of Mt Elgon and the low lands bound the western part demarcated by the Sikhendu- Naitiri road. To the North, the sublocation boarders Trans-Nzoia district while to the Southern and the Eastern side, it is bound by Naitiri-Tongaren road and Kimimini River. This River is a tributary of River Nzoia. The sub-location covers an area of 36.34 sq kilometres.

4.4 Climate

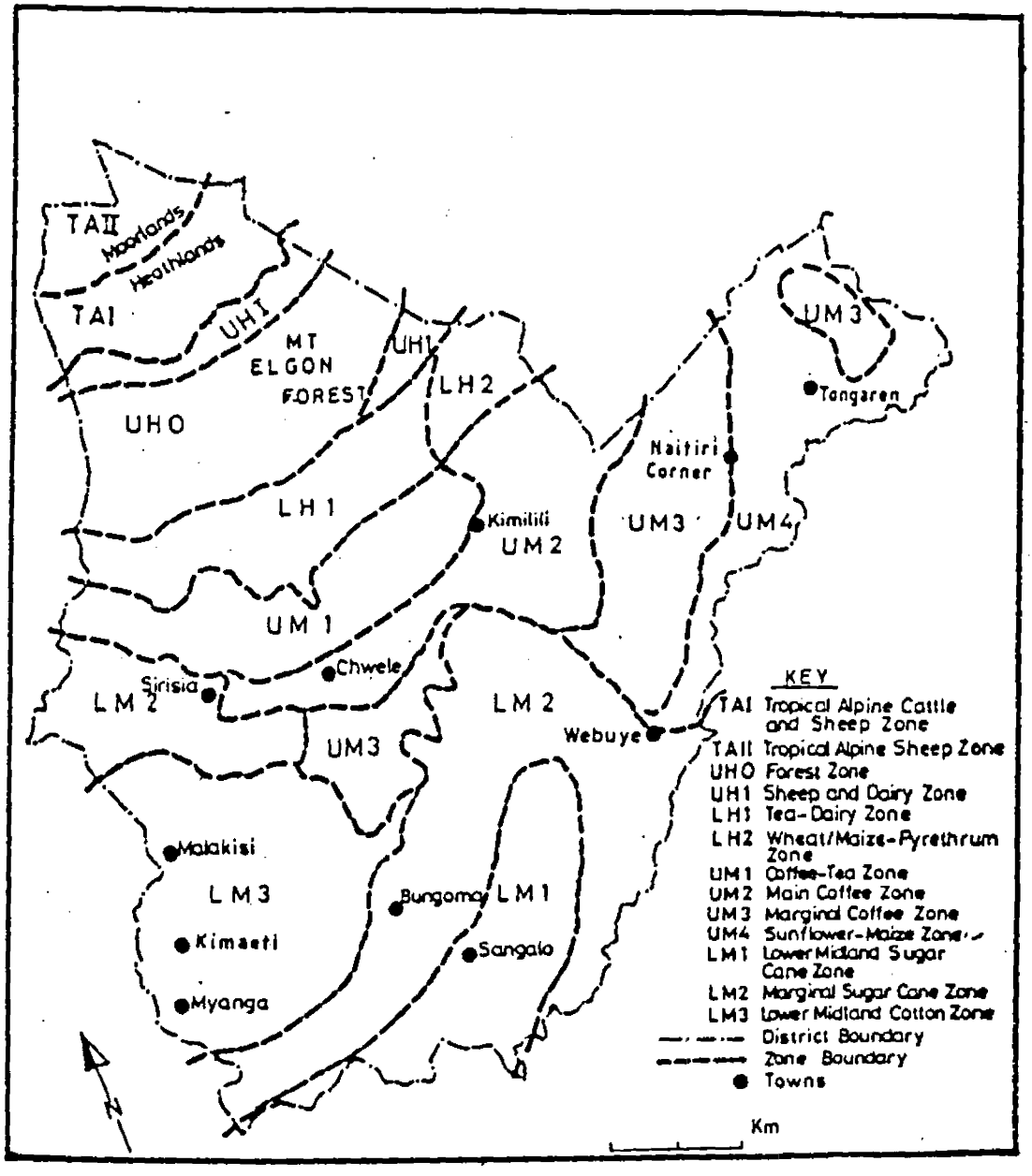
The ecological zonation of Naitiri scheme is dependant upon its location close to Mt Elgon as indicated by Map 3.1. This factor influences the amount of rainfall available and instigates temperatures. On the whole there is sufficient sunshine and a potential for exploring solar energy.

The area receives 889 mm - 1619 mm of rainfall per annum as shown by Map 4. Its a bimodal rainfall pattern with rainfall available for most months of the year with peaks in May and August. The long rains start from late March, reaching the peak in May and decreasing to June. The quantity increases again from July and decreases to the minimum of about in October as shown by Fig 4.1.

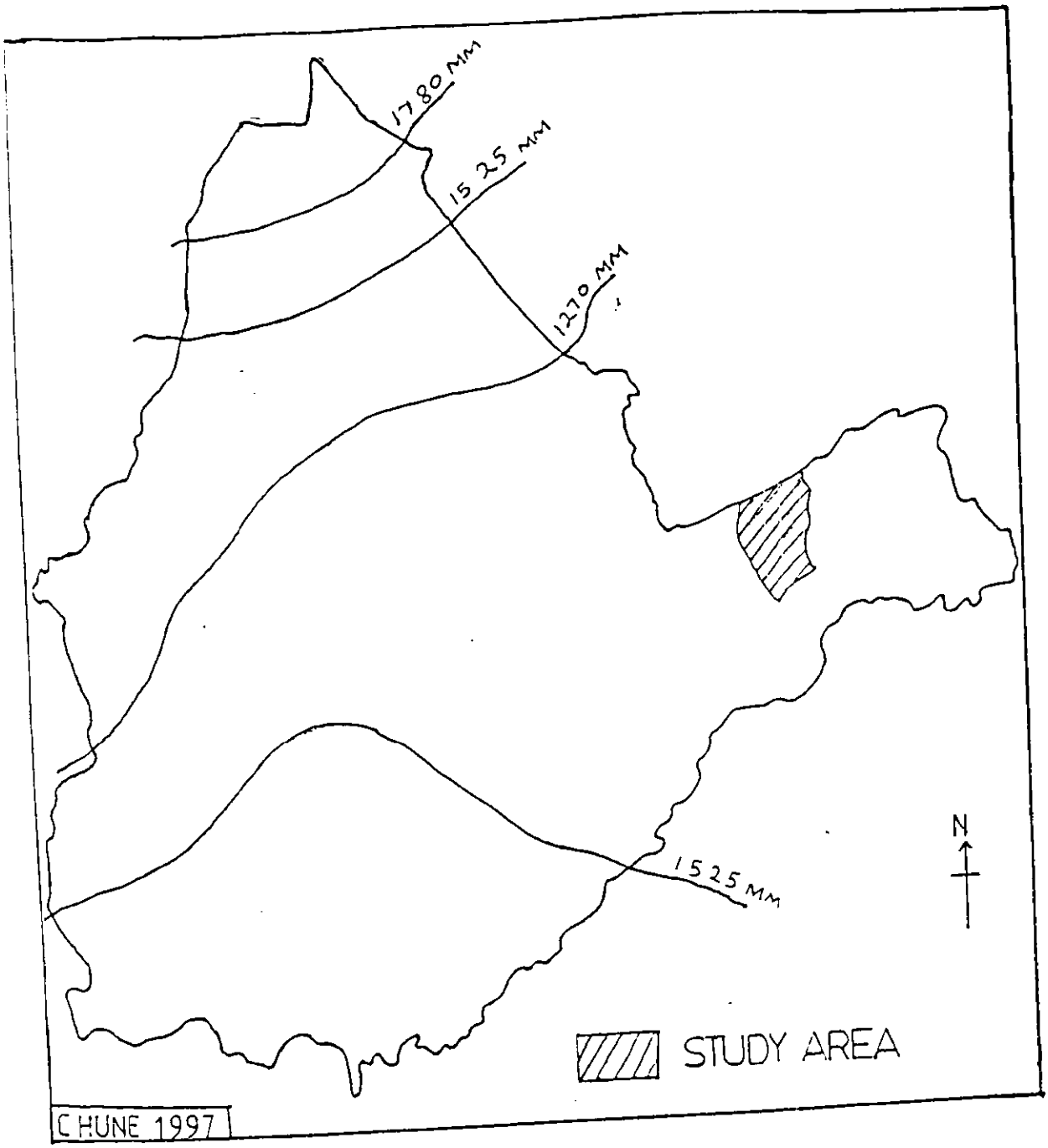


The mean maximum annual temperature is 29.95 °c while the mean maximum temperature per annum is 11-6 °c. The hottest months have been February/March with a mean, temperature of 20.1 °c and the coldest was July with a mean temperature of 14.3 °c.

MAP 4.3: AGRO-ECOLOGICAL ZONES



MAP 4.4 : DISTRIBUTION OF RAINFALL IN BUNGOMA DISTRICT.



4.5 Soils

The area is underlain by granite rock which forms the basement systems. It is inturn overlaid with dark brown sandy loams which are well drained. The soils vary from deep to very deep varying from red dark to red nitisols and ferrasols, and brown to dark brown acrisols. They have mostly developed from basic igneous rocks and granite rocks.

The seasonal distribution of rains is 500 - 1000 mm during the first season and 430-800 mm during the second season. With 60 percent reliability. There is rarely a month without rains although January and February tend to be dry month. The area also experiences some hailstones especially during the month of June.

4.6 Land and Agriculture

The total land area of the sub-location is 3634 hectares. All land is arable. Agriculture and informal business are the mainstay of the economy in the area and non-agricultural employment activities are not common. Majority of the people are engaged in small scale mixed farming and they grow both cash and food crops. Maize is grown both as a food and cash crop. Other cash crops grown include coffee and sunflower.

There is also livestock rearing which include exotic dairy cows, sheep, goats and local poultry while steers are reared as to provide power for ploughing land. The Boran cattle are preferred for their resistance to diseases and provision of beef.

According to the Divisional Agricultural Officer (DAO), Tongaren division within which Naitiri sub-location is located has a potential for a combined crop and animal production that can produce a surplus for sale. With improved agricultural production techniques, Soya

beans, cow peas, sweet potatoes, Irish potatoes, cassava, arrow roots, groundnuts bananas, citrus fruits, mangoes, avacado, pineapples, kales, cabbages, tomatoes, carrots onions, macademia, french beans, paw paws, chilies and simsim can also be grown both for household consumption and for sale.

At the moment produce from these crops are relied on as sources of supplementary food requirement especially vegetables. Though there is no documented agricultural information about the potential for tomatoes, kales and bananas, these crops are widely grown for household consumption and to supplement household incomes.

In 1965 when the scheme was opened, it had a total of 324 plots with an average of 28.6 acres each. However, this acreage has declined since that time. At the time of these study, there were 782 registered plots as a result of subdivisions. The field survey has established that the average land per household is currently 8.7 acres. The distribution of the land is skewed with 53 percent of the people owning less than four acres. Table 4.1 gives a summary of Dairy and heifer population in Tongaren Division since the information on Naitiri scheme could not be available.

Table 4.1 Cattle population in Tongaren Division over the Last six years from 1991 to 1996.

	91	92	93	94	95	96
GRADE DAIRY	1,150	12,276	12,986	13,050	13,095	13,520
HEIFERS	3,650	3,800	4,050	4,070	40,140	4,350

Source:Divisional Agricultural Officer (DVO). 1997

By the end of 1996, there were a total of 359 Bull and 347 grade heifers. There were also 84 breading bulls, and a total of 15,935 Zebus cows and 4,900 steers.

4.7 Marketing of Dairy Products.

Milk sales is one of the greatest income earner to most farmers in the Division. There are two milk coolers in the division one at Naitiri Shopping centre and the other at Tongaren Divisional centre respectively each with a capacity of 1200 litres. However, these coolers are not operational due to management problems. For the year 1996, Kitinda farmers co-operative society in Bungoma and KCC in Kitale were the main receptors of milk from the Division. However most milk is sold locally. Table 4.2 indicates the quantity and value of milk from farmers in Tongaren Division 1996.

Table 4.2 Quantity and value of milk in 1996.

	Price KSh /litre	Amount in Litres	Revenue in Ksh
KCC	8	134,859	9,022,808
KITINDA	11	1,107,846	1,583,449
LOCAL SALES	12	1,023,058	12,286,296
TOTAL		2,265,763	22,892,553

Source: Divisional Agricultural Officer, 1997.

The statistics for the three main cash crops for the last six years in the Division is as follows

Table 4.3 Yield (in Tons) and area (in Ha) of three main cash crops in Tongaren Division from 1991 to 1996.

	91	92	93	94	95	96
Maize Ha	21,383	19,479	23,500	21,477	23,300	21,100
Yield. Tons	64,149	58,428	70,500	70,874	69,900	56,970
Beans Ha	4,519	10,100	8,716	8,000	10,000	9,550
Yield(tons)	18,016	6,060	5,230	4,800	9,200	4,775
Sunflower Ha	1,140	975	400	800	2,000	1,700
Yield(tons)	851	683	200	400	1,500	1,190

Source: Divisional Agricultural Officer, 1997.

As clearly indicated in the tables 4.2 and 4.3, there is a fluctuation in the production of the three crops. This is attributed to various reasons ranging from the climate, heavy rains affects beans negatively, the size of land under cultivation, damage by birds especially to sunflowers, and productivity (yield per unit area) of the land.

4.8 Population.

As already noted in chapter one, the population of Naitiri scheme has risen from 3,993 in 1969 to 6,561 in 1989 (kenya,1969, and Kenya 1989). The projection puts the current figure at 8,180 people with an average household size of six people per household. The sex ratio is 1:1 which compares well with the current District estimate.

During the field survey, twenty five percent of the respondents indicated that they had lived in Naitiri scheme for less than four years. Most of them are victims of the 1992 tribal clashes that affected the Mt.Elgon region and other parts of Rift Valley and Nyanza provinces. The increase in population has led to high density of population per kilometre squared from 99 in 1969, 142 in 1979, to 154 in 1989. At the time of field survey the population density is 225 people per square kilometre.

CHAPTER FIVE

RESEARCH FINDING.

5.0 Introduction.

This chapter analyses the incomes raised from various crops and livestock related activities. This analysis is done against the background of the objectives of the establishment of settlement schemes and most important the typical household budget as provided in chapter one.

Crop husbandry is the most predominant source of income to the respondents. Maize is the most outstanding, according to the finding it accounts for up to 76 percent of the total income raised from crops. Other important crops are beans, sunflower and coffee each accounting for 13 percent, 1.7 percent and 1.3 percent respectively of all the total income raised from crops. A further contribution of 8 percent is raised from miscellaneous crops which are sold locally.

Livestock produce is mainly dairy and animal sales. When viewed against the total households expenditure, dairy farming accounts for 10 percent of all the income raised in the scheme whilst animal sales account for 15 percent of the income. Together, crop and animal husbandry accounts for seventy seven percent of the expenditure in the settlement scheme.

The chapter looks at the changes that are taking place in land sizes and the reasons for this changes. Land subdivision has occurred due to inheritance and/or land selling practices in the scheme. The average land size has reduced from 28 acres per to 8.75 acres per household.

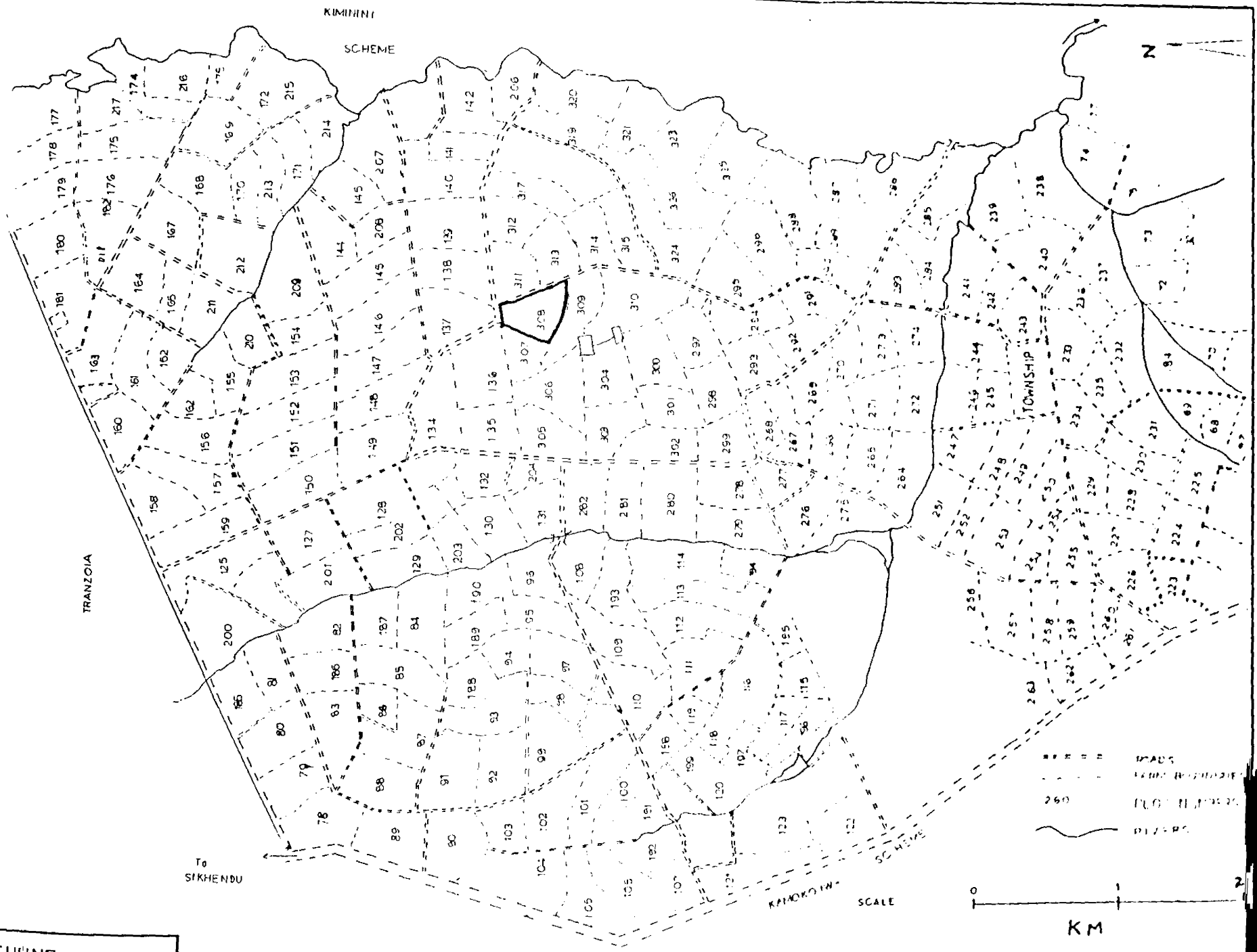
5.1 Land Sizes

Initially when the settlement scheme was created in 1966, the average land size was 28 acres. However, with population increase and the resultant subdivisions that have occurred, the average land size is now 8.7 with a total of over 700 plots as compared to the initial three hundred and twenty six plots as shown by map 5.1 and 5.2.

When the relationship between land size and the total amount of money earned from crop sale is analyzed, its found to be significant at a chi-square value of 0.01693 and gives a spearmans correlation of 0.286. The land size therefore influences up to 29 percent of the value received after selling the farm produce 15 percent of people own farms yet they don't sell any farm produce. They produce mainly for consumption purposes.

The results of cross tabulation between the size of land owned and the amount of money received is as shown by Table 5.1 below.

MAP 5.1. NAITIRI SETTLEMENT SCHEME ORIGINAL SUBDIVISIONS 1968



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MAP 5.2

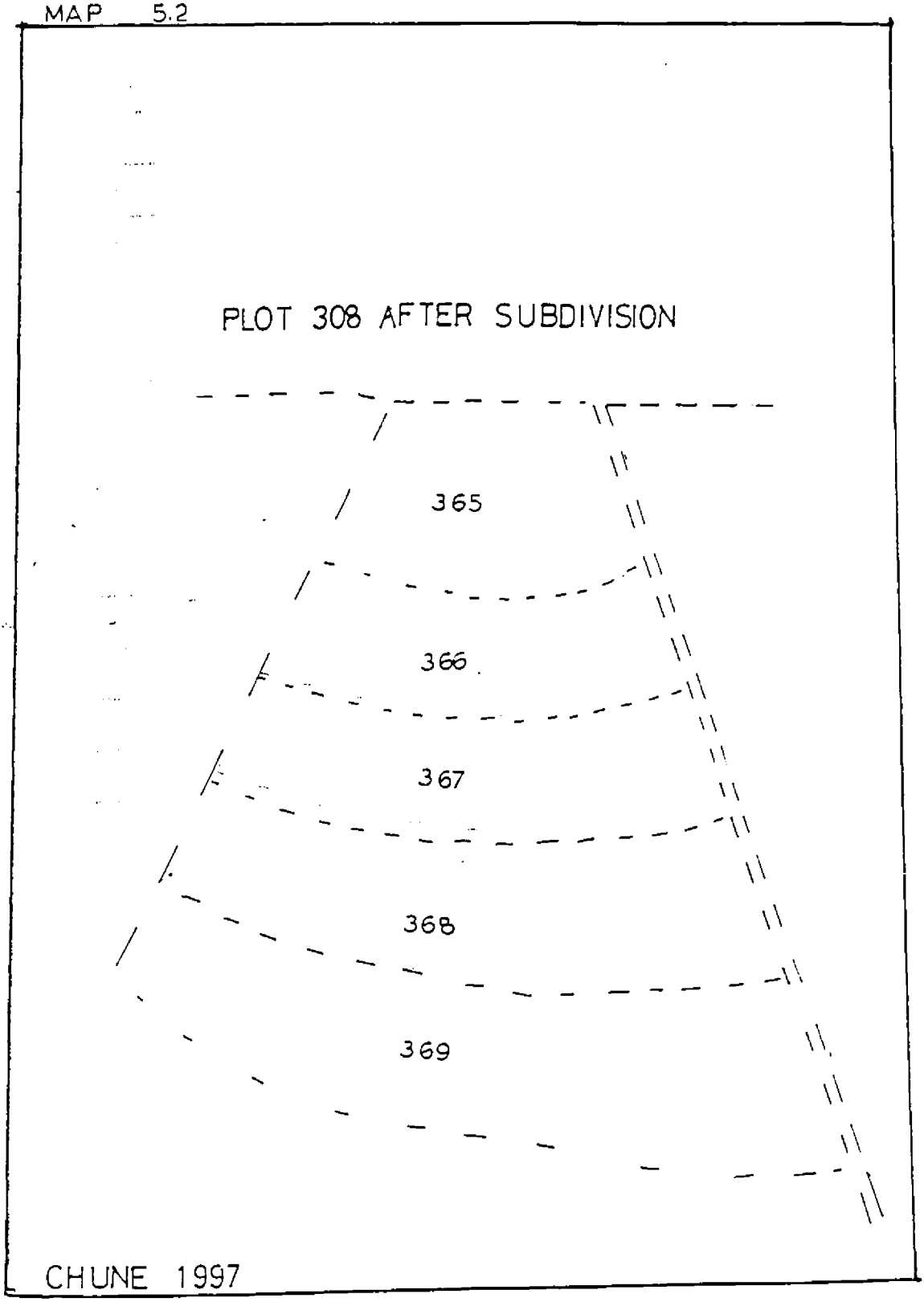

Table 5.1 Definition of categories.

category	Landsize in acres	Amount in KSh.cropsale
1	0-15	0-50,000
2	16-30	50,001-100,000
3	31-45	100,001-150,000
4	Above 45	Above 150,001

Table 5.2 The Relationship between the Size of Land and the Amount Received from Sale of Crops.

Size of Land	Categories of amount of sales					
	1	2	3	4	Total	%
1	36	4	1	2	43	63.2
2	7	-	-	3	10	14.7
3	1	1	-	-	2	3
4	7	2	-	1	13	19.1
Total	51	7	4	6	68	100

Source : Field Survey 1997.

Table 5.1 indicates that 83.7 percent of respondents in the first level of land ownership earn less than 50,000 shillings out of crop sail, while there are 53 percent of respondents in group four who also fall in the first group of income. The implication is that most people with large farms don't invest so much in farming. They don't grow crops for economic purposes. Whereas most people with small pieces of land grow crops for sale, they earn very little incomes.

The same holders of large pieces of farms (group 4) spent very little money on farming. As shown by the table 5.3 below

Table 5.3 Relationship between Land Sizes and Money Spent on Farming.

Size of Land	Money spent on Farming Activities				
	1	2	3	Total respondents.	%
1	38	4	-	42	64.6
2	6	3	1	10	15.4
3	1	-	-	1	1.5
4	11	1	-	-	-
Total	56	8	1	12	18.5
Total %	86.2	12.3	1.5		

Source : Field Survey 1997.

Eleven out of twelve respondents with large farms fall within the first category of expenditure. This implies that most people with large farms rent their pieces of land out to people with little land. 24 percent of respondents were found to rent more land for farming 50 percent of them rent between one and two acres of land while the biggest size of land rented is 15 acres at an average rate of 1500/- per acre per year.

Out of the 75 respondents, 41 of them use steers, and human labour, while 33 apply tractor, steers and human labour with only one respondent who falls within the lowest cadre of land ownership applying purely human labour. 60 percent of respondents in the lower cadre use

steers and human labour, while 69% of the respondents in the highest group of land ownership use tractor, animal and human labour in land preparation. This implies that the size of land strongly influences the method of farming and all categories of farmers strive to minimize costs.

5.2.1 Maize Farming

Maize is the most important of all the crops grown. about 82 percent of the respondents grow maize and it contributes up to 80 percent of all the income earned from crop (agricultural) dales annually. All the respondents use hybrid seed developed by Kenya seed company limited in Kitale. The most suitable seed maize are 614, 626 and 625 hybrid varieties.

According to farm management handbook 1992, the production potential for maize in Naitiri based on agro-ecological zone typification ranges from 6.2 bags per acre cases where fertilizer is not applied to 17 bags per acre in cases where high amounts of nitrogenic fertilizer is applied (65kg per ha) and phosphates (73 kgs/ha) are applied. Whereas all the maize farmers apply fertilizer 70 percent of them live within the second production level of thirteen bags per acre.

Among the problems faced in intensification of the application of ample amounts of fertilizer, lack of capital takes precedence over availability. A cross tabulation result between the amount earned from maize farming and the money spent on input is as given by the table 5.3 below.

Table 5.4 Relationship between income earned from maize and money spent for farming.

Maize	Money Spent for farming			
	1	2	3	Total%
1	72.1	7.3	1.8	81.8
2	5.5	1.8	-	7.3
3	5.5	3.6	-	9.1
4	1.8	-	-	1.8
Total %	85.5	12.7	1.8	

Source: Field Survey 1997.

Categories

Maize
1- Less - 50,000
2- 50001 - 100,000
3- 100001 - 150000
4 - 150001 - Highest

Farming

1- Lowest - 30,000
2- 30001 - 60,000
3- 60001 - Highest

There is a very weak positive correlation between the income earned from maize and money spent on farming inputs. This gives an r value of 0.136 which is almost insignificant. 72.1 percent of the farmers spent the first category yet and fall in the first income bracket, while there is 1.8 percent of farmers falling within the first category of expenditure yet they earn an amount over Ksh. 150,000 while another group spent with the third category and yet they fall

within the first income bracket. This implies that an increase in farm input shall not necessarily lead to increased income earned from maize.

There exists a weak negative relation between the method applied in land preparation and the amount earned from maize. This gives an r value of - 0.122. A total of 46.2 percent use tractor, animal haulage and are distributed among all the four income groups as follows 35 percent, 46 percent, 4.6 percent and 1.5 percent in the fourth group. While 53.5 percent utilize animal haulage and are also distributed in the various income groups as follows 46 percent in first, 3.1 percent in the second and 4.6 percent in third group. None of the farmers utilizing animal haulage attains the fourth income group.

The choice of the method to be applied in ploughing depends on various factors such as the availability of capital; The cost of ploughing an acre of land is one thousand two hundred shillings yet it costs only six hundred to plough the same piece of land using steers. The second factor in time since the steers take three days on average to be through with one acre while it takes 40 minutes to do the same job by use of the tractor. Other reasons include ownership of the equipment and the period of ploughing.

5.2.2 Beans.

Beans are intercropped with maize specifically for subsistence and provide the seeds for the next planting season. A few farmers however dispose the excess beans to the nearest schools to raise extra income. 79.2 percent of the farmers who fall within the first level of income earned from maize intercrop with beans. The beans are planted together with maize and it only take three month for maturity as compared to maize which takes up six month to mature.

The high figure of the farmers who fall within the first income level could be due to the high nutrient requirements by beans which leads to negative maize yield due to nutrient deficient especially phosphates. Whereas beans are known to be important nitrogen fixers, it requires a lot of phosphates for development of leaves during the initial stages of growth. This leads to competition for nutrients between the beans and maize.

5.2.3 Coffee.

Naitiri scheme falls within a marginal coffee area. Coffee planting was introduced in the settlement scheme in 1979 following the effects on international coffee broom and the Chebkube coffee business in 1977. Only eight percent of the respondents plant coffee. The coffee farmers are organised on co-operative basis and they have a coffee mill operating within the scheme called Makhanga coffee farmers society.

The society is their only marketing outlet and its open two days a week during the picking season for cleaning and drying the coffee cherry delivered by the farmers. The cooperative operates under the auspices of Kenya Coffee Board (KCB) and Kenya Planters Cooperative Unions (KPCU). However, the current economic changes require that a cooperative union can now auction their produce to be exported directly without going through KPCU.

PLATE 5.1 : Makhanga coffee factory

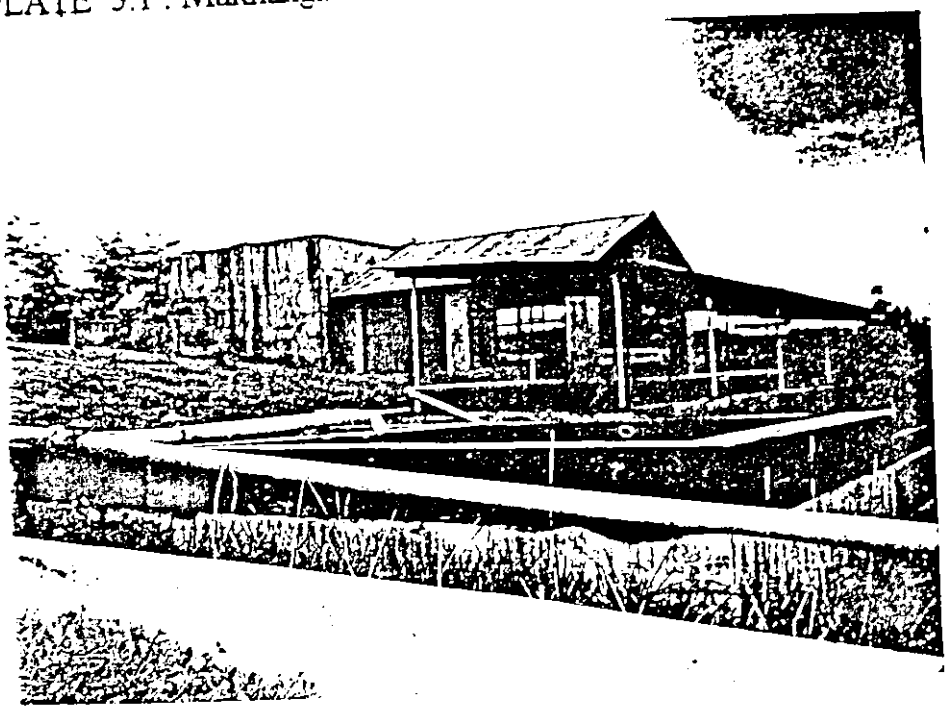

PLATE 5.2 : A Neglected Coffee Bush.

About sixty percent of the farmers who grow coffee lie within the first maize income level. While the second and third production levels have twenty percent each. None of the farmers in high maize income bracket grows coffee. This implies that there is a tendency for small scale and the farmers who earn less income from maize to diversify to coffee.

However, it should be noted that coffee as a crop has been negatively hampered by the international trends that affect the crops through imposition of quotas and fluctuating prices. Since coffee is a biannual crop, it can only be uprooted or neglected. Because of the uncertainty by farmers of the future price trends, most farmers opt to neglect it and use the same land to grow beans in between the coffee lines.

5.2.4 Sunflower.

Sunflower is one of the crop that was introduced in the settlement scheme in late sixties so as to provide oil manufacturing companies with raw material. Only nine percent of the respondents grow sunflower for economic purposes with 8.5 percent of them falling within the first level of maize income and 15 percent in the third level. This further illustrates the willingness of the maize farmers to diversity their incomes especially those in the Lowest income bracket.

Sunflower, just like beans mature within three month hence its possible given the rainfall pattern for the crop to be grown twice a year. The first planting is usually in May when we have long rains subsiding and second planting is in July/ August season when the short rains appear. Many farmers only plant sunflower after they have failed to plant maize. It is just after a second thought since its not too much sensitive to climatical changes secondly sunflower does

not require as much fertilizer as maize and since the crop has wide leaves, the weeds are controlled by not allowing light to penetrate to the ground hence they just require weeding once per season.

However, even with all this advantages, sunflower farming is not popular with farmers because the mature crop is so much prone to destruction by birds. This problem is more pronounced during the first crop since at this moment (June/July) maize is not ready and almost all birds have to depend entirely on sunflower for food. The second crop is a bit safe because around the same period when the sunflower is ready, maize is also ready and the birds shift their attention.

Sunflowers are also prone to destruction during the hailstones in early stages of growth. The stones tear the leaves into pieces and interfere with flowering of the crop. This later affects the yields negatively. There is no proper way of marketing the product. All along, the sunflower has been sold to middlemen at a throw away prices who later sale to industries in Kitale and Eldoret. Marketing has been sited as a major problem in sunflower production with prices ranging from three to twelve shilling per kilogram.

5.2.5 Tobacco Growing

There has been an effort to extend tobacco growing from Busia district and the Western side of Bungoma district by mastermind Kenya. A demonstration farm was set up in September 1996 and the results were very encouraging. The crop was able to yield 30,000 shillings per acre within three months.

According to Mastermind Tobbaco Kenya (MTK) representative, the company targeted to have fifty farmers registered for the first lot, instead they received three hundred applications. So far they have contracted sixty farmers and the first crop is expected in June 1997.

There are several factors that pit tobacco against maize farming. There are three varieties of tobacco common in Kenya viz fire, flue and barley varieties. Five has been found to be the best suited for Naitiri scheme with a spacing of 1.2 m x 0.7m, about 4200 stems per acre. With each stem yielding around eighteen leaves in as season. According to research finding, A hundred leaves make 1 kilogram. This means each acre is able to yield up to seven hundred and fifty six kilogrammes, thus (18 x 1400/100) = 756 Kgs.

Whereas the prices of tobacco fluctuates, they are not as unstable as the maize prices. The best quality tobacco BT goes for sixty six shillings per kilogram. However, most of the yields in Naitiri are bound to fetch a lower margin of 40 shillings per kilogram with some going higher. When this lower margin is used for illustrative purposes, An acre of tobacco fetches over hirty thousands, thus 40 x 756 = 30,240.

The MTK gives support to farmers contrary to maize farming. The company provides farm inputs loans that cover seedbed preparation, fertilizer, transportation of the produce and assists in construction of the burn to facilitate leaf curing. The company also intends to provide farm improvement activities through their field extension officers. This include mainly soil conservation and the planting.

Some problems are expected to be faced in the field and reduce the farmers incomes. The greatest fear is the possibility of hailstones. Incase of hailstones during the harvesting

season, most farmers are likely to loose up to a half of their produce since the leaf leaves are destroyed and fetch low prices due to poor quality.

Whereas the company provides transportation, some roads are too muddy or rough making them impassable and hence delay the delivery of the products. Besides, the dried leaves are sent to Malakisi (a leaf collection center) where they are graded before being taken to Njoro for processing of cigarettes. The company official however feels that the cess deductions should be used to improve roads in the area.

The falling land sizes, the support given to farmers by the company, the high income and a short period of maturation might make tobacco growing popular in Naitiri scheme as a source of income.

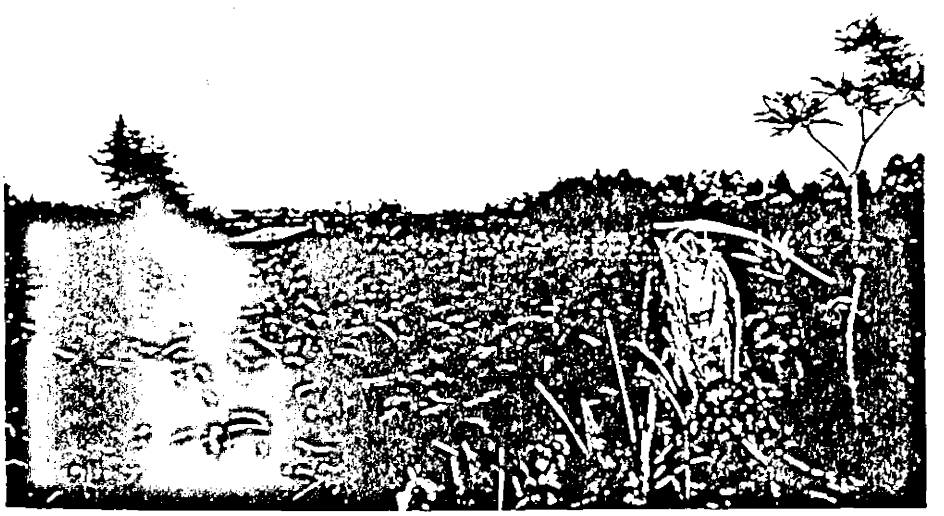

PLATE 5.3: A Recently Introduced Tobacco Crop.

5.3.0 Livestock Production.

Livestock farming is a major economic activity besides crop husbandry. The major activities are dairy farming and cattle sales. Cattle sales accounts for 51.4 percent of the total income earned from livestock.

5.3.1 Dairy Farming

Dairy farming in the settlement scheme is run as a simple animal husbandry along with crop cultivation. Only seventy percent of the respondents keep cattle, and of these only thirty nine percent earn some income from dairy sales. This implies that about thirty percent of the respondents keep animals for other reasons other than dairy production.

There exists a very spurious relationship between income earned from dairy and the size of land owned. However majority of dairy farmers fall in the category with smallest pieces of land, this accounts for thirtynine percent of the total dairy farmers whilst the second category accounts for twenty nine percent and, three percent and twentynine percent for the third and fourth category respectively. Dairy activity can be said to be evenly distributed among all categories of land sizes other than the third category. Cattle keeping is a cultural activity in these society and besides providing milk for domestic requirement, dairy is preferred because its product (milk) has readily available market with instant cash. The amount erned from dairy is therefore not dependent on the siz of land owned.

Table 5.5 The Relationship Between the Size of Land Owned and Income from Dairy Farming.

Landsize	Categories of income				
	1	2	3	4	Row %
1	58.3 38.9 22.6	33.3 57.1 12.9	- - -	80.3 20.0 3.2	38.7
2	66.7 33.3 19.4	11.1 14.3 3.2	- - -	40.0 6.5	29.1
3	100.0 35.6 3.2	- - -	- - -	- - -	3.2
4	44.4 22.2 12.9	22.2 28.6 6.5	11.1 100.0 3.2	22.2 40.0 6.5	29.0
Total Column %	58.1	22.6	3.2	16.1	100

Source: Field Survey 1997.

Dairy farming has been faced by several problems which include; shortage of pasture and water during dry spells especially between the months of December and March. This problem is further exacerbated during drought years like 1993 and 1997, most farmers have to move with their livestock for a distance of four kilometres in search of water from permanent rivers (Kiminini and Kabuyefwe rivers). The existing public dips are poorly stocked with acarisides and hence ineffective as methods of tick control. This exposes the animals to East Coast Fever (ECF) which is a lethal tick borne disease in the scheme.

The Divisional veterinary officer is unable to operate efficiently in Naitiri due to lack of transport, fuel and the poor state of roads especially during rainy season. This has a negative impact on milk production because Artificial Insemination (AI) services can not be delivered on time. It is due to this reason that farmers have resorted to the local bulls for breeding, overtime, this has resulted into low milk yielding breeds though with high resistance to diseases.

There are two milk coolers in the division which are however non-functional. The main formal outlet for milk marketing in the scheme are Kenya Cooperative Creameries (Kitale) and Kitinda Diary Farmers Cooperative firm in Bungoma. However due to delays in farmers payments, they have become unpopular and most milk sixtyfour percent is either sold to vendors who later sell in the nearby urban centres or local sales. Poor roads hinder milk marketing especially during heavy rainy seasons when they are rendered impassable.

The average number of cattle kept per household is six heads per household. The highest with a mode is one cattle (sixteen percent), fifty seven percent of the respondents keep between one and four cattle per household.

5.3.2 Cattle Sales.

It was the objective of the architects of settlement in the scheme for farmers to raise some income from cattle sales as already pointed out in a prototype of typical household budget in chapter one whereas this occurrence still holds true, its practised on a very minimal scale. Only thirty nine percent of the respondents earn some income form the sale of cattle.

About eight percent of the farmers who sell cattle fall within the first and second categories of land size ownership. While only twenty percent of the farmers sell cattle have

largest farms. Most of the farmers who sell their animals have small pieces of land. Mostly the animals are sold due to the shortage of grazing land and to raise money to meet other family expenses such as school fees and family expenditure.

Cattle sales accounts for over fifty percent of the total income earned from livestock related activities second after diary. Other reasons for selling the cattle is when there is a danger of a contagious diseases that is likely to result into death and when the animals especially steers become too old and can no longer work on the fields.

Ninty five percent of animals are sold to the local business men who later take them to the local butcheries or resale them at other livestock markets especially Kimilili which is almost fifteen kilometres away or Mbakalu which is within the Tongaren Division.

5.4.0 Patterns of Expenditure

The three major expenditure identified from the questionnaire were; money spent to buy farming inputs, money spent for family upkeep, this includes money for food, clothing, development and leisure, the third major expenditure is the money spent for meeting school and post school training costs.

5.4.1 Farming.

The money spent on farming activities accounts for 21 percent of the total expenditures. As already mentioned farming is a major undertaking and source of income in the scheme for it accounts for 76 percent of all the income.

There is a significant relationship between the amount of money spent on farming and the household sizes as shown by the table below.

Table 5.6 The Relationship between money spent on farming and the household sizes.

Farming	Categories of Household size				
	1	2	3	4	Totals%
1	16.9	36.9	27.7	4.6	86.2
2	-	6.2	6.2	-	12.3
3	-	-	-	1.5	1.5
Total %	16.9	43.1	33.8	6.2	100

Souce:Field Survey 1997.

As indicated by the table 5.6 above, a total of six percent of the respondents have large families, of whom only one percent spent within the third (highest) category. No other household group spent within this category yet they only form five percent of the number of people spending within the first category on the contrary, while seventeen percent of the respondents with very small households spent within the first category none of them spent in the

second and third category on farming. This relationship is found to be significant at a chi-square value of 0.005 with 0.05 degrees of freedom. This relationship implies that most people with large families invest leaving in farming so as to raise more food and income for general up keep of the family.

About eigty percent of the people who are employed invest their money in farming at different investiment levels. About seventy percent of them invest within the first level of less than Ksh. 50,000 per year while seventeen and four percent invest within the second and third level respectively. Only four percent of eighty seven percent of the people in highest income cadre commit the highest proportion of their salary to farming. This is due to various factors; agricultural production is not reliable since its vulnerable to changes in the weather and price fluctuation, hence most people with high salaries invest their money in other activities rather than agriculture.

The amount of money spent on farming is in no way related to the size of land owned. This hypothesis is rejected at a significance level of 0.05. There are various other factors that explain the amount spent on farming. As already noted, renting out land to raise income for an emergency need and rental of land as a compensation for the small sizes of land owned is a common phenomenon in the scheme. About twenty five percent of the respondents rent land of various sizes ranging from one acre to fifteen acres to plant maize, 76.5 percent the people who rent land own between one acre of land to fifteen acres, its within the cadre that people rent the largest sizes of land of between five acres and fifteen acres as illustrated by the table 5.7.

Table 5.7.The relationship between the size of land rented and the size owned.

Size of Land Rented	Size of Land owned				
	1	2	3	4	Total %
1	58.8	11.8	-	11.8	82.4
2	11.9	-	-	-	11.8
3	5.9	-	-	-	5.9
	76.5	11.8	-	11.8	100

Source: Field Survey 1997.

5.4.2 Family Expenditure

Money spent on the family upkeep include purchases such as clothing, food and leisure. This accounts for thirty two percent of the total expenditure at household level.

The relationship between household size and family expenditure is not significant at a level of 0.05 when the level of family expenditure is categorized into three broad groups. 87.7 percent of the people are found to spent within the first cadre, 11.0 percent in the second cadre and only 1.4 percent in the highest category 6.8 percent of all respondents have very large household sizes and yet spent within the first category. This implies that there is skewed income distribution. Some people with very high income spent very little money for their family upkeep. This portrays high levels of poverty that hence there is need to encourage and develop more profitable income generating activities.

5.4.3 Fees expenditure.

The money spent on payment of fees to schools and other tertiary colleges accounts for fifteen percent of the total expenditure. This element was not anticipated while drawing up of the typical household budget from the period of settlement up to now, there has been an increase in the proportion of young people who are the age of going to both primary, secondary and tertiary colleges, whereas, this are available, the fees is too high and results into dropouts and exerts a strain on the household income.

The relationship between the household size and the total amount spent of fees is significant at the level of 0.05 with a pearsons value of 0.3876. This shows that the large households are likely to spent more of their incomes on fees payment.

A total of seventy respondents pay school fees of various amounts ranging from One thousands to eighty five thousands per year. This situation calls for forecasting of employment opportunities for school leavers and development of tertiary colleges.

Currently there is only one secondary mixed day school within the scheme with one stream from form one to form four with a student population of one hundred and eighty. There are six primary schools that are all well distributed within the location each with a nursery school. However, within the same division (Tongaren) there are two other boys secondary boarding school (Naitiri and Maliki boys) each with classes from form one to form four. Lukhuma Girls also admits girl students in form one to form four.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction.

Kenya inherited an independent government lacking human resources, technology and financial resources, consequently, government of Kenya could not take independent decisions on matters of development. The government relied on external sources for funding development. This left very limited room to manoeuvre policy options[16]. This has seen the government pursuing a development paradigm modelled after the colonial economy which was heavily oriented in the export of primary produce. However in early 1970s and 1980s, the government shifted her approach to import substitution and currently there is focus on export promotion as a strategy for economic growth.

This chapter consolidates conclusions from research finding and enumerates various policy recommendations that can be adopted to improve the income of the rural smallholder farmers.

Finally it draws an intergrated conclusion about the study.In the chapter, policies are looked as autonomous instruments of change to be manipulated by eager and rational decision makers in the pursuit of declared development objectives. They are part of the fabric of social struggle and the outcome as well as a cause of historical developments. This chapter emphasizes this

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[16] . Fransis Stewart 1981:76 In *Papers on Kenyan Economy; Performance, problems and Policies*. Heinemann Ltd, Nairobi.

perspective so that the current situation may be viewed as a link between the past and the future state of development.

6.1 Summary of Findings

This section gives a summary of research finding based o the obectives of the study stipulated in chapter one and with reference to data analysis in chapter five.

6.1.1 Changes in Agricultural Production Regime.

The first objective set out to analyses changes in agricultural productive regimes as an income generating activity in Naitin Scheme. As already mentioned in chapter one, the projected income for farmers was between $ 20 and $ 70 per annum in 1963. This income was to be raised mainly from butterfat, sale of calves and passion fruits as shown by tables 1.2 and 1.3. The declining land size per household and increased family requirements have seen this pattern of raising income change.

Maize is the major cash crop grown by 82% of the respondents and contributing up to 80% of total income raised from crops. However, the production of this crop is at low levels compared to the yields attained in research stations. The farmers lack extension services, enough capital to purchase inputs especially fertilizer and seed maize and poor land preparation techniques.

Coffee and sunflower have also been grown by farmers specifically for income generation. This two crops are not popular since they are grown by only 8 percent and 8.5

percent by the farmers respectively. Coffee is faced by unstable prices while sunflower is liable to destruction and poor marketing channels.

Tobacco is the latest crop that has been introduced by mastermind Tobacco Kenya, a company that is contracting farmers to grow the crop. This is a liable venture as a response to small land units and the company offers the necessary technical support.

Income from livestock production is realized from dairy and animal sales. Dairy farming, through the sale of milk accounts for 10 percent of all the income raised in Naitiri Scheme, while cattle sale accounts for 15 percent. Together all the crop and animal husbandry accounts for 77% of the total income raised by farmers.

6.1.2 Factors Affecting Income Generating Activities.

The second objective of the research set out to identify and evaluate the most influential factors affecting income generating activities in Naitiri scheme. Land sizes are found to affect the amount of income raised in two different ways. As indicated by Table 5.1 most people who own large pieces of land from sixteen acres onwards do not necessarily earn more from the sale of crops. In most cases, this is rented out to people with small farms who later earn more from crops than their counterparts. However, most farmers with small pieces of land earn less from both livestock and crops.

The second factor that affect income generation from agriculture is the quantity of the produce and the prevailing prices. The price for the major cash and subsistence crop-maize fluctuates depending on the Government marketing policy and the quantity of maize produced nationwide. The fluctuation of the price therefore reduces the amount the farmer earns over the

years irrespective of the quantity. On the other hand, the quantity of the produce is affected by the prevailing weather conditions which is a natural factor. The production is greatly reduced during drought years. Other factors are human and can be manipulated for better yields this include the amount of inputs mainly fertilizer in terms of crops and pasture and food additives livestock. The farmers also don't have access to technical advice and hence their production is below those recommended by research stations. The main problem are far as fertilizer and food additives are concerned is not from the supply side. The commodities are available through the local shopping centre outlets, but the farmers don't have enough money to purchase the rightful quantities.

Livestock production is also affected by lack of Artificial insemination services. This has meant that the farmers resort to use of local bills which affect the quality of the breeds and hence the period of maturity and quantity of milk produced. Formal milk marketing is poor and farmers rely on disposing their milk locally to vendors. The Kitinda Dairy cooperative that used to collect creameries (KCC) has a poor reputation of not paying farmers in time. Besides, the nearest KCC plant is in Kitale and this has implications on transport costs. The poor state of roads is also blamed for inefficient transport to the creameries. This roads become impassable during rainy season.

6.1.3 Alternative Income Generating Activities.

The third objective set out to evaluate alternative income generating activities already adopted by the farmers to meet their increased expenses. On the basis of this objective, the research reveald that farmers have responded differently to the decline in land sizes so as to

raise more income. This objective was looked at in the context of the background of the creation of the settlement schemes as outlined in chapter one as it relates to land budget and budgeted incomes and expenditures.

Maize is grown as the main cash crop and its allocated most land area than any other activity. Moreover, it is the main source of income accounting to seventy percent of the total income.

Coffee has been introduced as another cash crop but its poor dealing at world market has led farmers to neglect it. Very few farmers are willing to start growing the crop. Coffee has a potential of being adopted as a supplementary cash crop if only there is an effort to stabilize the prices at local level.

Livestock production has also been identified as another activity adopted for income generation. Milk production is the most lucrative since there exists ready market both locally and in nearly urban centres of Webuye, Kimilili, Naitiri among others. Although cattle sales also earns substantial income, most of the cattle are local breed, it takes too long for them to mature so as to fetch high prices.

6.2. Recommendations.

The fourth objective recommends income generating activities that are more promising and strategies and policies that support alternatives that have more potential for enhanced rural income generation. Based on the above conclusions, it requires an integrated strategy to solving the issue of rural poverty. The policies and strategies adopted are supposed to be multi faceted and implemented concurrently so as to have a measurable impact on poverty. This section

identifies issues dealing with micro-economic policies as they relate to agriculture, integrated rural development food security, development of informal sector and intensification of land tenure as possible avenues to be pursued to alleviate rural poverty.

6.2.1 Macro -Economic Policies

The government should strive to achieve a macro-economic stability to enable smallholder and their enterprises to make long term planning, saving and investment decisions. These can be achieved by establishment of a sound pricing and marketing policy for both food and cash crops with the following four major objectives.

First, the policy should aim at reducing the marketing margins. Markets should perform the function of signalling prices to consumers and producers alike, thus bringing about efficient allocation of available supplies among consumers and of resources by producers. However, there are substantial differences between prices paid to producers, both overtime and space, that are caused by both monopolistic and profiteering elements of trade.

The secondly, the policy should be to reduce instability inprice and supply. The traditional markets are unable to cope with year to year instability and uncertainty in marketed supplies and prices that often result from fluctuations in production. In such a situation, the marketing and pricing policies serve different and conflicting functions in the urban - industrial and rural - agricultural sector by ensuring low cost of food supply to the urban sector. High food prices provides justification for demand for high wages, a situation that can lead to labour action and hence urban unrest.

The policy should also ensure minimum return to resources use. The pricing policy which assures a minimum return to the producer is necessary. Even if a substantial increase the ratio of output to input prices from previous level may not be called for, the policy should ensure a balance in price among food and cash crops, or cereals and pulses and between crops and livestock.

6.2.2 Minimum Prices and Price Stabilization

Minimum prices should be guaranteed for agricultural commodities that are important in terms of consumption and as substitutes in production. This prices should be established by a combination of more than one of the following criteria average total production; paid out costs of production and; parity with non-farm and or international prices.

Apart from determining the minimum prices, the government has to determine the range which the prices have to fluctuate (upper bound price has to be determined) while setting this, several issues have to be considered costs of holding a buffer stock vis a vis other alternative uses of government resources; Effects of price stability on production incentives and hence on growth in industrial and hence agricultural sector; and the incidence of taxation and or subsidy by sectors and classes.

6.2.3 Rural-development

Since approximately 80% of the countries population live in rural areas and depend on agriculture for a livelihood (Kenya 1997 : 17) the government should adopt a broad-based rural development strategy to alleviate poverty. This strategy shall involve increased and relocation of public spending in social sectors especially education, health and employment creation programmes.

Arresting the decline in per capita public real expenditure in social sectors must go hand in hand with relocation to those programmes that benefit the poor most. Within the Health sector, a greater share should be spend on preventive and promotive health as this improves the health of both adults, children and infants. Within the curative budget, the spending must shift towards health centres and away from District hospitals. Private initiatives should be appreciated through a well designed framework to operate clinics and dispensaries in rural areas. The mechanics of transfer of money to the poor will have to include inter-alia, increased cost recovery from non-poor from hospital based services; a move towards greater private health insurance for those who can afford it and a change in a mix of services provided both at hospital level vis-a vis health centres. There is need to integrate the insurance scheme within the overall plan for releasing public finance to finance the poor.

In education sector, at primary level, the poor are unable to afford as good quality of education as non poor. This is because they are unable to purchase non-teacher inputs needed by the curriculum. The poorest are unable to enrol their children due to decline or low levels of income. The overall enrolment at secondary level of education are modest and non-existent for the poor. This is due to the high cost of boarding and development fee. There is a need to

commit more funds to run the bursary programmes for the students whose parents are handicapped by low incomes. Particularly, female students should be accorded preference since most of them opt for marriage in desperation secondly, through the joint efforts, the government and non-governmental organisation should support rural communities to develop day schools to lower the cost spent on boarding and development fees. The support can be inform of provision of teachers, material and equipment, and construction of classroom.

The third type of a social programme is for the government to initiate targeted programs to provide employment opportunities to the poor in rural areas. Most of the poor are dependent on wage employment and such programs provide income support for the rural poor. The need for such wage employment has become all the most acute with the dwindling agricultural production and land sizes. The rural works programme would benefit the poorest sections of the community, and the poorest areas, by providing incomes and employment for the hired workers while at the same time providing essential services to the rural community. Rural work programme (RWP) should be designed to promote employment especially for the rural poor while providing economically useful assets and stimulating local development efforts projects under RWP can be classified under; Roads; agricultural support projects (cattle dips, nurseries); conservational and environmental improvement projects and; social infrastructure (domestic water supply and rural electrification).

6.2.4 Food Security

The sharp increase in food prices during drought years i.e. 1981, 1992 and 1997 points to a deficiency in policy pertaining to management food reserve stock. Also holding of high grain stocks or exporting grains at times when food prices are skyrocketing implies lack of clear government policy. For example in 1996, The National cereals and Produce Board (NCPB) exported 403,000 metric tons of maize to Mozambique (Kenya, 1996:8), while in the following year 1997, the country was hit by famine and Ksh. 7.1 million was required to import maize to offset the deficit.

While the government should eliminate the monopoly enjoyed by NCPB in cereal marketing in normal years, there should be an effort to develop alternative marketing strategies like use of cooperatives instead of leaving the process to marketing forces for this leads to exploitation of farmers(Footnote : in 1995, maize prices fluctuated from 950 shillings per 90 kg bag to 300 kshs during the peak harvest period (Kenya 1996: 122).

The government must increase the speed of response to indications of drought and greatly improve its critical coordination role among producers, marketing agencies, research and consumers. There should be a well executed strategy of holding food reserves in deficit areas so as to militate possible repercussions of famine.

6.2.5. Rural Small Scale Enterprises (RSSE)

The 1997-2002 National Development plan puts in place policies that will locate light agro-based industries in rural areas and small towns because such industries rely on agriculture for their inputs (Kenya 1997;) However, the growth of manufacturing sector will not have an

impact on the improvement of living standards of the majority of Kenyans poor who live in rural areas. Experience from Asian Tigers (notably Taiwan, Korea and China) shows that during the process of growth from 1965-1988, agricultural productivity and output grew at higher rates than in other parts of the world[17].

In this plan, rural population are seen as providers of raw materials, their role is to feed the industrial process and hence they don't come up to share in the incomes accruing from the sector. If employment is put alongside growth as a major national objectives, their rural non-farm activities must be considered important. Given the prospects of diminishing farm incomes as farm sizes decrease there is a strong case for development of non-farm activities as an alternative source of income.

There is an urgent need to design special programmes that would enhance the capacity of rural small scale enterprises credit. Several of them have come into operation in Kenya and follow the practices adapted from the successful rural finance institutions like Gramean Bank in Bangladesh - the use of groups and relatively small size of loans and close supervision. This is a favourable development that should be encouraged for it can have favourable impact on income and employment. Compared to schemes in Bangladesh and Indonesia, the Kenyan ones are small and hence not cost effective. They are also ineffective in reaching the large number of women groups in rural areas. The Kenyan scheme should incorporate a strategy to provide credit to individual entrepreneurs in rural areas. The common enterprises in rural areas include brick making, masonry, carpentry, retail, leatherworks, Posho mills and butchery.

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[17] . 3.2 percent and 2.2 percent respectively compared to less than two percent and 0.3 percent in Subsaharan Africa.

6.2.6. Intensification of Land use.

Land subdivision has continued unabated with average acreage falling from 28 acres to acres per household. The majority of the households have less than five acres. The effect of declining land sizes is low production and hence income per household. This calls for the need to have policies that directly encourage farmers to intensify their land use.

Intensive agriculture can be viewed at two different levels. During the normal agricultural extension farmers on time of planting, type of seeds, type and amount of fertilizer to apply and the type of breeds of dairy animals to rear and the risks involved in each activity.

In areas that receive two seasons of rainfall, its possible have the second type of intensification so that each rainy season is a new planting season. However this requires research and production of new types of seeds that are early maturing especially for maize and suited for the high altitude. Agricultural practices such as mulching and crop rotation can be practised with an aim of both retaining moisture in the soil and stepping up soil fertility. However, the most important condition to ensure the success of this type of intensification is supply of piped water that can be used for irrigation during dry periods. The government should therefore enact policies that will encourage the community to abstract water from rivers, sink individual boreholes and develop and repair natural dams.

Because of the limited land sizes, there is little prospects for diversification into perennial cash crops such as coffee and tea. This is because they take long to mature and occupy land for a lent time. The criteria for crop diversification is based on three factors

namely. The period it takes to earn income, it should be able to meet subsistence needs and the period the crop occupies land and the support given the farmers through marketing and provision of inputs. Its on this basis that cash crops such as tobacco have an edge over other cash crops. However, the most prevalent subsistence diversification is the growth of dry weather resistant crops such as bananas, cassava and potatoes. With availability of water, there exists enormous potential to diversity into intensive dairy farming and production of horticultural crops especially vegetables. This two have ready markets both locally and in the nearby urban centres.

Intensive dairy production is an expensive undertaking that require proper government support through appropriate policy. Key issues that require policy attention are breeding, marketing of milk, acarisides, medicine and treatment, it also requires planting of non-natural grasses such as nippier and bona varieties to ensure ample supply.

6.7. Credit

There is an urgent need to design special programmes that would enhance the capacity of credit to rural farmers and entrepreneurs. For the farmers to intensify and diversity their production, there should be an external injection of credit both in cash and material. Material loans can include fertilizers, seeds and marketing services, while cash credit scheme can be designed in conjunction with local banks so that by use of land little deeds as collateral, farmers and businessmen can submit their written proposals for funding indicating the likely profit margin. The loans can be recovered through sale of farm produce.

6.3. Conclusion:

Kenyas independent government adopted an economy modelled to export primary agricultural produce to the former colonies. This economic model worked well in early years of independence until early 1970's. This was due to expansion of cultivatable agricultural land as a result of Africanisation of the former white highlands. A million Acre settlement scheme was one of the well designed method that necessitated the orderly transfer of land to African ownership.

Now in 1997, most farmers in the settlement schemes are merely struggling for subsistence due to a decline in agricultural production. The most salient factor that has resulted to this situation is the high population increase due to both natural increase and immigration. These has later translated itself into high land subdivision with a dropping average land size available to each household.

Farmers strive to make ends meet by adopting various other methods of income generation. The performance of agricultural sector is hampered by low income due to low prices and output. This is as a result of lack of proper policy guidelines as far as pricing and agricultural land subdivision is concerned. Lack of capital has taken its toll upon the quality of farming. Most farmers don't apply enough fertilizers, neither do they use the right seeds. There is also poor land preparation, this factors reinforce low levels of production vis-avis what is achieved in agricultural research stations. The answer to this situation lies in facilitation of land registration and acquisition to title deeds followed by provision of credit scheme to improve both agricultural production and related non-farm activities. This will step up the value of the

produce and stimulate investment in both manufacturing and quatnery sectors of the rural economy in which there lies an enormous potential.

6.4 Area For Further Research.

For reasons of higher agricultural output and the simoulteneos achievement of both greater efficieny and more equity, land reform is proposed as a necessary first condition for agricultural development. Land reform usually entails a redistribution of rights of ownwership, or use of land away from large land owners in favour of cultivators with very limited or no land holding. It can take many forms: The transfer of ownership to tenants who already work on the land to create family farms (Japan, South Korea, Taiwan): Transfer of land from large estates to small farms (Maxico), Rural Co-operatives (Cuba) or State Farms (Peru), or appropriation of large estates for new settlement

Land reform is urgent now like never before because income inequalities and unemployment in rural areas has worsened; rapid population growth threatens to worsen inequalities; the landed can utilize recent technological breakthroughs in agriculture and result into their great power, wealth and capacity to resist future land reforms. The government shuold therefore take stock and individualise all trust and public land so as to enhance income distribution.

BIBLIOGRAPHY.

Abubakar, A. (1989). **Africa and the Challenge of Development: Acquiescence and Dependency versus Freedom and Development.** Preager publishers, New York.

Batten, T. (1965). **The human Factors in community Development.**Oxford University press, London.

Bertelmus, P.(1987). **Environment and Development.** Gorge, Allen and Unvin press,London.

Bigsen, A. (19) **Income Distribution in East and central Africa: A Survey of Government Policies.**

Blalock, H.M. (1981) **Social Statistics 2nd edition.** McGrawHill series, London.

Carlsen, J.(1980). **Economic and Social Transformation in Rural Kenya.** Upsalla, Sweden.

Chambers, R. (1974) **Managing Rural Development; Ideas and Experience from East Africa.** Udevalle, Sweden.

Chambers , R.(1983) **Rural Development: Putting the Last First.** John Wiley and sons Ltd, New York.

Chambers , R. (1979) **Settlement Schemes In Tropical Africa .** Routledge and Kegan Paul, London.

Chambers,R. (1988) 'Sustainable Rural Livelihoods: A Key Strategy for People, Environment and Development'.In **Convoy, C. and Litvinoff. The greening of Aid: Sustainable Livelihoods in practice.**Earthscan publishers, London.

Chambers,R et al(1989) **To The Hands of the Poor.** Rekha Printers, New Delhi.

Chamers R. (1980) 'The small farmer is a professional'. **In CERES vol.4 p.80.**

Chitere, O. (1991) **Working with Rural Communitties. A participatory action Research in Kenya.** Nairobi University press. Nairobi.

Cloke, P.J and Park, C.C (1985). **Rural Resource Management,** Groom Helm, London.

Downs, R.E and Reyna S.P. (1988). **Land and Society in Contemporary Africa.** Hanover and London, University Press of New York.

Edborn (1985). **Statistics in Geography 2nd edition.**

Hallowel, H. (1964) **Development for what?** Duke University Press. U.S.A.

House, W.J. (1979) **Social Justice and Development Policy in Kenyas Rural Economy.**

Kulp, E.M.(1970) **Rural Development Planning.** Preager Publishers London.

Lapin, L.L. (1987) **Statistics for modern Bussiness Decisions, 4th edition.** Harcourt Bace Javanovich.

Lea, D.A and Chaundri D.P. (1983) **Rural Development and the State.** Mathuen and co. publishers. London.

Mabogunje, A.C. (1984) **The Development Process.** Anchor Brendon. London

Mulwa, W (1987) **Participation of the Poor in Rural Transformation: A case in Kenya.**

Oyugi,O.(1981). **Rural Development Administration, A kenyan Experience.** Vikas publishing House Ltd.

Russell, S. et al (1979) **Public Choise and Rural Development.** John Hopkins University press, U.S.A.

UNDP (1979) **Evaluation Study No.2 Rural Development.**

UNPUBLISHED MANUSCRIPTS,PAPERS AND REPORTS.

Abrams, P.D (1979). **Kenya Land Resettlement Theory. How 66,000 African Families were Settled on 1325 large scale European farms.** Nairobi.

Agatsiva, J.L (1984). **Kenya Rangeland Ecological Monitoring Unit** -Technical Report.

Ayiro, A.A (1971). **Effects of Mautuma Settlement scheme on its Settlers.** B.A Dissertation, University of Nairobi.

Chambers, R (1971). `**Planning for Rural Areas in East Africa; Experience and Prescriptions.**' IDS Discussion paper, University of Nairobi.

Clough, R. H (1968). **An Apprisal of African Settlement Schemes in Kenya.** PHD Thesis, Cornel University.

Fielding, J. T (1947). **The Geographiacl Background of White Settlement in Kenya Highlands.**

Fleming, J.T.(1968). **Analysis of the Review of Kenya Land Reform Programme 1966- 1968.** Nairobi.

Leo, C. (1976). **Political Economy of Land in Kenya. The Case of the Million Acre Settlement.**

Macharia, C. K. (1981). **Land Tenure Reform and Africanisation of the White Highlands.** LLb Thesis University of Nairobi.

Mbithi, P. M. (1975). **Spontaneous Settlement Problem in Kenya.** East African Literature Bureau, Nairobi

Moris, J. R. (1967). **The Evaluation of Settlement Schemes Performance.** A Sociological Appraisal, paper presented in University of East Africa Social Science Conference, 1966 Proceedings Vol. 4.

Nguyo, W. (1967). **Some Socio Economic Effects of Land Registration in Vihinga.** Paper presented in East Africa University, Social Science Conference Nairobi.

Nottidge, C.P.and others (1966). **The Million Acre Settlement Scheme 1962-1966.**

Odingo, R.S (1967). **`Land settlement in the Kenyan Highlands'.** In Education, Employment and Rural Development. Nairobi, East African Publishing House.

GOVERNMENT OF KENYA PUBLICATIONS.

Kenya, Republic of (1981). **Sessional Paper Number 4 of 1981 on Food Policy.** Government Printers, Nairobi.

---------- (1974). **National Development Plan 1970-1974.** Government Printers, Nairobi.

---------- (1983). " " " **1979-1983.** Government Printers, Nairobi.

----------(1996). **National Economic Survey 1996.** Government Printers, Nairobi.

----------(1969). **Department of Settlment, Five Year Review and Annual Report on Settlement Schemes.** Government printers.

APPENDIX 1.

A HOUSEHOLD SAMPLE QUESTIONAIRE.

VILLAGE:.....

QUESTIONNAIRE NO:.....

DECLARATION:

The Information given here is purely for Academic purposes

and will be treated in strict confidence.

Date:.....

Name of

Interviewer:.....

Name of Respondent: (optional).....

Plot No.:.....

I.PERSONAL DETAILS

1. How long have you lived here?

2. What is the relationship with the household head?

   1. Household head
   2. Spouse
   3. Daughter
   4. Son
   5. Other (specify)

3. Sex of the respondent

   1. Male
   2. Female

4. How old are you in years?

5. Please give your educational background

   1. No schooling
   2. Primary
   3. Secondary
   4. University
   5. Others (specify)

5. Ethnic group

   1. Luhyia
   2. Luo
   3. Teso
   4. Others (specify)

7. What is your household size

	Name	Age	Sex	Marital Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

II.SOCIO-ECONOMIC ASPECTS

8. (a) Do you own land?

1. Yes 2. No

(b) If Yes what is the size in acres?

(c) Do you rent land?

1. Yes 2. No

(d) How much land is rented in acres?

(e) How much do you pay per acre per year?

9. (a) What crops do you grow on your farm?

1. 4.

2. 5.

3.

(b) Which ones are grown for sale?

1. 3.

2. 4.

10. What animals do you keep on your farm?

1. 3.

2. 4.

III.INCOME AND EXPENDITURE

11. What are your major expenditures on annual basis?

	Activity	Amount Ksh.
1.		
2.		
3.		
4.		

5.

6.

7.

8.

12. (a) Are you employed?

1. Yes 2. No.

(b) What is the monthly income from this occupation?

1. Less than 1000 Ksh

2. 1001 - 2000 Ksh

3. 2001 - 3000 Ksh

4. 3001 - 4000 Ksh

5. Above 4000 Ksh

13. How much do you earn from crop harvests?

	Type of Crop	**Annual Amount Ksh.**
1.		
2.		
3.		
4.		
5.		

14. When do you plant each of the above crops?

1.

2.

3.

4.

5.

15. When do you hervest the above named crops?

1.

2.

3.

4.

5.

16. What methods do you use for ploughing?

1. _____

2. _____

3. _____

17. How much do you earn from Animal related products per year?

Type of product	Amount (Ksh) per year
1.	
2.	
3.	
4.	

18. What are your other sources of income

	Source	Amount/Year
1.		
2.		
3.		
4.		
5.		
6.		
7.		

19. (a) Have you ever been awarded a financial loan?

1. Yes 2. No.

(b) If Yes, what purpose was it for?

.....

.....

(c) How much was it?

.....

(d) Have you repaid it?

1. Yes 2. No

20. How can you be assisted to improve your income?

.....

.....

.....

21. Other observation/comments

.....

.....

.....

.....

.....

.....

APPENDIX 2.

A BUSINESS ENTERPRISES - INTERVIEW SCHEDULE:

DECLARATION: THE INFORMATION GIVEN HERE WILL BE TREATED IN STRICT CONFIDENCE.

Date of interview.....

Name of Interviewer.....

Name of Respondent.....

Questionnaire No.....

1. Market (Name).....

2. Type of Business(es)

   1. .....

   2. .....

   3. .....

3. When was the business started?

4. Number of employees?

5. (a) Sources of supplies

   1. .....

   2. .....

   3. .....

   (b) Is there any difficulty in getting your supplies?

.....

.....

6. (i). What is the average monthly/annual sales in Kshs?.....

(ii) Average monthly/annual expenses in Ksh.....

(iii) Annual/monthly income in Ksh.....

7. Is this premises 1. Owned 2. Rented

8. (a) What was the source of your initial investment capital?

.....

.....

.....

(b) How much was it (Ksh)..... ....

9. (a) Have you applied for a loan anywhere?

1. Yes 2. No

(b) Why?

.....

.....

.....

10. How can your business be improved?

.....

.....

.....

.....

11. Any other comments.

.....

APPENDIX 3

LIST OF SUBDEVIDED PLOTS.

Original Plot number.	Original size in Ha.	New numbers	size ha.
23	7	551	2
		552	0.8
		553	0.8
		554	0.8
		555	1.26
		556	0.8
		557	0.8
		558	0.8
14	7	498	
		499	
13	6.3	533	0.8
		534	0.8
		535	2.5
		536	1.6
8	6.9	400	5.72
		401	1.0
32	9.3	342	2.6
		341- 474	4.24
		475	2.4
41	7.0	404	6.2
		405	0.8
43	5.8	402- 620	1.89
		621	1.42
		622	0.92
		623	0.38

		403	0.8
53	6.1	382	4.0
		382	2.1
58	6.9	332	4.9
		333	2.0
64	6.0	764	5.6
		765	0.05
		766	0.02
		767	0.02
		768	0.05
		769	0.02
		770	0.02
		771	0.05
		772	0.02
		773	0.02
		774	0.02
71	8.5	727	5.46
		728	2.7
77	15.5	462	12.54
		463	2.0
		464	0.8
82	14	419- 585	11.77
		486	1.0
		420	1.23
89	16.5	396	11.5
		397	5.0
96	10.2	354	4.8
		355	3.2
		356	2.2

99	14.8	406- 442	7.74
		443	0.8
		444	0.8
		407	3.0
		408	2.4
102	15	336	7.98
		337	3.2
		338	1.2
108	12.5	384- 690	2.8
		691	0.13
		692	0.02
		693	0.11
		694	0.02
		695	0.01
		696	0.07
		697	0.07
		698	0.04
		699	0.04
		700	0.12
		701	0.05
		702	0.02
		703	0.01
		704	0.20
112	14.8	409	12.73
		410	2.4
116	16.5	481	14.1
		482	2.4
123	49.5	709	9.5
		710	4.05

		711	4.04
		712	4.03
		713	2.8
		714	4.05
		715	4.04
		716	4.03
		717	4.06
		718	4.03
		719	4.04
131	10.1	653	2.12
		654	1.69
		655	1.64
		656	1.64
		657	1.63
		658	1.6
141	8.9	376- 583	5.9
		584	0.8
		377	2.0
145	15.5	478(13.13)664	
		665	
		666	
		667	
		668	
		669	
		670	
		479	1.3
		480	0.89
146		492	9.34
		493	2.8

		395	2.0
		492-671	7.0
		672	0.23
		673	0.6
		674	0.2
		675	0.44
167	15.5	352	10.0
		353	4.8
170	6.6	390	4.6
		391	2.00
171	9.2	348-612	4.69
		613	0.24
		349	2.28
172	8.6	503	7.29
		504	1.31
178	14.1	453	2.02
		454	3.35
		455	2.81
		456	2.81
		457	2.81
186	8.3	500(6.79) 610	
		611	
		501	0.8
		502	0.4
193	12.7	346-485-760	7.44
		761	1.01
		762	0.61
		486	.70
		347	3.6

198	7.8	449	4.3
		450	2.0
208	8.0	334-594	1.14
		595	0.04
		596	0.36
		597	0.10
		598	0.8
		599	0.5
		600	0.5
		601	0.6
		602	0.6
		603	1.0
		335	2.0
209	17.5	618	2.5
		619	14.47
211	11.6	467-488-519	8.15
		520	0.6
		521	0.25
		522	0.4
		523	0.8
		524	0.71
		489	.69
		468	1.2
212	12.4	546-782	5.4
		783	.46
		784	.2
		547	2.8
		548	3.4
213	8.9	428	7.1

		429	1.8
216	10.5	539	8.49
		540	1.21
		541	.81
217	11.7	339	8.7
		240	2.8
219	13.5	465- 638	2.69
		639	1.49
		466-676	7.7
		677	0.6
		678	0.2
221	8.3	374	6.3
		375	2.0
222	12.5	679	11.3
		680	1.2
235	10.4	647-775	1.91
		776	1.2
		777	1.11
		648	1.2
		649	0.8
		650	0.8
		651	0.8
		652	2.8
264	18	343-490	10.62
		491	0.8
		344	3.6
		345	2.8
268	6.5	413	3.65
		414	2.72

272	15.5	559	7.53
		560	4.40
		561	2.00
286	17.0	370	14.2
		371	2.8
293	11.6	482	2.4
		483	10.0
298	11.1	378-411	4.98
		412	2.0
		379	1.2
		380	1.2
		381	1.6
308	10.8	365	2.0
		366	2.4
		367	2.4
		368	2.0
		369	2.0
318	9.9	530	3.6
		531	4.41
		532	2.0
320	15.5	386	4.0
		387	4.0
		388	4.0
		389	3.3
324	18	361	5.9
		362	4.0
		363	4.0
		364	4.0