

THE GROWTH AND CONTRIBUTION OF THE  
SUGAR INDUSTRY IN RURAL DEVELOPMENT:

A CASE STUDY OF RAMISI IN KWALE  
DISTRICT, KENYA

BY

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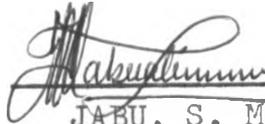


(ii)

DECLARATION

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

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This thesis has been submitted for  
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Supervisor

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I appreciate the cooperation of various personalities and organisations who availed their time for the purpose of data collection and constructive contribution to this work. I feel the deepest gratitude to my Supervisor, Mr. G. Ngugi, whose inspiring discussions and criticisms have made this work what it is.

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(iv)

DEDICATION

TO MY PARENTS

ABSTRACT

The problem that prompted this study is that, Kwale district is faced with the problems of rapid growing labour and land pressures already scaring parts of eastern sections of the district among many others. This calls for establishments that can both create on and off farm employment opportunities.

This study examines the strength of the linkage structure of the sugar industry and its contribution to rural development. In particular, the study is on the Ramisi sugar industry. This industry was chosen with the view that when well planned, it is development **inducing**, hence could create more employment opportunities that could absorb part of the rapid growing labour force of the district and at the same time trigger development of the region.

The study has been presented in order of introduction of the study, Analysis, findings, proposals and synthesis of the study.

In general the study established that the sugar industry has fairly strong linkage structure but there exists problems weakening linkage strength.

This has affected its contribution to rural development. Proposals to the solutions of the problems both in the short and longrun have been given to strengthen the linkages and hence make the industry contribute fully to development of the region.

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## CHAPTER ONE

### INTRODUCTION

#### Rural Development

From the Rehovot approach to rural development by Raanan Weitz (1979), the term "Rural" relates to all sections of a developing country which are not eminently urban or metropolitan.<sup>1</sup> This includes rural towns that act as urban centres in addition to the classic rural elements, such as villages or homesteads. The term rural development may be defined as a discontinuous and spontaneous change in a near stationary or static state which for ever alters and displaces the equilibrium state previously existing.<sup>2</sup> In the developing countries there exists a significant incidences of poverty more so in rural areas. That is, population is mainly producing for subsistence, there is under-utilisation of land leading to low productivity, inadequacy of basic needs, low per capita income, uneven distribution of income and further more a high population growth rate which not only does press hard to provision of the above but also creates unemployment.

The Focus for rural development is intended to eradicate poverty. This is through meeting

the basic needs of the entire population of the rural areas through increase in production and where necessary redistribution of productive assets. In fact this is very much in line with the Kenya's 1979-83 development plan and that of 1984-88 where their main theme is alleviation of poverty by provision of basic needs and promoting agricultural activities in rural areas. For the purpose of this study and what is understood as rural development in Kenya, the term will mean improving of standards of living of the rural population. The process of which shall be self sustaining. Raising standards of living in this study will mean raising income of the people to and beyond the poverty line of Kshs. 2200 per annum so that people can be able to acquire basic requirements which are mitrition, health care, basic education, water and housing.<sup>3</sup>

In Kenya the ideas of rural development date back about 20 years ago, following the Kericho Conference on Education, Employment and rural development.<sup>4</sup> Like what many African countries did after their independence, Kenya also adopted an import substitution industrilization development. This approach equated development with maximum Gross Domestic product (GDP)

growth through maximum investment. This approach was already under serious question in 1960 even before Kenya's independence and adaptation thereafter. Its critical analysis in terms of shortcomings to development in developing countries more so in Kenya, is given in length in the I.O.L. report.<sup>5</sup> Its main underlying assumption was that growth would take care of rural poverty. Thus the periphery (rural areas) was left at the mercy of the centre. The rural areas did not envisage the intended trickle down effects. The results were that absolute poverty and increase in social inequalities being prevalent.<sup>6</sup>

Kenya became very concerned of the situation of poverty inequality and unemployment in the 1970's. This is the time Kenya came with another strategy to development ---- "Redistribution with growth."<sup>7</sup> In the 1979-83 development plan another approach, though connected with redistribution with growth strategy came into being. This approach to rural development strike great relevance. It was the "Basic human needs" approach. Its basic objective was "Alleviation of poverty."

Kenya had thus accepted that poverty was a nationwide problem. For example in 1977 41% of the rural families engaged in smallholder

agriculture which represented 80% of Kenya's total population of about 15 million, had incomes including subsistence production of less than Kshs. 2000 per family per annum.<sup>8</sup> Only 14% of the small holder families incomes were in the range of Kshs. 2,000 - 3,000 per annum. These income levels are inadequate to meet rural people's basic needs of nutrition, health care, basic education, water and housing.<sup>9</sup>

Recent data show that there exists in Kenya a marked regional spatial incidence of poverty which reflects fundamental regional disparities in development.<sup>10</sup> The 1979-83 development plan strategy for "Allieivation of poverty," identified four major goals:

- (a) Creation of income earning opportunities
- (b) Improvement of expenditure patterns
- (c) Provision of other basic needs
- (d) Institution building.

It also attempted to boil down to specific level of rural development objectives thus;

- (i) To ensure better land use
- (ii) To pppvide essential services, credit, extension, inputs, markets and transport to small farmers.

- (iii) Construct rural access roads to expand flow of farm inputs, extension services and credit, market accessibility, water and power.
- (iv) Identify and encourage inexpensive appropriate technologies for the enhancement of rural farm productivity.

In order to open up more employment opportunities and at the same time curb rural urban migration to the big towns, a policy of industrial decentralization in favour of rural areas under growth centre approach was also advocated. For the rural areas in most cases, these are industries based on agriculture produce as their source of raw material. With Kenya's population growth rate of 4.1%," such a move would help in absorbing extra labour in rural areas, that would otherwise not be involved in farm activities.

Any economy whether in developed or developing countries must have its base. Agriculture is Kenya's economic base. It supports about 80% of the population and contributes about 30% of the GDP.<sup>12</sup> Thus attention to rural

development not only meets welfare objectives but where it facilitates improved agriculture, it is an investment in the national economy. The role agriculture can play when appropriate multi-objective approach is followed, can be:

- (a) Provide increased food surplus to the rapid expanding population in the agricultural and non agricultural sectors.
- (b) Increase the demand for industrial products and thus necessitating the expansion of the secondary and tertiary sector, because of increase in incomes brought about by increase in output.
- (c) Provide additional foreign exchange earnings for import of capital goods for development through agricultural export. This needs surplus production.
- (d) Increasing rural incomes to be mobilised by the state.
- (e) Improve welfare of the rural people.

For the above to be realised, an attempt should be made to process raw agricultural, produce

at home. This calls for the setting of agro-based industries in rural areas where raw material are available. The planning of the industries, farm organisation, the technology to be used and marketing procedure will very much determine whether the target group will be reached to bring about the five facts outline above.

It is with this major concern of rural development in finding ways and means of eradicating poverty so as rural areas can be a better place to live, that this study was undertaken. It is mainly concerned with agro-based industry and its contribution in rural development and in particular sugar industry of the Ramisi sugar belt in Kwale district.

#### Statement of the problem

Kwale district is not among those districts which have achieved a high degree of development in terms of both agricultural and industrial development.<sup>13</sup> However the District has the potential for economic and industrial development. From the two population census 1969 and 1979 the district registered a population growth rate of 3.9%, having a

population of 205602 and 288363 respectively. This compares well within the national growth rate of 4.1%<sup>14</sup> Because Kwale district has been designated an immigrant district and so long as land is still available, its population will continue to grow both naturally and through immigration. Looking at the growth rate of the district labour force, which currently stands at 5.4%, it is higher than the national growth rate of 4.4%, while the national employment growth rate is only 2%.<sup>15</sup> This problem can only be solved only if agricultural activities in the district can be developed to a stage where gainful employment can be created.

Of the above mentioned population of Kwale district, about 95% live in rural areas where agriculture is the main occupation. Already in the eastern section, densities of up to 400 persons per square kilometre have occurred in Msambweni, Diani and Pungu.<sup>16</sup> Out of the total land area of the district 825m<sup>2</sup>, only 35.7%,<sup>17</sup> can be classified potential land for crop growing, the rest being rangeland. This has resulted in 80% of the population living in the eastern section of the district which comprise of good land with adequate rainfall.

The result of 1974 of a 10% sample survey of 10% sample titles registered under the land adjudication programme in Kikoneni and Msambweni in the eastern section which houses the Ramisi sugar belt showed that about 50% the farm - holdings were below 2 hectares.<sup>18</sup> Though this results do not agree with a study in farm management by a German Agricultural team which found farm sizes fairly big about 8 hectares in Kikoneni, Mkomba and Mkongani,<sup>19</sup> What is to be born in mind is that with increase in population the farmholdings will be smaller as subdivisions among sons and daughters will take place. The population living in this section will thus exert considerable pressure on land. This is particularly so if families have to earn incomes sufficient enough to meet their basic needs. This situation might lead to degradation of land which will result into reduction of productivity.

Agriculture is the economic base of Kwale as it is for Kenya. From a study carried out by Karani (1976), Kwale district was found very much endowed with agricultural resources which if fully developed can lead to several agro-based industries being established.<sup>20</sup> This could very much help to improve the standards of living in region

through creation of employment opportunities, which could absorb the rapid growing labour force. Unfortunately little has been done in this line. The only Agro-based industry of more significance in the district and indeed the biggest is the sugar industry. With the problems facing the district, thus poor communication and transportation network and lack of well organised institutions to steer ahead smallholder farmers, the agricultural sector of the district largely produce for subsistence. With the rapid growth rate of labour force as noted earlier in this section, there is a need for an integrated development of agricultural sector with other sectors of the economy in order to create employment and in the overall analysis alleviate poverty.

This study looks at the contribution of the sugar industry in the district in terms of rural development. Unlike the Western sugar zone, the Ramisi sugar belt is not very extensive. It has been noted that, when well planned, sugar industry can play a greater role not only in rural development for the area but also for the entire country.<sup>21</sup> Thus the industry is development inducing. The industry is labour intensive, due

to this fact it can create significant employment opportunities. For example in 1978, among the processing industries in East Africa, the sugar industry accounted for 3.0% of the total number of operatives.<sup>22</sup>

Many of the problems that face sugar industry as disclosed by various studies in Western Kenya are in the planning and organisational structure.<sup>23</sup> This coupled with communication and transportation problems will very much determine whether or not the objective of raising standards of living of the rural poor can be realised. Amongst such problems are the target group (the poor) left out of production, inavailability of finance to prepare, plant and transport cane to factories, hence limiting creation of employment, overmature cane lying in the fields due lack of transport facilities. This has led to farmers losing significant sums of money and some scaring to quit production.

#### Study assumptions

1. That the population of Kwale district will continue to grow exerting more pressure on land especially in the eastern section, hence a need to create more employment opportunities to absorb excess labour force.

2. That Kwale district economic base will continue to be agriculture and the development of this sector so that it can produce surplus to warrant establishment of related agro-based industries; should be the main thrust in improving levels of standard of living of the rural population.
3. That there exists at present a weak but significant linkage structure especially so from outgrower cane producers in the sugar industry and if strengthened could contribute a great deal to the other sectors of the rural economy of the region.
4. That farmers are rational, so that any real benefits that they reap is reinvesting in both farm and off farm activities.

#### Scope of the study

This study recognises the importance of formulation of hypothesis to evaluate the impact of the industry on rural development of the region. Thus multipliers were the most appropriate technique that would have been used to test linkage strength, but given the time limit and financial constraints, the study will not look

into each and every aspect of the industry. In order to test the linkage strength there will therefore be a need to trace each and every movement of the variables of the industry. Due to the above, descriptive statistics will be deployed in an attempt to test linkage strength.

The following variable hence were investigated:-

(a) Income and employment creation from both nucleus estate and outgrower farms.

(b) Organisation of outgrower cane production and availability of extension services and credit facilities as well as related inputs.

(c) Transportation of cane from outgrower farmers to factory, buying methods and payments machinery to outgrower farmers.

(d) At factory level, the following were examined; employment capacity, present number of operatives by category (unskilled-skilled), their income and places of origin and inputs required apart from cane.

(e) Marketing of final products at local and export markets (if any).

(f) Non - farm activities that came about because of the sugar industry of the region, number of operatives and income derived from them.

(h) Social and physical infrastructure resulting from the industry i.e., housing, education, health, water, roads and Telephone and Postal facilities.

(i) Quantities of the by-products from the factory and their present use.

#### The study area

The area that this study was undertaken is in Kwale district, in Coast Province of Kenya. The area is in eastern section of southern division of Kwale district. It therefore covers four locations, Msambweni, Pongwe/Kidimu, Diani and Kikoneni with a total area of 918 square kilometres.

#### Justification of the Study

While studies of the sugar industry in Kenya have mostly concentrated in Western Kenya zone, the coast sugar zone though not extensive has hadly been researched into greater depths.

As every geographical area is unique in its own way, findings of the studies done in Western Kenya, as far as the sugar industry is concerned cannot be totally used for planning the Ramisi sugar zone. This study has hopefully contributed more to the pool of knowledge already from the previous studies.

Secondly 61 years now, from the establishment of the Associated Sugar Company Ramisi, it is an interesting and a long overdue task to perform in an attempt establish to what extent the rural economy of this region has been effected by setting this company.

#### Literature review

Industrial policy in Kenya is spelt out in the 1979-83 development plan, where it is stated that "in the future rapid expansion in the manufacturing sector will be looked upon as a major source of employment opportunities and income for urban as well as rural dwellers."<sup>24</sup> In order to minimise rural - urban migration and the same time bring about regional balances, the setting out of these manufacturing industries in rural areas and where they make use of local available raw materials, will bring about

meaningfully the intended goal of alleviation of poverty. For these rural areas therefore, it is expected that most of these industries will be agro-based processing industries.

In order to achieve the above, the location of these industries as well as knowing how a particular industry will affect people of a region, may be as crucial as the very decision to undertake the project itself. Most of the classical industrial location theories were formulated in the industrialized economies, thus implicitly they have adopted certain assumptions due to prevailing conditions then. Hence such theories are tailored to suit the needs of such countries. The theories cannot therefore be fully applied in the developing countries but nevertheless, do provide broad guidelines for industrial location.

Theories as presented by scholars such as Smith, D.M. (1971), Bale, J. (1975), Weber, (1909), Pollandes (1935); Hoover (1948), bring out the main factors of industrial location. But they are based on optimum access to labour, transport, raw materials and markets.<sup>25</sup> However Norcliffe (1975) noted further that in

so far as such industries are material oriented, the location of processing activities will correspond fortuitous location materials that are processed.<sup>26</sup>

George Renner (1947) formulated the general principle of industrial location.<sup>27</sup>

This incorporates most of the factors of the above scholars. He argues that an industry will tend to locate at a point which provides optimum access to its ingredients or component elements. Hence such industries seek a site near to:

1. Its raw materials if it uses perishable or highly condensable raw materials or
2. The market, where processing adds fragility, perishability, weight, or bulk to the raw material or where its products are subject to rapid change in technology; or
3. Power where the mechanical energy costs of processing are the chief item in total labour cost; or

4. Labour where, its wage to skilled artisans are a large item in the total costs.

The above industrial location approach can be divided into three. The first approach which is based on cost minimisation, lays emphasis on inputs side and its assumption that the firm can sell all its produce.<sup>28</sup> The second approach is the market area analysis approach which lays emphasis on availability of market such that a firm will locate where it has access to the market and serve the greatest demand. Its main thrust is the demand criteria more than anything else. The third approach centres on profit maximisation where the assumption is that a firm will locate in an area which will make it reap maximum profit possible. But due to businessmen not knowing costs in alternative locations which can be the basis for comparison as stated by Darko (1975). It is difficult to determine such an area.<sup>29</sup> It is advisable to note that the above analysis is based on free market system. While this is the case, in the real world situation there no free market system situation as such as a government policy may

militate against the occurrence of such a situation.

As far as plantation agriculture in Kenya is concerned, the industries tend to locate in rural areas where raw materials are available. For example, in Tea industry, location of factories should be near as possible to their sources of raw material (green leaf) because of the perishability of these input. This holds true to Renner's (1975) general industrial location principle number one (see page 17). Therefore the industry will not locate in urban areas but in rural areas where tea farms are. This aspect makes this industry very important as far as rural development is concerned so long as it is well planned and the target group to benefit more from it is identified.

Studies carried out in small-holder tea growers in Kenya fall under two broad categories:

1. Economic studies related to the productivity and economic benefit of the small holder sector.
2. Geographic or spatial studies concerned with the patterns that emerge out of small-

holder production.

Etherrington (1973)<sup>30</sup> in his economic study of smallholder tea production, found out that intensification of the smallholder sector could face labour problems. Though he identified this drawback, it may be assumed at this level that intensification of smallholder agriculture creates employment. Another economic study by stern (1972), found out that many benefits go to the factories and K.T.D.A. but as the output of tea builds up, it may result in decrease in cesses and high second payment to farmers.<sup>31</sup> Already high second payments to tea farmers has been reported allover Kenya. From this it can be learnt that there is need to plan smallholders production and its organization framework such that farmers can benefit more if our goal of rural development is to be achieved.

Gyllstreum (1977)<sup>32</sup> in his study of production organization, urges that the emergent of spatial structure is also dependent on the organisation of production and on how the supporting bodies are built up and how efficient they perform their functions. He goes further to say that by linking the smallholder to the

type of organization which is able to undertake the necessary large scale operation research, they are bound to be a more balanced spatial spread of employment, skills and incomes. He thus found out that smallholder production for tea and it can also be true for sugar cane; superior to estates in contributing to regional economy since agro-based establishment subordinated to large corporation are upto forster skewed resource use and intraregional imbalances. Thus smallholder production when well organised has trickling down effect - into the local economy and this is of profound importance to the local economy.

Another plantation agriculture crop is pineapple. In Kenya this crop date back to the 1950's. Pineapple growing especially in smallholder farms has a mixed story. Upto this level no significant benefits have acrued to smallholder farmers. But most of the drawbacks facing this crop are based on organization and management.<sup>33</sup> One can therefore conclude that apart from the number of opperatives drawn from Thika town and its environs, the setting of Kenya Cannery has not significantly benefited the hinterland of Thika.

Rice is also a crop grown on smallholder outgrower basis. The author had a chance to visit Mwea Irrigation Scheme. The scheme was started in 1954, in 1966 it was brought under National Irrigation Board by an act of Parliament. The board thus carries out all the organizational and management of production, processing, marketing and research. Though the National Irrigation Board claims that it has significantly contributed to uplift the standard of living of the rural community in semi - arid parts of the country, a doubt can also be cast as to the truth of this story.

Cotton is one of the crops grown wholly by smallholder farmers. Though this industry can have a great contribution to the rural areas, it is with problems. In most cases the farmers are under co-operatives. Awour, R.O. (1979)<sup>34</sup> identified various problems facing cotton production. These were one, malpractices of co-operative officers in under-weighting produce of farmers hence depriving them of income which is crucial for their upkeep and rural development in general. The second was that most profits go to the gineries which are in most cases privately

owned. In this case there is no guarantee that these people will invest in the area. For cotton therefore we can conclude that the weakness facing farmers is that organisation from production to marketing policies.

As far as the sugar industry in Kenya is concerned, we find that the industry is raw material oriented and that sugar cane is moderately perishable. Thus it should reach the factory within 24 hours from the time it is cut. The processing plants therefore are found in rural areas where sugar cane is grown. Cost factor which are the main elements of industrial location have little role in the location of sugar industry. This is even further supported by the findings from Western Kenya sugar belt studies by Obiero, (1980), where he stated that:

Cost factors do not play important role in determining the location of the sugar industry in Western Kenya. This is because of certain anomalies in economic operation of various established sugar factors.<sup>35</sup>

In the above study it was found out that the sugar companies are being subsidized by the poor outgrower farmers and the central government especially in transporting cane to the

factory and processed sugar to the market. Some evidence also show that some sugar companies enjoy subsidies from the central government by being awarded higher price per tonne of millwhite sugar in order to cover costs.

On the organisation of the industry, there exists two types of sugar companies the government owned or where the government has majority shares and the privately owned sugar companies. But the whole industry is under the umbrella of the Kenya Sugar Authority which is supposed to advice the government on the industry and undertake research. We can not assert at this level that the organisation of the industry is perfect, for the industry is not without any problems.

This study has attempted to look at linkage structure and its strength of sugar industry in rural development. In the study of industrial linkages in Kenya, there is not much that has been done so far. From early studies by Sargent Florence and the West Midland Group,<sup>36</sup> regarded industrial linkage as occuring when flows of semi - finished goods or components take place between manufacturing plants or industries.

These goods concerned are then processed further, or or assembled into some end product, by the "importing" industry - Linkage of this kind can either be classified as "forward" or "backward", depending on whether flows are of outputs to other manufacturing plants as customers, or of inputs from other manufacturing plants as supplies. A further distinction on linkage is made. That is linkage can also be "vertical", "Lateral", and "diagonal". Vertical linkage exists where flows involve successive operation on initial materials by different factories, in the industry. Lateral linkage concerns flows of different components from several plants to one factory for assembly. Diagonal linkage occurs where the products or services of a particular factory are used by plants, sometimes in different industries, at different stages in the process of end-product manufacture. This work of Florence and West midland Group is a useful one though he discusses the concept in a context which seems to restrict the meaning of linkage especially to those semi - finished goods which occur between plants located within the same industrial area.

In defining industrial linkage, Bale (1976), defined it as:

All the operational contacts including flows of material and exchange of information, between the separate functional elements of the manufacturing system.<sup>37</sup>

The elements can be thought of as whole industrial sector of the economy, or individual plants, depending on the scale at which one is considering the system. Linkage therefore vary in their complexity from the simple movement of a single product from one plant to another, to a series of inputs from a large number of origins converging on one plant. Linkage can thus be viewed as chains binding the manufacturing system together.

Hirschman (1958) discussed two types of linkages as pointed earlier by Florence and West Midland group.<sup>38</sup> He sees forward effects as encouraging invests in subsequent stages of production and backward linkages as produced by increase in demand. Hirsehman contends that Development should aim at discovering projects with largest total linkage structure.

To asses the contribution of the Ramisi sugar industry in rural development, the study

is based on disaggregating various activities of sugar production. This disaggregation of functional elements of the industry fit well the definition as given by Bale (1976).<sup>39</sup>

For the purpose of this study three main linkage levels has been adopted. These are namely:

- (1) Farm linkage level (Esate and out-grower farms)
- (2) Factory linkage level (processing)
- (3) Marketing (final product and by-product etc.) linkage.

#### Study objectives

This study of sugar industry which is among the very few most important agro-based industries in Kwale district, looked at the contribution of the industry in rural development of the region. In doing so it - examined the linkage structure of the industry and related this to other sectors of the rural economy. This enabled this study to assess the extent to which the industry has been responsible to rural development in terms of raising standards of living of the rural

population of the region. The identification of weak linkage structure and their nature will determine whether or not their strengthening can be achieved and used as a basis for integrated rural development.

To be more specific about the objectives, the study aims:

1. To assess the growth of both nucleus estate and outgrower sugar can production and noting problems if any.
2. To establish the extent to which sugar cane industry has influenced the economy of the study area and the region in general, in terms of income, creation of employment opportunities and overall level of standard of living of the rural people.
3. To evaluate the nature and organisational structure of the present production, processing and marketing, to note any problems and to trace their effects on rural development of the region.
4. To establish the relationship of the industry with other industries in terms

of inputs in various stages of production, processing and marketing.

5. To examine the role played by public sector and its institutions in trying to strengthen the industry.
6. Finally, to recommend and propose on how to strengthen the linkage structure of the industry and sectors of the rural economy that is geared at improving standards of living of the rural people.

### Research Methodology

It was the aim of this study to investigate and identify to what extent the sugar industry of the Ramisi sugar zone as an agro-based industry has help to foster rural development in the region.

Four major methods of data collection was employed in this study:

1. A questionnaire was used to gather information at farm level (outgrowers) on hectarages, incomes, employment, extension services, housing,

infrastructure and social services, non farm activities that have originated from sugar production and problems related sugar cane production marketing and payment procedures.

Before such questionnaires were administered to the farmers a reconnaissance of the study area was done after which the total number of outgrower farmer was established. The study area was then divided into seven blocks. In each block, farmers were interviewed following lines of transportation (roads and paths). Two areas were left out un interviewed, these were Gazi and Msambweni. The reason for doing so was because, in most of these areas where cane is grown are under nucleus estate farms hence there are very few outgrower farmers if any.

Some of the sample blocks amongst the seven had many questionnaires administered than others. The reason behind this decision was arrived at from the intensity of sugar cane growing and the size of the sampling block. The choice of demarketing a sampling block and its size was very much influenced by the catchment area of a shopping centre in each block. Thus each sampling block was chosen in relation to

its shopping centre surrounding it.

The following are the names of the sampling blocks and the number of questionnaires administered. A total of 125 questionnaires were

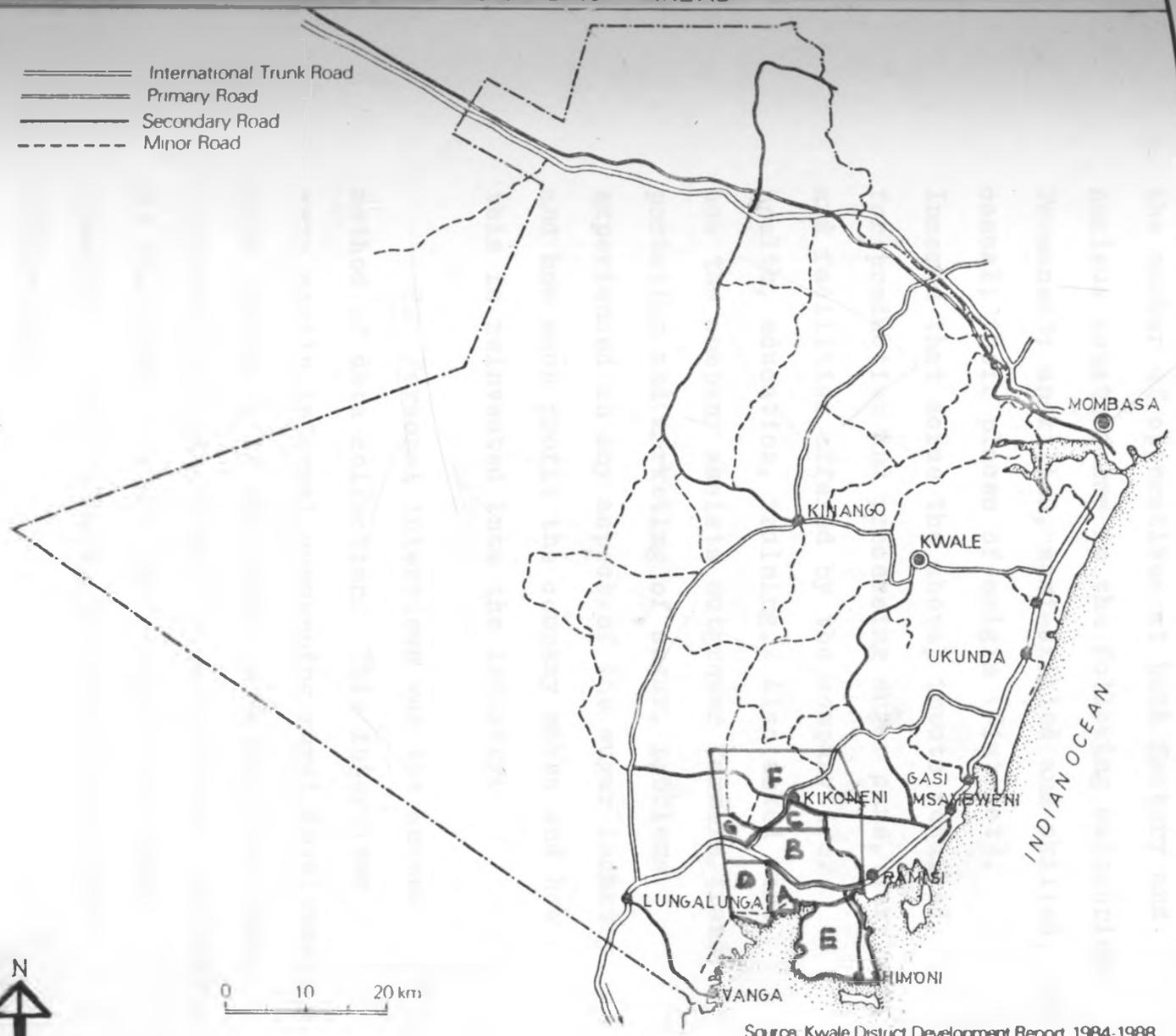
<u>S.BLOCK</u>	<u>NAME</u>	<u>NO. OF QUESTIONNAIRES</u>
A.	Majoreni	22
B.	Mrima	29
C.	Kiruku	8
D.	Mwangwei	17
E.	Kidimu/Kiwambale, Chwaka	11
F.	Mwananyamala, Kikoneni	33
G.	Mamba	5

administered out of 1209 outgrower farmers. This was slightly over 10% sample size.

All inventories of the shopping centres were taken after which informal interviews were done that seek to know number of people employed in each type of business and the problems currently faced.

Another type of questionnaire was administered to the factory personnel in - charge. This questionnaire covered the following offices: General Manager, Personnel Manager and the Outgrowers Manager in an attempt to know brief

- ==== International Trunk Road
- ==== Primary Road
- ==== Secondary Road
- - - - Minor Road



Source Kwale District Development Report, 1984-1988

history of the factory upto the present time, the number of operatives at both factory and nucleus estate farms in the following categories: Permanent; unskilled, semi-skilled and skilled, and casual; their places of origin (District).

Incomes that accrue the above, inputs required for production and processing sugar cane, services and facilities offered by the company i.e.

health, education, training. Also asked were how the company assists outgrower farmers, transportation and marketing of sugar, problems experienced in any aspect of the sugar industry and how much profit the company makes and how this is reinvested into the industry.

2. Personal interviews was the second method of data collection. This interviews were mostly informal concerning rural development with reference to the sugar industry, its administration, management, infrastructural facilities in the sugar zone and marketing of the final products. The following personnel were hence interviewed:

- (a) District Development Officer (Kwale)
- (b) District Officer/Chief and Subchiefs
- (c) District Agricultural Officer/  
Assistant Agricultural Officers

and Field Extension Officers.

- (d) Kenya Sugar Authority Officers
- (e) Agricultural Finance Corporation Officers (Ukunda).

3. This is secondary source of data collection. It included all relevant literature the author could lay hands on i.e. books, reports, statistical abstracts, maps etc.

4. Lastly, data was also collected through observation and experience in the study area.

#### Limitations

The study has limitations which can be attributed to data collection from the study area and other factors outside the study area. The following are the limitation that were experienced:

1. Time was one of the limiting factor in this study. Effective data collection was only done for a period of one month and half, thereafter time was to be shared between other classwork and data collection of this study.

Given this constraint this study could not collect all the data needed for example to warrant use of multipliers as a test of strength to linkage structure of the industry.

2. Finance was also a limiting factor. Any study of this nature requires a great amount of Finance for hiring research assistant, travelling and upkeep of research team in the field. Also given the extensiveness of the study area, high transportation costs were unavoidable. All the above, led a budget squeeze at the same time attempting to collect as much data as possible.

3. Lack of information or unwillingness of the interviewees to release information is also a limitation of this study. For example the associated sugar company (Ramisi) management personnel could not give the financial situation of the company. Efforts to establish the factory's inputs used for processing sugar and what it costs the company to acquire such inputs were fruitless.

4. Incomes from business establishments can not be highly relied upon as there were no other ways of counter checking the information.

Despite the above limitations to data collection most of information needed was collected.

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## CHAPTER II

### BACKGROUND INFORMATION (KWALE)

This Chapter introduces the reader to the main salient features of the district in general after which each section boils down into the study area. To be discussed in this Chapter therefore will be, Location and size of the study area in both national and regional context. Physical factors, climatic conditions, vegetation and ecology will then follow. Also given a place in this section will be, Agricultural activities, and industrial potentiality of the district. In order to appreciate how the resources of the district and that of the area under study can be exploited this Chapter will be incomplete without considering demographic characteristics and employment levels of the district. Finally, analysis of the development problems will be given. It is hoped that the above will go a long way to prepare the reader in appreciating to what extent the Ramisi sugar zone has been responsible for rural development of the region which will be discussed other Chapter yet to follow.

### Size and Location

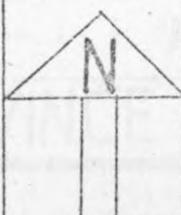
According to the 1979 population census, Kwale district covers 8,257 square kilometres. Being the most southern district in Kenya, it does lie south of Mombasa District. Kwale District is bordered by the Indian Ocean in the East, to the north it borders Kilifi District, Taita Taveta district to the west and Tanzania in the south. The district is divided into four divisions, namely, central, Kubo, Hinterland and southern. It is the later division (southern) that houses the Ramisi sugar zone. All the four location of the Southern division, Msambweni, Diani, Pongwe/Kidimu and Kikoneni are traversed by the Ramisi sugar zone. The zone has a total coverage area of 250 square kilometres. The sugar zone stretches 45 kilometres in the North-south direction and with a maximum width of 10 kilometres towards East - west direction. Map number 2 shows the location and size of Kwale district in the National Context while Maps number 3 and 4 shows the regional setting of the district and the location and extent of the Ramisi sugar zone in Kwale district.

# KENYA

## KWALE DISTRICT



- INTERNATIONAL BOUNDARY
- PROVINCIAL BOUNDARY
- DISTRICT BOUNDARY
- KWALE DISTRICT



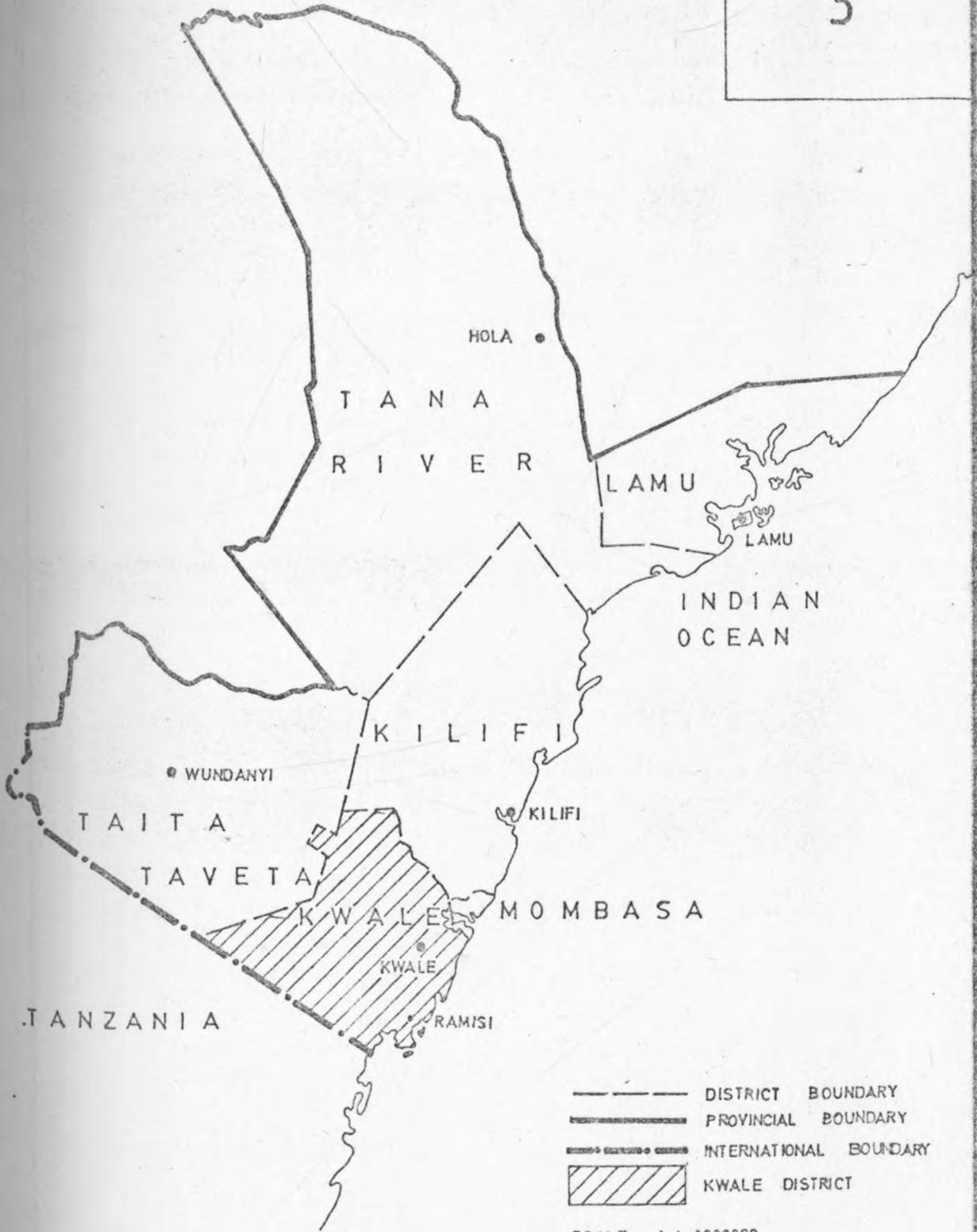
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MAP  
2

MAP

3



COAST PROVINCE



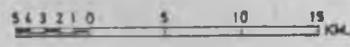
KWALE DISTRICT

RAMISI SUGAR CANE ZONE [ STUDY AREA ]

- INTERNATIONAL BOUNDARY
- DISTRICT BOUNDARY
- == MAJOR ROAD

- - - - - MINOR ROAD
-  RAMISI SUGAR CANE ZONE

SOURCE : COAST PROVINCE  
REGIONAL PHYSICAL DEVELOPMENT PLAN



MAP  
4

Physical factors

Under the above heading the following are examined; Topography and Geology, soils, and drainage.

Topography and Geology

Kwale district is composed of four major physical zones, namely the coastal plain, foot plateau, coastal range and the Nyika platform.

The coastal plain, sometimes referred to as the "coral rag" is a narrow belt of 3 to 10 kilometres wide and lies below 30 metres above the sea level. It consists <sup>of</sup> corals, sand and <sub>^</sub>alluvial deposits. In this physical zone sugar cane can only do well in the alluvial deposits.

The foot plateau comes just behind the coastal plain. It ranges in altitude between 60 to 135 metres above sea level on a flat plain surface with high potential permeable loamy soils. It is in this physical zone that sugar can flourish.

Marking the boarder of the sugar cane zone, is the coastal range. It ranges in

altitude between 150 to 462 metres above sea level made up of many sand-stone hills. These include the Shimba hills at 420 metres high and Jombo at 462 metres.

Lastly is the Nyika plateau which stands at altitude of about 180 to 300 metres above sea level. This is the semi - arid zone of the district. It occupies a sizeable chunk of the district. With exception of occasional patches of reddish sand soils, soils in this physical zone are generally poor.

Geologically Ramisi sugar zone has three main stratigraphical divisions of rock grouping. These are; Quaternary sediment, Tertiary sediments and a small portion of the Karoo system.

The Quaternary sediments are terrestrial in origin, though their climatic changes that occurred during deposition in East Africa is not known, it is presented by raised coral reefs, sand-stones, sand and dunes.

The second rock group, Tertiary sediments are associated with volcanic activities, mainly associated with rift faulting of the east rift.

Alkaline plutonic intrusions that are frequently carbonatite bearing complexes are evident in the Ramisi sugar zone. This is exemplified by Mrima and Jombo near Tanzania border, south of Mombasa.

The last rock group in the study area is the Karoo systems. These mark the periphery of the Ramisi sugar zone. They are derived from the time southern Africa formed part of the super continent Gondwana land and later the breaking away of Gondwana land. The Karoo rock in east Africa mainly overlies Precambrian crystalline rocks. In age, this rock range is between Carboniferous to Triassic.

### Soils

The main quality of all soil types in Kwale district is that they are of low to moderate fertility. A deficiency common to them all is that they have inadequacy of phosphorus, nitrogen and calcium in varying degrees.

The district has generally six types of soils, (see Map 5) namely, the coral rag adjacent to the coastal line, coastal sands,

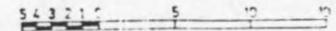
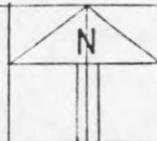


**KWALE DISTRICT : SOILS**

-  CORAL RAG
-  COASTAL SANDS
-  RED FRIABLE CLAYS WITH ALKALINE AND SALINE CLAYS
-  LOAMY SANDS
-  MIXED SOILS INCLUDING CLAYS & STONY SOILS WITH ROCK OUTCROP
-  SANDY LOAMS

-  INTERNATIONAL BOUNDARY
-  DISTRICT BOUNDARY

SOURCE: AGRICULTURE SECTOR SURVEY  
KENYA  
VOL. I & II REPORT NO 214 G-KE



red friable clays with alkaline and saline clays, loamy sands, mixed soils including clays and stony soils with rock outcrop and sand loams.

At a broader level four types of soils are found in the Ramisi sugar zone. These are, the coral rag, coastal sands, red friable clays with alkaline and saline clays and loamy sands, derived from both sedimentary and basement complex rocks. At a lower level nine types of soils characterize the sugar zone.

(1) Soils developed from intermediate igneous rocks rich in ferromagnesian minerals. These soils are well drained, extremely deep and their colour range from dark to yellowish red friable clays. Parts of Mrima and Mamba in the sugar zone is composed of these soils.

(2) Well drained, very deep, red to dark red and strong brown friable, sandy clay loam to sandy clay, with top soil of loamy sand to sandy loam. These type of soils cover parts of Kikoneni and Mwananyamala areas.

(3) Soils developed on higher-level lagoonal deposits. These soils are excessively drained to well drained, very deep, redish-yellow to white. They are loose, namely sand to loamy sand. Mwangei and Ramisi are characterised by these soils.

(4) Imperfectly drained, deep to very deep, very dark greyish to brown to olive brown, mottled soils. These are firm to very firm sand clay to clay found in Msambweni area.

(5) Soils developed on lower-level lagoonal deposits. They have varying drainage conditions, colour, texture and salinity. Five areas of the sugar zone are composed of these soils; Msambweni, Mwabungo, Kidimu/Kiwambale, and Majoreni all along the coastal line.

(6) Soils developed on raised coral reef limestones. These are usually well drained and deep. They range in colour from dark red to redish brown. These are the rocky, sandy clay loam to sandy clay with top soil of loamy sand found in Chwaka.

(7) Soils on bottom lands. They are normally imperfectly drained to poorly drained - and very deep. They range in colour from light brownish grey to brown, found in Kikoneni and Mwangwei.

(8) Soils developed on raised coral reef lime stone but different from 6 above because they are well drained but shallow. Colour range is from darkbrown to dark-redish brown. These are rocky, sandy clay loam to sandy clay found in Chwaka, Msambweni and Gazi areas.

(9) Lastly, soils of magrove Swamps. These are poorly drained but very deep and saline. They are loam to clay. Msambweni, Gazi, Diani and Bodo near Ramisi are areas in the sugar zone characterised by these soils.

#### Drainage

Apart from several minor streams the Ramisi sugar zone is drained by two main rivers. These are namely Ramisi river and Kurmoja river. As discussed earlier, the land rises one metre at sea level to labour 420 metres

at Mrima. Generally the land slopes towards the Indian with some flat sections. Those flat sections, mostly have, impeded drainage. They are sections like Majoreni, Gazi and Ramisi swamps.

### Climate

The climate of Kwale district is generally warm and humid especially along the coastal strip. The hinterland is not and humidity is lower than that of the coastal strip which is over 80%. Climate of the district is influenced mainly by two prevailing wind directions. These are the south-west and north-east monsoon winds. In October to March, the south-west winds blow in land and in April to September the North Easterlies blow towards the ocean, - bringing changes in rainfall and temperatures.

### Temperature and Humidity

Being close to the sea level as well as near the equator Kwale district has high temperatures and high relative humidities. However the hinterland of the district is hot and humidity is lower than the strip. Humidity thus varies between 95%

along the coastal strip to 60% for the hinterland.

As far as temperature are concerned the coastal areas have maximum temperature ranging from 26°C to 30°C. The hinterland has relatively higher temperatures ranging between 30°C to 40°C. The district's mean annual minimum temperature is 22°C. Although the above is true there exists some anomalies. Shimba hills and Mrima, apart from lying close to the Ocean, have cooler climate accounted for by their high altitude. Similarly relative humidities are low. The hinterland or the Nyika platform which is lower than the Shimba hills and also being a rain shadow area makes it dry with high temperature and low relative humidities.

The Ramisi sugar belt being situated behind the coastal strip has mean maximum annual temperature of 26°C and humidity of more than 80%.

## Rainfall

Rainfall of the district varies greatly. Generally it decreases from the coast towards the interior. The district rainfall is bimodal with long rains coming in March to June and short rains in September to October when the monsoons blow in land. Average rainfall ranges from 500mm. in Rangeland of the Nyika platform to 1200 in the high rainfall areas of the coast as shown in Map No. 6. Shimba Hills are the wettest areas with almost 5000mm. of rainfall per annum.

Table 1: Mean rainfall for various stations

- Kwale

Station	Mean Annual Rainfall mm.
Mrere (Shimba Hills)	4974.9
Kwale Town	1079.3
Ndavaya	759.3
Kinango	822.9
Mariakani	868.9
Samburu	598.0
Mackinnon Road	692.2
Vanga	1118.8
Tiwi	1290.9

60000

55000

MACKINNON ROAD

SAMBURU

HAZERAS

MEMBASA ISLAND

KINANGO

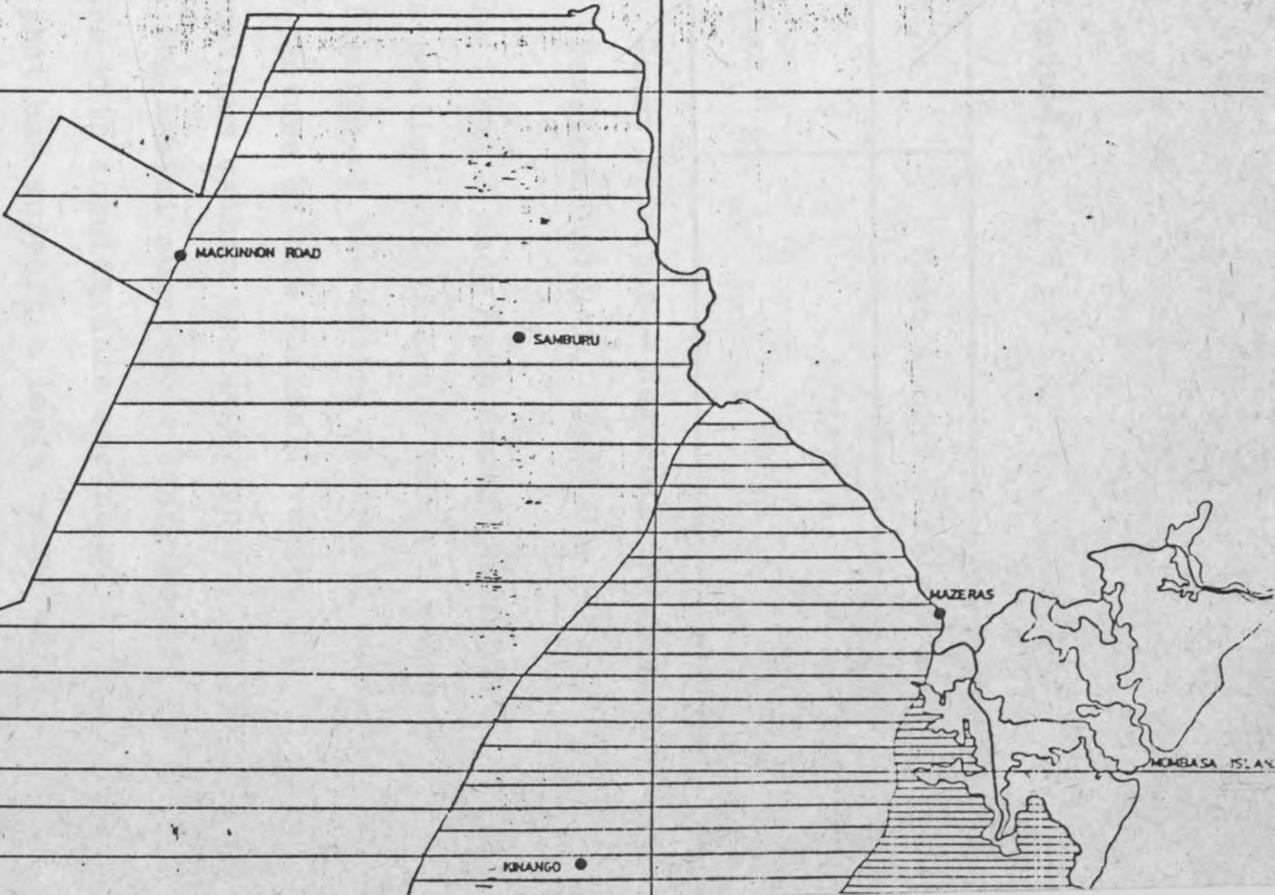


Table 1. (contd.)

Station	Mean Annual Rainfall mm.
Gazi	1375.6
Lunga Lunga	882.6

Source: Coast Province - Regional Physical Development Plan. Page 8 - 9.

Table 1 and 2 show Mean Annual Rainfall in various station within Kwale table 2 shows rainfall figures of the entire district, table 3 gives a picture of how rainfall varies in various stations within the sugar zone. By far therefore the Ramisi sugar zone Ranks second after Mrere with considerable amount of rainfall that can support a large range of crops.

#### Vegetation

Man's efforts to settle and cultivate has interfered much with natural vegetation of Kwale. Apart from the Gazetted forest which are composed of indigeneous trees, which of significant is the Shimba Hills forest reserve, thick woodland appear in

Table 2: Mean Annual and Monthly Rainfall for various stations in the  
Ramisi Sugar Belt.

Altitude	Station	Av.rainfall mm.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
15M	Associated sugar works Ltd.	1426	23	18	78	271	359	155	121	82	61	84	103	71
46M	Gazi, Kenya sugar co.	1349	23	24	70	256	347	150	100	86	68	79	89	58
6M	Gazi, Midir's Office	1408	21	18	69	275	397	133	108	81	66	86	104	50
60M	Muhaka	1129	23	19	50	207	260	104	93	79	59	93	105	40
152M	Gazi, Kikoneni	1236	25	14	92	209	234	112	107	89	70	84	124	77

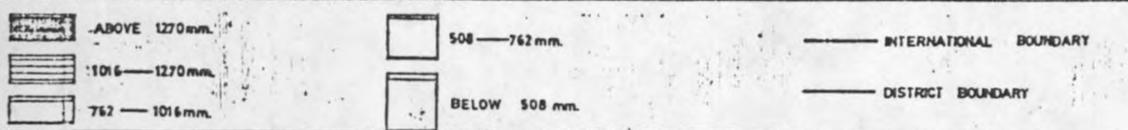
Source: Modified from Ministry of Agriculture German Agricultural team Report  
1983 page 291.

isolated areas in the high rainfall zone (refer rainfall Map No. 6). This type of vegetation can be seen as one travels along the Mombasa Lunga Lunga road and the junction of Mombasa Lunga Lunga road to Kwale township at Waa and Ukunda. This is the woodland that is sometimes referred to as the "lowland Dry Forest on the Coral Rag". Lighter woodlands are common further inland especially between Mkongani, Ndavaya and Kinango. In the extreme western areas which constitute the semi arid lands of the district, scattered wood and thorn bushes exist. This is the Kuraze Triangle. The thorn bushes also cover the Samburu and Mackinnon road areas. Along the coastline where the sea is shallow or there exist inlets, lagoons and river estuaries mangrove swamps thrive.

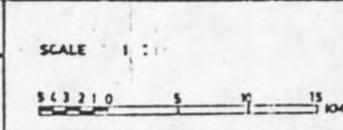
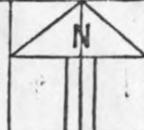
The Ramisi sugar belt being situated in the high rainfall zone of the district, generally has grassland type of vegetation. This is either scattered grassland or grouped trees always conspicuous but having a canopy cover of less than 20%. Along the coastline in places like Gazi and Bodo mangrove swamps



**KWALE DISTRICT : MEAN ANNUAL RAINFALL**



SOURCE : COAST PROVINCE  
REGIONAL PHYSICAL DEVELOP-  
-MENT PLAN



**MAP**  
**6**

thrive. There are also sections covered by indigenous forests these are namely Gongoni, Mafisini, Mrima and Kiruku.

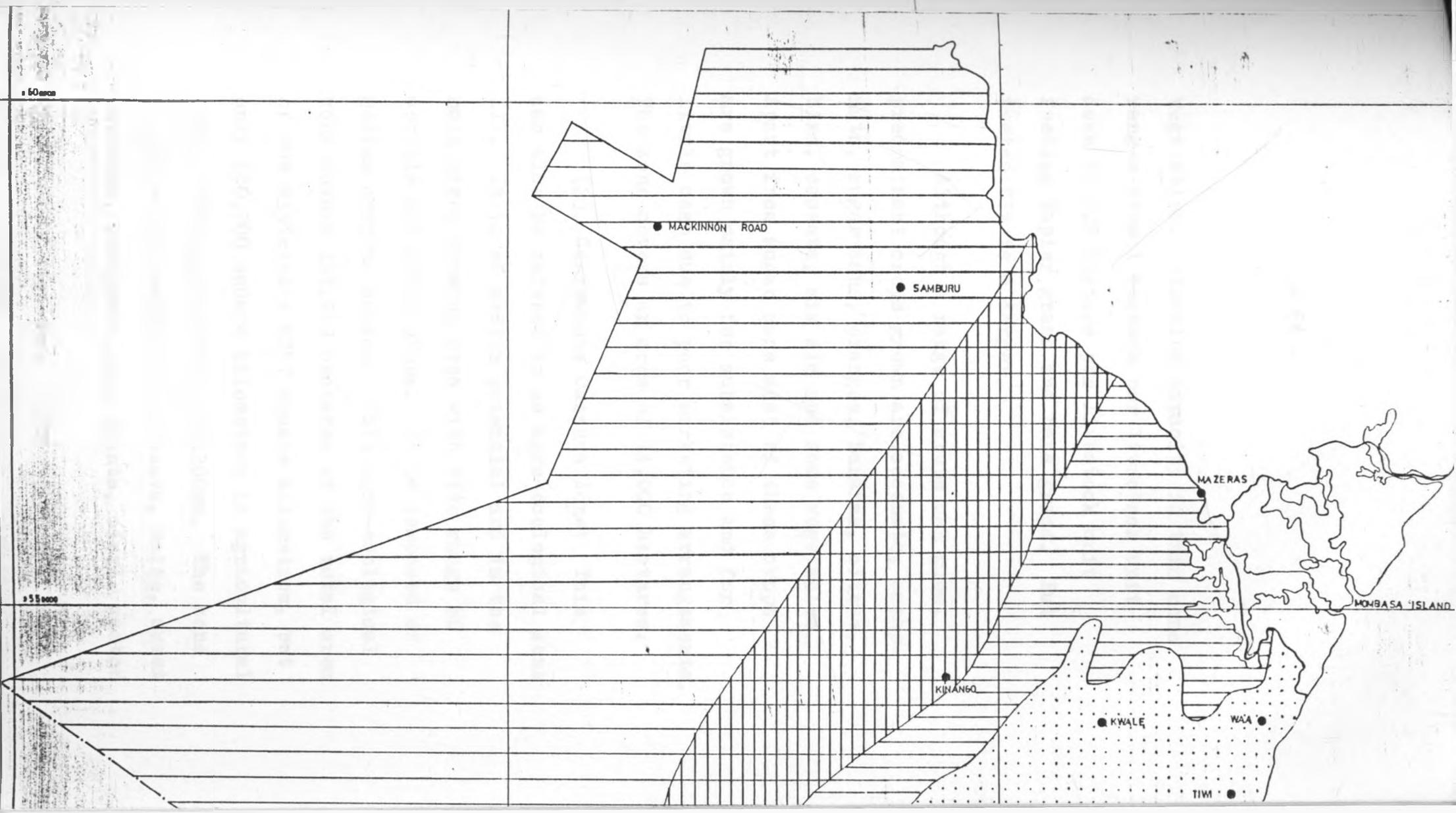
Agro-ecological zones and Major agricultural activities

In Kwale, agro-ecological zones very much portray the pattern of rainfall of the district as it is always the case. Four agro-ecological zones\* can therefore be identified namely (see Map 7).

(1) The marginal sugar cane zone agro-ecological zone II. In Kwale this zone can also be referred to as the coconut cassava zone. This zone has the highest potential for agriculture. Rainfall averages 1200mm. and above per annum. It has a long two medium cropping season soils range from light to heavy. This zone is suited for sugar cane in alluvial soils, cassava, coconuts and intensive livestock. Quite a large number of other crops can be grown such as maize, sorghum, sweet potatoes, sunflower, soyas beans, conepeas, sim sim, bixa, bananas, mangoes, cashewnuts, citrus, pineapples, oranges and nearly all

1 60 0000

1 5 0000



vegetables. Stocking capacity in this zone ranges from 1 hectare per livestock unit down to 0.2 hectare per livestock unit feeding Napier grass and Bana grass. But tsetse fly is a danger.

Although a range of crops can grow, predominant crops grown are coconuts, cashewnuts, sugar cane, oranges, bananas, citrus, bixa, cassava, sim sim and some vegetables. Apart from sugar cane most of these crops are grown mainly for subsistence and for little cash due to poor marketing arrangements. The zone covers an area of 14,000 hectares.

(2) Cashewnuts Cassava Zone: This can also be referred to as agro-ecological zone III. It is of medium potential and is the main mixed farming area with wide range of cereals and other crops. It is composed of medium cropping season. This agro-ecological zone covers 151,919 hectares of the total area of the district's 8257 square kilometres, but only 120,000 square kilometres is agricultural land. Average rainfall is 1200mm. The zone is suited to cashewnuts, cassava, maize, sweet potatoes, sunflower, egg plants, sisal, castor

mangoes, cotton, cowpeas, bixa, bananas coconuts and many kinds of vegetables. Stocking capacity ranges from 3 hectares in thicket to 0.3 hectares feeding in napier and Bana grass per livestock unit.

Predominat crops grown are cashewnut, coconuts, cassava, bixa, cowpeas, maize, mangoes, bananas and vegetables.

(3) Lowland livestock - millet - also known as agro-ecological zone IV. It is a marginal potential zone with low capacity to support human population. The zone has short cropping season with average rainfall of 900mm. It covers an area of 148366 hectare of which only 14700 hectares can be used as agricultural land. Crops grown in this agro-ecological zone are cashewnuts, cassava, fair for mangoes and cotton, good in sorghum, millet, and cowpeas. Stocking capacity is 2-5 hectares per live unit an evergreen bushland.

(4) Lowland ranching zone - which can refered to as agro-ecological zone V. Climatic conditions in this zone are hot and semi-arid

rainfall averages are less than 750mm. per annum. No rainfed crops average better than poor results in this zone. The agro-ecological zone is therefore to some extent suitable for extensive livestock. Cattle, sheep - and goats do well in short grass savana mixed with small leaved bushland with more than 5 hectares per livestock unit and in the rest of the area stocking capacity is more than 8 hectares per livestock unit. The zone covers an area of 511,415 hectares but only 507,700 hectares is agriculture rangelands.

#### Industrial activities

Kwale district has a great potential for industrial development more so in agro-based industries,<sup>1</sup> but only a few

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\* Ecological zones derived from classifications by:

1. Maturi, S.M. 1978, Kenya - Agricultural setting. Report prepared for Government of Kenya/UNEP/UNDP on Environment & Development, April, 1978.
2. Jaetzold, R. 1983, Ministry of Agricultural team; Farm management hand book of Kenya Vol. II/C.

so far have been developed. Apart from non agricultural industries namely, the tourist industry and the Waa lime works, the other industries developed are all agro-based. These are sugar cane, coconut, timber and bixa industries. There are other industries that can further be developed like cashewnut, cassava processing, fruit and vegetable and honey processing industries, which can very much help to draw significant amount of labour force from the district as well as the entire country.

#### The coconut industry

Though this industry has great potential, at present it is not fully developed. Hectare - ranges under coconut trees is increasing year after year. For example in 1975 Kwale District had over 1200 hectares under coconuts as compared to Kilifi which had more than 15000 hectares.<sup>2</sup> In the same year Mombasa district had over 2000 hectares. In 1973 more than 270 hectares were planted with new coconut plants, and in 1974 new plants planted were about 200. By 1977 the hectarage under coconuts trees was 9,133, which increased to 14367 in 1983, an

increase of about 57%.<sup>3</sup> This was as a result of the coconuts rehabilitation programme that was instituted in the district.

At present there are only three small scale industries and a proposed one owned by individuals that process products of coconut tree. At Gazi there is a copra and coir fibre processing plant owned by Msambweni development farm. It processes vegetable oils from copra. Its capacity is not big enough to serve a sizeable number of farmers. For this reason it serves the development farm and the surrounding farmers. Hence not many farmers have benefited from this factory as the majority of the farmers take the coconuts to Mombasa either as whole nut or as copra.

The other two factories are at Diani. One is mainly coir fibre processing and has a capacity of only 3 tonnes per day for coconut fibre. The other one is for copra processing only, while the proposed one is under construction at Ng'ombeni location.

What can be concluded of the coconut industry is that, it is not fully developed to the capacity to tap the raw material produced (Nuts and copra). Further more the industry has no marketing organisation whatsoever as supported by the district development plan which states that:

Marketing is either by farmers themselves to Mombasa or through unorganised temporary agents or individuals.<sup>4</sup>

The factories have opened up employment opportunities but their number are still insignificant. Lack of marketing organisation actual deprives farmers full value of their produce as they have to take the produce individually to Mombasa where they have to pay for both transport and ferry charges at Likoni or sell to individual temporary agents who may under value the farmer produce.

#### Bixa industry

This is one of those industry that had achieved a very rapid growth. In 1977 only 241 hectares were under bixa producing 480 tonnes of raw bixa, while in 1980, 2207

hectares was under bixa.<sup>5</sup> By 1982, 4447 hectares was under bixa producing 3187 tons of raw bixa. This rapid growth is accounted for by increase in prices which were highest in 1980 at Kshs. 420 per 90 kilogramme bag.<sup>6</sup> By 1981, price were Kshs. 320. In July the same year, they dropped Kshs. 175.<sup>7</sup>

This adversely has affected further expansion of the crop. It has led some farmers abandoning their plots and some were reported to have uprooted the crop.

As far as processing of this crop is concerned a factory was established at Tiwi, with a capacity of processing 250 tons which means that in 1982 over 2000 tons were exported raw. But it is said that the factory has a possible capacity to process 1000 tons per year.

With the effects on reduction of prices one can conclude that there is doubt whether the future of this industry is bright unless something is done. The factory being small as portrayed by its capacity, offers fewer off farm job opportunities.

### The timber industry

This is amongst of those industries, when well development can be able to earn the district quite sizeable income. There are more than ten blocks of registered forests in Kwale district. Their coverage total up to about 29,000 hectares. As earlier mentioned in this Chapter, most of the free species in these forests are indegenous producing a variety of hard wood. At present only a small fraction isprocessed in form of timber otherwise logs are sold at Mombasa where they are processed into timber denying the district full value of the resource. Of the ten blocks in the district only three on the Shimba plateau are exploited by two Companies.<sup>8</sup> The Companies have five saw mills which mainly split large logs into smaller units to render them portable to Mombasa for the final touches. This in ensense denies Kwale district further employment opportunities let alone finance.

### Other industries

Other industries as mentioned before are lime-stone works and Tourist industry.

They are of great significant as far as creation of employment opportunities in district is concerned. Especially the Tourist industry that relates well to its hinterland interms its demand for a variety of foods and vegetables hence creating a market for such commodities. Table 3 sheds more light on what has been discussed in this section and also points out to the possible agro-based industries that can be developed.

### Demographic Characteristics

#### National demographic Context

Kenya's population has been increasing year after year. The average national growth rate as per 1979 census stood at 4.1% per annum. The population then was 15,327,061. Factors behind this upward trend are non other than decline in mortality which is attributed by increase in health services, and high fertility rates. Table 4 dramatises vividly this upward trend.

Table 3: INDUSTRIAL CROPS

CRPOP	UNIT	1977	1981	1982	1983	1984	1985	1986*	1987*	1988*
SUGAR	HECTARES	4900	7200	7256	7336	7536	7546	7646	7800	8000
CANE	TONNES	27000	96666	98844	99000	100000	100500	100700	105300	112000
BIXA	HECTARES	241	4163	4447	4447	4447	4500	4500	4500	4500
	TONNES	480	2769	3189	3200	3200	3200	3200	3200	3200
SIMSIM	HACTARES	984	1143	1381	1600	1650	1700	2000	2000	2200
	TONNES	295	460	688	800	825	850	1000	1000	1320
COCONUTS	HACTARES	9133	14367	14650	15176	15686	16226	16876	17676	20676
	TONNES	18266	-	20000	20300	24000	26000	28700	28500	30000
CITRUS	HACTARES	302	2743	2922	3242	3622	3782	3900	3970	4000
	TONNES	4530	46000	30000	38000	37500	40000	43500	45000	49000
MANGOES	HACTARES	784	1063	1095	1300	1435	1618	1700	1800	1900
	TONNES	8100	9500	1800	9090	10000	10800	12700	130000	150000
CASHEW	HACTARES	9767	18272	18406	19076	19676	2000	2000	2000	2000
NUTS	TONNES	6000	1222	4090	4300	4460	4800	6000	6000	6000

Source: Kwale district agricultural development plan 1984/88.

\* Projected figures in the planning period 1984/88.

Table No. 4: Changes in population and growth rates in Kenya between 1931 - 1979

Year	Population	Growth Rates Between year shown
1931	3 981 000	-
1941	4 853 000	2.0%
1948	5 405 966	-
1951	6 211 000	2.5%
1961	8 346 000	3.0%
1962	8 636 263	3.2%
1969	10 942 705	3.3%
1971	11 524 000	3.4%
1974	12 934 000	3.5%
1979	15 327 061	4.1%

Source: Republic of Kenya - Development Plans  
1974 - 1978 and 1979 - 1983.

#### Kwale's population distribution

Projected to year 2000 at a growth rate of 3.9% per annum, the district will have more than 600 000 persons. This will be more than double the figure of 1979 census which was

288,363 or 22% of the population of Coast Province.

Kwale's population is not evenly distributed. This is due variability of factors such as rainfall and soils which command the potentiality of land as discussed earlier on in this Chapter. Because of high rainfall in the eastern section of the district which can support perinual crops, population, concentration is high.

The 1979 census revealed that among the four divisions of the district, southern division has a population of 11,073, 41% of district's total, Hinterland had 94,713, (33%), Central had 46,327 (16%) while Kubo had 29,250 which was 10% of the district's total population. Although the average density as at 1983 was 42 persons per square kilometre in the 1979 census, the range was from 29.7 in Hinterland division to 161 in Central. Furthermore already sections of the Central and Eastern division have registered densities above 400 persons per square kilometre.

Table 5 - Projected population 1979-1988

Kwale District

DISTRICT DIVISION	DENSITY 1983	SQ.KM	1979	1983	1985	1988
KWALE	42.0	8257	288363	347352	375732	42305
CENTRAL	161	340	46327	54649	59039	76295
HINTERLAND	29.7	3838	94713	113936	127939	143665
EASTERN	42.6	3331	118073	142034	153446	172305
KUBO	77.5	454	29250	35173	37998	42668
KWALE TOWNSHIP	-	-	2200	2630	2827	3173

Source: Republic of Kenya - Kwale District Development  
Plan 1984/1988 page 2.

Generally more than 2/3 of the population is concentrated in the Eastern section of the district where settled agriculture can be carried out.

According to 1979 population census, about 2% was urban population made up of two urban centres Kwale and Kinango. Hence 98% of Kwale district population is rural.

### Population Structure

In 1969 total males and female in Kwale district balanced out well. Thus males were 101785 against 103817 females. But according to 1983 projections there were slightly more females than males. The male, female ratio was 97:100, 171038 males against 176314 females.

Table 6: Population by age and sex 1983

AGE GROUP	MALE	FEMALE	TOTAL	% OF TOTAL
0 - 4	35861	35716	71577	21%
5- 14	50466	48096	98562	28%
15 - 19	16466	16979	33445	10%
20 - 24	12172	15884	28056	8%
25 - 59	49955	53773	103728	30%
60+	6118	5866	11984	3%
TOTAL	171038	176314	347352	100%

Source: Republic of Kenya - Kwale District

Development Plan 1984/1988 page 3.

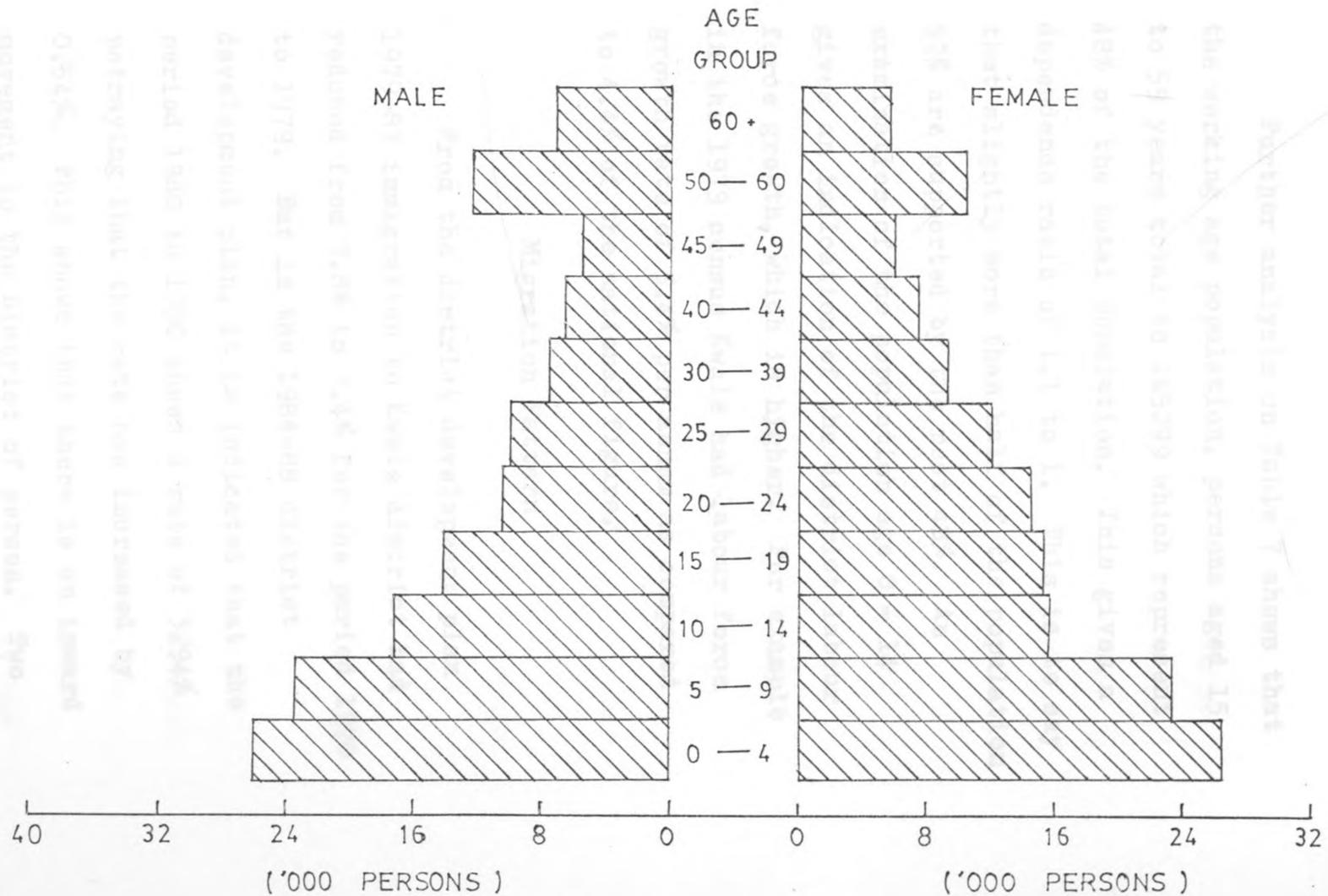
Table No. 7 Population by age and sex for Kwale District - 1979

	TOTAL	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-44	45-49	50-60	60+
KWALE	288363	52759	46940	32697	29592	24984	22447	16989	14109	11446	22948	13060
MALE	141746	26119	23479	17103	14226	10498	10282	7692	6676	5629	12494	7317
FEMALE	146617	26640	23461	15594	15366	14486	12165	9297	7433	5817	10454	5743

Source:- 1979 Population census report Vol. 1.

FIG. 1

KWALE DISTRICT AGE SEX PYRAMID (1979)



Further analysis on Table 7 shows that the working age population, persons aged 15 to 59 years total to 165299 which represent 48% of the total population. This gives a dependence ratio of 1.1 to 1. This is to say that slightly more than half of the population 52% are supported by the rest 48%. An examination of the population age 0 - 14 gives an indication of the district labour force growth, which is higher. For example in the 1979 census Kwale had labour force growth rate of 5.4% per annum as compared to 4.4% of the national figure.

#### Migration Pattern

From the district development plan 1979-83 immigration to Kwale district had reduced from 3.8% to 3.4% for the period 1970 to 1979. But in the 1984-88 district development plan, it is indicated that the period 1980 to 1990 shows a rate of 3.94% portraying that the rate has increased by 0.54%. This shows that there is an inward movement to the District of person. Two possibilities for this phenomenon is explained, that either people might be coming for

employment in the beach hotels or elsewhere or people are moving into the district to buy land along the coastal strip as well as in other areas. This aspect adds more pressure to the district resource base.

### Employment

In 1976, Kwale district had less 10% of its population involved in monetary economy.<sup>10</sup> This included forestry, fishing, industrial enterprises, commercial farming and other economic activities. In 1982 there were 11696 persons engaged in wage employment out of the total labour force of 165,299 people. Kilifi had 95,026 while Taita Taveta had 11917 persons in wage employment.<sup>11</sup>

#### Formal sector

This sector employs majority of the people in wage employment. Most of these persons are Civil Servants and County Council Staff, while the industrial establishments accounts for the smallest share in wage employment. Table 9 gives a picture of the wage employment situation in some of the industrial establishments of the district.

Table 8: Wage employment by District 1974 - 1982

Coast Province

District	1974	1975	1976	1977	1978	1979	1980	1981	1982
Mombasa	69148	70906	73925	80631	86276	92707	94761	94796	95026
Kilifi	10802	11773	12830	12286	13264	14167	15619	16599	16656
Kwale	7913	7341	7233	9273	9323	9548	11616	11446	11696
Lamu	1080	1262	1558	1542	2109	2443	2397	2198	2332
Tana River	1565	1605	1508	1720	2051	2074	2426	2841	2965
Taita Taveta	10,014	8426	8801	8381	8381	9655	11707	12467	11917

Source: Statistical Abstract 1983.

Table 9 : Wage employment in industrial establishments - Kwale District

Establishment	No. of employees
Ramisi Sugar Company	3000
Gazi Copra Factory	70
Timber Mills	200

Source: Kwale District Development Plans  
1974-1978 and 1984-1988.

#### Informal Sector

This sector excludes those employed by the formal or public sector and the industrial establishments. It therefore constitutes hawkers, carpenters, tailor, masons, bicycle repairs and many others. Informal activities in the district is not very active as compared to the other districts in Kenya which provide a living to a sizeable part of the population. Hence this sector does not contribute significantly in terms of employment - opportunities.

Though the above gives a picture of wage employment in the district, it is not easy to measure employment because usually

statistics covering all wage earners are incomplete. Thus there is always the omission of self - employed people within the informal sector such as hawkers, tailors, masons, carpenters and other under-employed people.

#### The District Development Problems

From the analysis of this Chapter, several development problems facing the district emerge. These are:

- (1) Poor marketing arrangements and inadequate processing facilities for the various crop grown.
- (2) Nutrient deficiencies in the soils. Thus a deficiency which is common to all soils of the district is that they lack phosphorus nitrogen and calcium.
- (3) Rapid labour force growth rate coupled with limited employment opportunities.
- (4) In-migration from other districts which contributes more to the district's population growth.

- (5) Dependency on agricultural sector which is mainly producing for subsistence.
- (6) Small land holdings in the Narrow coastal strip which can not be able to meet subsistence needs of the people.

#### Synthesis of the Chapter

This Chapter has portrayed the potentiality of the district more so, the Eastern section which is very conducive for agriculture. But despite this, there are problems that hinder development. It has been noted that there are crops grown of significant importance. Thus if fully developed and problems outlined solved, its likely that Kwale can be an industrial district. The district will be able to generate more employment opportunities and incomes both on and off farm. This will not only help to absorb its first growing labour force but that of other districts too.

While the district is blessed with potential resources, little has so far been done. Of the various industrial crops grown only sugar cane has had significant development interms of provision for processing facilities. But while such a move can ease the pressure on land by creating off farm employment opportunities proper planning is needed otherwise it will be a self defeating exercise.

FOOT NOTES

1. Republic of Kenya; Kwale District Development  
1984/1988 page 37.
2. Karani, L.K.K.; "Industrialization of Kwale  
District" (Kenya)  
M.A. Thesis 1976 U.O.N.  
page 158.
3. Republic of Kenya; Kwale District Development  
Plan page 22.
4. Ministry of Agriculture; Kwale Agriculture  
District Development Plan  
1984/1988 page 11.
5. Ibid page 12.
6. The Kenya Farmer: Issue Number 1  
August 1981 page 17.
7. Coast Provice Annual Agricultural Report  
1982 page 41
8. Karani, L.K.K.; Industrialization of Kwale  
page 106
9. Republic of Kenya; Kwale District Development  
Plan page 2.

10. Karani, L.K.K.; Industrialization of Kwale  
page 176.
11. C.B.S. Statistical Abstract 1983.

## CHAPTER III

### ANALYSIS

In an attempt to assess the contribution of the Ramisi sugar industry in rural development, this Chapter will analyse the linkage structure of the industry at three levels. These are namely Farm linkage, Factory linkage and Marketing linkage. First a brief discussion of the sugar industry in Kenya is given; the factory linkage will follow as this is the central unit within the overall activities of the sugar industry. Both forward and backwards linkages of the industry will be examined within the various linkage structure levels. It is therefore hoped that the analysis will be explicit in showing the contribution of the sugar industry in rural development of Kwale as a region.

#### The Kenya's Sugar Industry

At present the industry is composed of 7 factories. Of these factories six are in Western Kenya and only one (Ramisi) is at the Coast. Five of the factories are government owned while two are privately owned. The sugar industry is under the umbrella of Kenya Sugar Authority (KSA). Charged with the role of co-ordinating production, carrying out research and marketing of sugar. KSA is thus an Advisory regulatory body which is supposed to advice the Minister in matters pertaining to sugar industry.

Table 10. Factories of the Sugar Industry in Kenya

Factory	Ownership
Muhoroni	Government owned
Chemelil	" "
Miwani	Privately owned
Mumias	Government owned
Nzoia	" "
Sony	" "
Ramisi	Privately owned

Source:- Field Research, 1985

#### Production and Consumption

Production of white sugar has been continuously increasing since 1973. This is because of the government policy of promoting the industry so that Kenya is self-sufficient in white sugar production. Hence the opening of several sugar factories.

Though production has been increasing continuously, consumption trends have generally been greater. This trend has always made the government loose foreign exchange due to importation of sugar to meet the domestic demand. Table 11 portrays the picture production, consumption, imports and exports in 1973 - 1982 (See Daily Nation extract page 91).

35  
5  
5  
0

# Sugar shortage had been forecast

By DOUG CHARAGGU

The Government was advised on the shortfall in sugar production and asked to import 40,000 tonnes, according to the Kenya Sugar Authority's chief executive, Mr Walter Okelo.

In an interview with the *Nation* yesterday, Mr Okelo said Kenya started importing sugar after 1981 due to poor management of the sugar industry, the lack of a sugarcane development fund and the poor state of roads in the sugar belt, among other problems.

He said Kenya imported 61,000 tonnes last year to meet the shortfall in production.

Although the Minister for Agriculture and Livestock Development, Mr William Odongo Omamo, reported that the 40,000 tonnes had been imported, the shortage in and around Nairobi continued yesterday.

An on-the-spot check by a *Nation* team found that major supermarkets in the town had no stocks of sugar.

Mr Okelo said that if the sugar industry was to meet national demand, the Government would have to give more assistance to the small-sugar growers who produce up to 70 per cent of Kenya's sugar.

The costs of producing sugar were becoming too high and small farmers were finding it very difficult to meet them he said.

Although all the sugar factories were now closed for maintenance purposes, Mr Okelo said this did not contribute to shortages.

Contacted to comment on the shortages, a deputy secretary in the Ministry of Commerce said they were not "officially" aware of any shortages.

Mr R. C. Shikwe said there was enough sugar in the country as far as the Ministry was concerned.

"If the consumers are not getting enough, then probably the distribution network is not performing its role perfectly. We are not aware of any shortages at all," he said.

Mr Shikwe denied reports that the imported sugar had not been distributed because a local businessman who brought it in was demanding to be paid in foreign currency while the Government wanted to pay him in local money.

Uchumi Supermarkets had their last delivery from the Kenya National Trading Corporation last Thursday. The 100 bags received was sold in less than three hours. It usually takes them three to four days to sell the same number of bags.

PRICES

MONEY

SHARES

Source: Daily Nation Tuesday, May 27, 1986

Table 11: Sugar Production, Consumption, Import and Exports, 1973 - 1983 (Kenya).

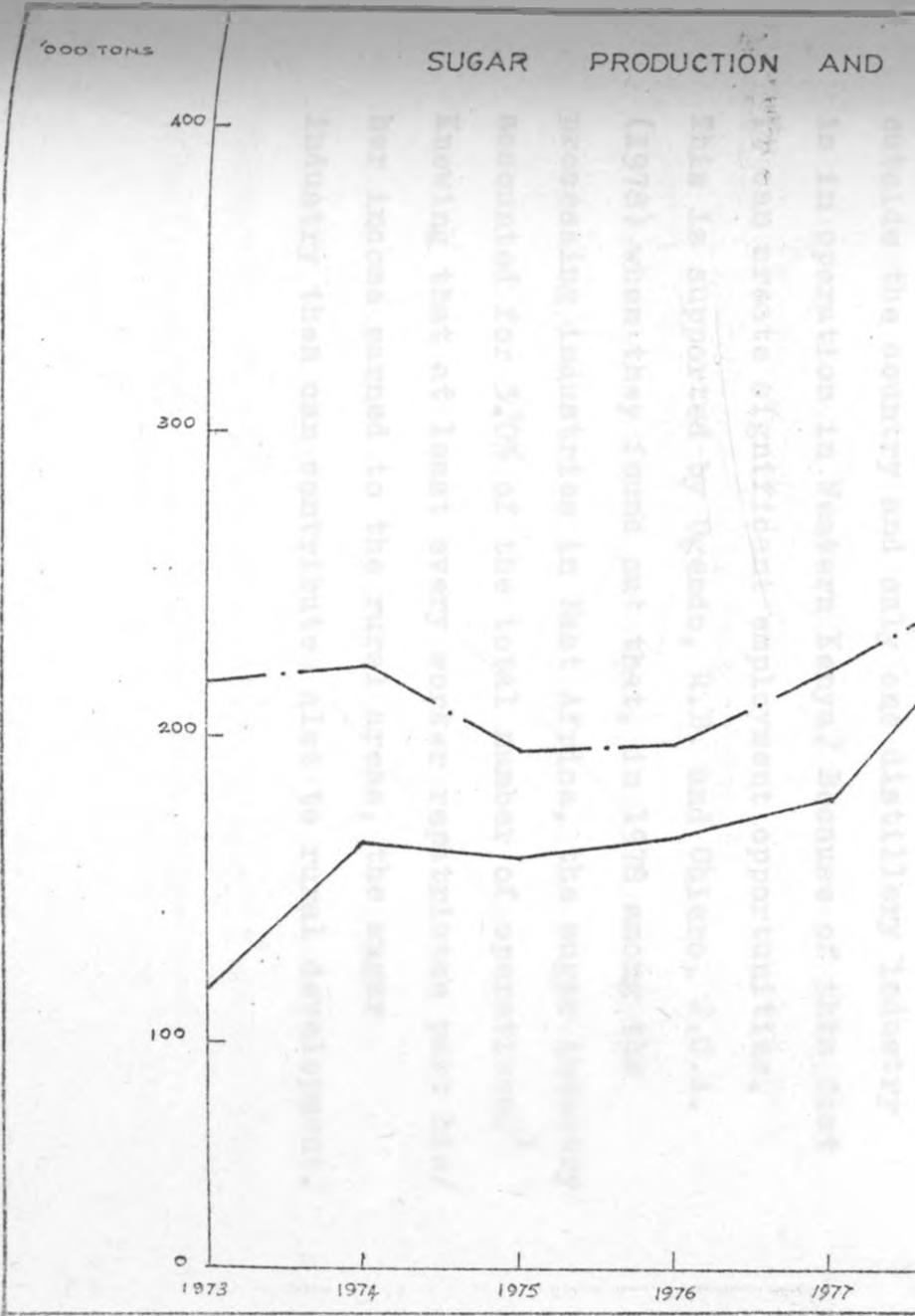
YEAR	PRODUCTION	CONSUMPTION	IMPORTS	EXPORTS
1973	117,373	217,462	76,016	NIL
1974	164,314	223,661	81,814	"
1975	159,607	195,254	10,722	"
1976	167,124	197,013	31,815	"
1977	180,410	223,198	33,681	"
1978	236,274	251,186	44,495	"
1979	296,586	253,413	10,983	1983
1980	401,239	299,514	1,482	94,674
1981	368,480	324,054	NIL	69,054
1982	308,019	328,236	NIL	18,200

Source:- Kenya Sugar Authority, Statistical Series on Sugar, 1982.

#### Employment

The sugar industry is an agro-based industry that is rural oriented due its nature of raw materials. Further more this industry is labour intensive hence development inducing.

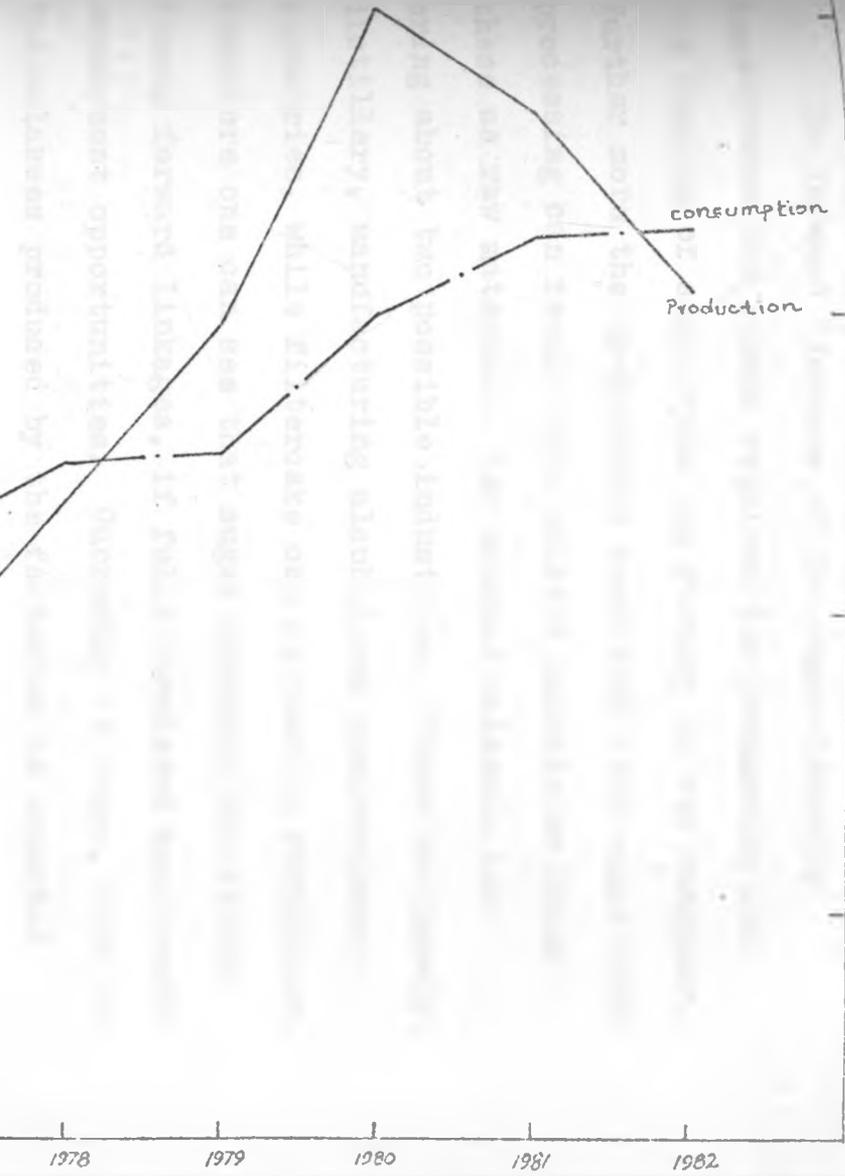
FIG. 2



CONSUMPTION

KENYA

1973-82



The forward linkages of the sugar industry constitutes the inputs required for processing and the landing of sugar from the factory to the Consumer. Further more the by-products resulting from sugar cane processing can result into related industries using these as raw material. For example molasses can bring about two possible industries. These are namely, distillery, manufacturing alcohol and confectionery industries, while filtercake can be used as fertilizer. Therefore one can see that sugar industry has fairly strong forward linkages, if fully developed can create employment opportunities. Currently in Kenya, most of the molasses produced by the factories is exported outside the country and only one distillery industry is in operation in Western Kenya. Because of this fact it can create significant employment opportunities. This is supported by Ogendo, R.B. and Obiero, J.C.A. (1978) when they found out that, in 1978 among the processing industries in East Africa, the sugar industry accounted for 3.0% of the total number of operatives.<sup>1</sup> Knowing that at least every worker repatriates part his/her income earned to the rural areas, the sugar industry then can contribute alot to rural development.

## Sugar Industry Linkage

Unlike for example the tea industry which has weak forward linkages, the sugar industry has both forward and backward linkages of significant strength. At the farm level, which constitutes backward linkage, the farmers produce the raw material which factories require. Therefore they earn incomes from sugar cane they grow. But the growing of sugar cane requires various inputs which the farmers have to purchase. These inputs range from farm implements, labour, to means of transport which means the industry creates demand for goods and services of other industries. This fact is also true at the factory level where labour, machinery, processing materials are needed.

### Associated Sugar Company Ramisi

The associated sugar company of Ramisi was established in 1924 near two small villages namely Bodo and Shirazi about 10 kilometres behind the south coastal line of Kenya. It is about 50km. from Mombasa town and about 7km. from the now southern division headquarters of Kwale district, namely Msambweni. It is linked to above places by an international trunk road, the Mombasa Lunga Lunga road.

The site of the Ramisi sugar factory was influenced by three factors:-

(a) Proximity to its raw material. This is one of the major factors. Sugar cane being a bulky commodity that loses weight drastically when processed and that it should be processed within 24 hours after being harvested, any processing plant should be sited nearest to the place where sugar cane is grown.

(b) Water availability - sugar processing needs quite sizeable amounts of water, where water availability is a problem a site near a permanent river can serve the purpose. The Ramisi factory is located near the Ramisi river apart from being near its raw material.

(c) Accessibility:- The Ramisi sugar factory is sited along the Mombasa Lunga Lunga road for the easy of transporting both the final product and inputs.

The associated sugar company Ramisi is amongst one of the two privately owned sugar companies within the Kenya Sugar Industry. The other being Miwani Sugar Company in Western Kenya. Ramisi Sugar Company owns a total of 500 km<sup>2</sup> of land. Of these only 5,000 Hectares are under sugar cane currently. The factory has a crushing capacity of 1000 tonnes of sugar cane per day.

## Sugar Manufacturing

In the Ramisi Sugar factory, after cane is from the farms it passes through the weighing bridge to be weighed after which it either directly delivered to the Feed table or to cane store. This depends on whether the feed table is empty or full. From the feed table cane is elevated by cane elevators into kniving chapter where cane is knives into smaller bits to enable the mills extract juice. After the juice is extracted at the mills, two by-products are got. These are Bagesse and Filter cake. Bagesse is used as fuel in the boilers to produce steam. At the mills cane juice is conveyed to mixed juice tank after which Liming and Sulphating is done. Juice that has been limed and sulphated is taken to a clarifier where clarification is done. After this stage the clarified juice is taken to juice heaters then to evaporators where water vapour is expeled out to leave sugar syrup. The sugar syrup then is taken to vaccum pan for crystalisation. In this stage not all the syrup is crystalised hence a need for another stage called centrifugall where the crystals are separated from uncrystalised scrup. At this stage another by-product is produced. This is molasses which goes to molasses tank. The sugar crystals are passed to sugar Drier to be dried after

which sugar emerges out of the processing plant at the bagging and weighing section. In this section sugar is put into bags of 100 kgms. - and put in sugar store ready to be marketed.

Though it was noted that production of sugar in the country has continuously risen since 1973, output from Ramisi sugar factory has been declining slowly. The other sugar factories in Western Kenya have been experiencing an up-ward trend in production. Table 12 shows sugar production at Ramisi sugar factory for 1967 - 84 while table 13 shows the same for other factories for 1973 - 1982.

It was noted earlier on that Ramisi sugar factory has a capacity of crushing 1000 tonnes of cane per day. Assuming that the factory works for 24 hours in 9 months of the year, giving three months allowance for repairs and adjusting machinery, the factory if fully utilised can produce about 20769 tonnes of sugar per year. But to the average, from 1967 to 1984 the factory has been producing 11330 tonnes of sugar per year. This is only 52% of its capacity using its performance rate of 14.9 tonnes of sugar cane per one tonne of sugar. This capacity underutilisation is as a result of lack of adequate raw material

FIG. 3 THE MANUFACTURING PROCESS ( SUGAR )

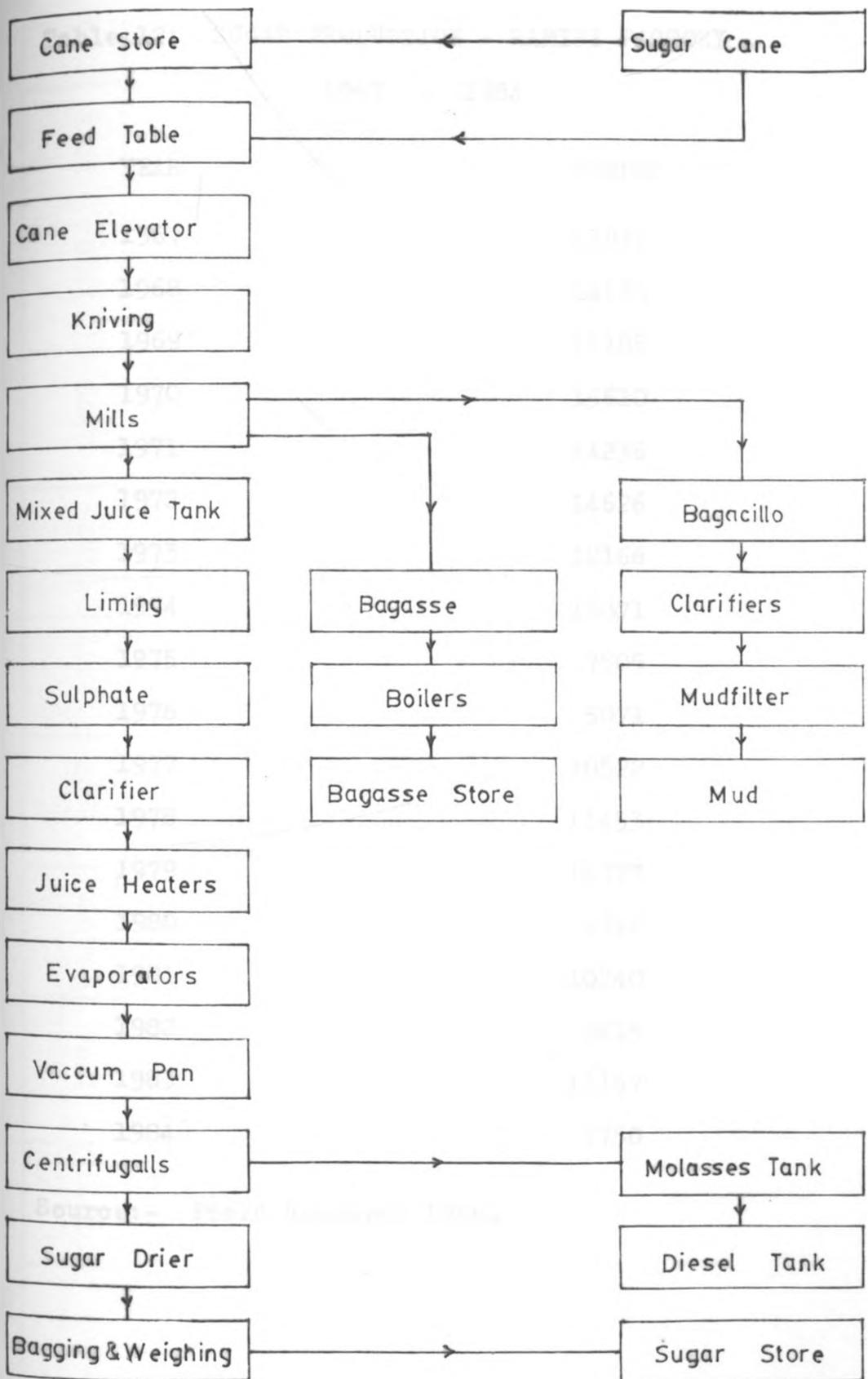


Table 12: SUGAR PRODUCTION - RAMISI FACTORY  
1967 - 1984

YEAR	TONNES
1967	11932
1968	14493
1969	15185
1970	15610
1971	14236
1972	14626
1973	12166
1974	10871
1975	7505
1976	5071
1977	10522
1978	11453
1979	14773
1980	6746
1981	10240
1982	9615
1983	11157
1984	7750

Source:- Field Research 1985.

Table 13: Sugar production, other Factories 1973-82

SUGAR FACTORIES	Y E A R									
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
MUHORONI	32429	28491	26356	26100	23031	42332	47000	51900	35731	29170
CHEMELIL	35676	39166	39922	46146	43394	46269	46203	63376	51389	35389
MIWANI	37102	30226	26709	25198	22207	36425	32206	31587	30954	18287
MUMIAS	-	55559	59207	63699	81275	92500	109929	163510	168525	139977
NZOIA	-	-	-	-	-	7295	45958	43540	43921	47880
SONNY	-	-	-	-	-	-	516	34702	29643	26636

Source:- Kenya Sugar Authority.

(sugar cane). This shows that more benefits can result at both regional and national should this factory operate at its full capacity. Capacity utilisation in the other factories is as follows; Miwani 50%; Chemilil 82%; Muhoroni 57%; Mumias 72%; Nzoia 79% and Sonny 47% as of 1982.

In terms of performance Ramisi sugar factory ranks bottom compared to other sugar factories in Kenya. While other factories use to the average about 10 tonnes of sugar cane to produce one tonne of sugar, Ramisi factory uses 14.9 tonnes of cane. Table 14 shows the performance of Ramisi sugar factory.

Table 14:- Cane crushed, sugar produced milling rate and Tonnes cane crushed per tonne sugar Ramisi sugar factory 1973 - 1984.

YEAR	CANE CRUSHED (TONS)	SUGAR PRODUCED (TONS)	MILLING RATE/ DAY*	TC/TS
1973	176995	12166	-	14.5
1974	160745	10871	-	14.8
1975	114603	7505	700	15.3
1976	86614	5071	601	17.1
1977	150035	10522	632	14.3
1978	174697	11453	716	15.3
1979	219642	14773	817	14.9
1980	139333	6746	822	20.6
1981	136385	10240	816	13.3
1982	140280	9615	839	14.6
1983	133844	11157	-	12.0
1984	100001	7750	-	12.9

Based on net grinding time & at 24 hrs. operation per day

Source:- Field Research 1985

The reasons for poor performance of Ramisi factory is because of overmature cane. This type of sugar cane has low sucrose containment, hence it requires more tonnes to produce one tonne of sugar. The second reason is that the factory machines are very old which leads to low recovery. Ramisi's overall recovery in milling averages to about 73% and there are times it falls as low as 66%. Due to the same reason the factory has a time efficient of 50.1%. This has effects both nationally and at regional level. At National level low productivity means that the national goal of striving towards self-sufficiency in sugar for domestic consumption will be hard to achieve. At regional level it means that the industry denies itself extra income it could earn under normal circumstances. This last point affects somehow the development of the region as the company will have less money to reinvest in the region.

#### Employment Structure and Linkages

Structurally, Employment in Ramisi Sugar factory can be divided into three. The skilled workers, semi-skilled and unskilled workers. Among these three categories, unskilled workers predominate in terms of absolute numbers as compared to the other two categories. The skilled workers also include the managerial staff, clerical staff and technicians. In total, the Ramisi

sugar factory employs over 2800 workers.

Out of the above total only 15% of the workers are working in the factory itself, 83% in the nucleus estate farms, while the other 3% are in Education and Medical services offered by the company. Apart from some few staff who were either sponsored by the company to acquire the various skills or got employed when they already had acquired skills outside, majority of the skilled and semi-skilled workers acquire skill on - the - job training. The company also employs casual workers. On peakdays when there is much cane delivered to the factory, it can hire as many as 65 workers per day while on slake days it normally hires 25 persons per day. The number is higher than the one quoted above as some casual workers are also hired to work in the nucleus estate farms to assist planting and weeding of cane but the number could not be got during the time of research.

Out of the total wage employment in the Kenya sugar industry, the Ramisi sugar company employ 12%. It can therefore be seen that the company has helped in creating employment in the rural area of the region to persons who would otherwise be unemployed due to lack of skills or lack of employment opportunities. Taking a house-hold size of 6 persons per household as indicated

in the population census report 1979 of the southern division of Kwale district where the Ramisi Sugar zone is situated; then one clearly see the contribution this factory makes in supporting lives of the families whose relatives or family heads are employed by this company. Thus the Ramisi sugar company supports a population of about 16800 persons, nearly 5% of Kwale district's population.

Assuming that some of these employees also employ other people in various capacities i.e. ayahs, farm labourers and so on the number can be more than the one above. Viewed in terms of the whole district, it can be seen that the factory has not contributed significantly to the alleviation of unemployment problem of the district whose labour force is growing at a faster rate. Neither has it contributed much to arrest the situation of population pressure that is already biting some sections of the district especially the southern division. Further more this factory is rated the biggest interms of offering employment in Kwale district.

The above conclusions can be more clearer in learning that of the people employed by the Comapny in various capacities 83.5% come from Western Nyanza provinces. But this point also shows that though its

contribution in offering employment is not all that significant, the little it offers is not confined to region but also to the other regions of Kenya.

#### Income levels and income generation

It was noted earlier that the company employs about 2800 employees. Hence the company provides livelihood for the people in the region and those from other regions of Kenya either directly or indirectly.

A look at the income levels the company offers to its employees shows that wages range from Kshs. 364 to about 10,000 per month. Table 15 shows the income levels of employees in various categories, sections and district of origin. As for the Casual labourers

Table 15: Income levels by category, section & district of origin 1985

SECTION CATEGORY	MINIMUM & MAXIMUM PAY	NO WORKING IN FACTORY	NO WORKING IN ESTATE FARMS	DISTRICT OF ORIGIN
Skilled	2500-10000	225	315	83.5% From
Semi-skilled	1150 2000	75	35	Western and Nyanza Prov.
Unskilled	364- 1150	125	1974	
Total		424	2324	

Source: Field Research, 1985

they earn Kshs. 12.50 per day. If it is assumed that all those employees of the company repatriates money to their families either in cash or by hiring other persons to perform some kind of work, it can then be seen that the company provide livelihood for people within and outside the region either directly or indirectly. But, because of low wages especially for those workers who are unskilled, who constitute about 75% of all the employees of the company, (see Table 15) The amount repatriated should also be small. The same problem of low wages was found to prevail in Nyanza and Western Provinces.<sup>2</sup>

It can thus be noted that a pay rise to employees in the the unskilled categories can be more beneficial in raising standards of living of the region and to those who benefit from other regions.

There are other economic activities that have come up due to the establishment of the factory. These are mainly commercial activities. They provide the basic commodities that the employees of the factory need. Though their number has been almost stagnant which may be attributed to the low wages, nevertheless they have also created employment to some few people. For these people having rental houses mainly at Mrongotoni, Barabarani and Bondo near the factory.

### Forward Linkages

It was seen in Chapter one that forward linkages are those that encourage investments in subsequent stages of production, or where the products or services of a particular factory are used by plants, sometimes in different stages in the process of end-products manufacture. This later case was referred to as Diagonal linkages. Thus an industry's strength in terms of forward linkages can be measured by knowing the extent it sets off other economic activities beneficiary to the regional economy.

A regards the sugar industry of Kenya. It has moderate foreward linkages. This is because the end products, sugar, is mainly consumed by individual households. Thus white milled sugar which is mainly produced by Kenya sugar industry is not used by most manufacturing enstablishment for example Kenya Breweries, House of Manji and manyfood processing plant, because it is not refined sugar. Despite this fact, the sugar industry produces by-products which can be inputs to other industries. Furthermore in the manufacturing process and bagging sections there are inputs from other industries that are needed by the sugar industry.

In the following section four levels of forward linkage are examined, namely, sugar by-products, sugar inputs, domestic sugar sales and other economic activities generated.

### Sugar by-products

In sugar manufacturing process it was found out that there are three by-products that emerge out of the process. These are Bagasse, Filter cake and Malasses.

#### Filter Cake

This is very fine bagasse mixed with mud. It is a very good natural manure. Therefore this by-product is an input in the agricultural industry. Ramisi Sugar factory does not produce quite a sizeable amount of the product as it has a small capacity. But the much it produces is used as manure in the company Nucleus Estate farms. This saves Kenya some foreign exchange in the importation of artificial fertilisers.

#### Bagasse

This is the fibre that remains after - juice has been extracted from sugar cane. At the moment this by product is used as fuel in the boilers. This also saves some foreign exchange as it saves from the use of oil. But a possible industry can emerge from the use of bagasse

as an input. It can be used for the manufacture of Wax (FulFulrole) but to date no attempts have been made in this lines.

### Molasses

This is the main by-product of sugar cane processing. Two possible industries that can use molasses as its raw material are Distillery industry that makes power Alcohol and confectionary industry for manufacture of sweets. Among these two industries only one has so far been developed in Western Kenya. This is the distillery industry. As for the Ramisi sugar industry the company has no plan to develop any of these industries. The reason being that the molasses they produce is not sufficient for an economic establishment of any of the two above. However most of the molasses produced by the factory is exported outside the country. But an investigation to ascertain the amount needed for the Kisumu destillery plant shows that to the average it uses about 5000 tonnes per annum while Ramisi sugar factory produces over 6000 tonnes per year. This shows that it produces enough mollasses to support this kind of plant. It is even likely that this amount of output can also be sufficient to support a confectionary plant.

Although most of the Molasses produced by Ramisi sugar factory is exported the product has some contribution Nationally as it earns the country foreign exchange.

Table 16 shows production and disposal of molasses in the period 1973 - 1984.

Table 16: Production and disposal of molasses  
Ramisi Sugar factory 1973 - 1984

YEAR	PRODUCTION TONS.	D I S P O S A L		
		EXPORT	DOMESTIC	TOTAL
1973	6223	6404	97	6501
1974	6219	5666	170	5836
1975	4479	4461	150	4611
1976	3405	2972	93	3065
1977	5985	3221	166	3387
1978	6035	5678	121	5799
1979	7127	5731	23	5754
1980	6191	6328	18	6346
1981	4000	3863	-	-
1982	5273	5336*	-	-
1983	-	6001*	-	-
1984	-	4380*	-	-

Source: Field research 1985

\* The Ramisi sales are virtually for exports.

Using 1980 price of Shs. 500 per tonne (F.O.B)<sup>3</sup>, the exports of 1984 earned foreign exchange worth 2.19 million shillings.

#### Chemicals for Sugar processing

In sugar processing some chemicals are needed. These are sulphur and lime. Figure interms of values the Ramisi sugar factory spends on acquiring the chemicals from their repective industry was unavai-  
lable. But it is seen that the factory creates market for these industries.

#### Bagging

Bagging is another activity in the sugar industry. After sugar is out of the processing plant, it <sup>is</sup> put <sub>^</sub> in bags of 100 kgms. Hence the factory is also a buyer of these bags. The bags are either made from sisal or synthetic fibre. This purchasing of bags by the factory according to the average annual production, is about 113300 bags, helps the local bag manufacturers to create more incomes and employment. This is therefore among the forward linakages that contribute nationally than to the Kwale region. The use of sisal fibre to make the bags can be an added forward linkage to the region. This is because Kwale district produces little sisal but it has the capacity to produce more.

### The sale of Sugar for local Consumption

After sugar is bagged by the factories, it is the role of KSA to advice for marketing. The K.S.A. has therefore advised on Kenya National Trading Corporation (KNTC) to be responsible of transporting sugar from the factories to their stores and distribution of the same up to the consumer level. Thus the factories are not responsible for the transportation costs of processed sugar. This normally is recovered from the consumer. This work of distribution of sugar upto the consumer level is a forward linkage the economy enjoys.

### Whole sale and retail trade

The distribution of sugar to ensure that it reaches the consumer involves whole sale and retail trade. In all of these two levels there are benefits that accrue for this activity. This is so because it creates employment and incomes for the persons involved in the activity. As for the retailing trade the benefits are even more as this is a widely spread activity both within and outside the region. Further more, most families in Kenya have developed a taste on sugar such that it is among the essential commodities a family needs.

Employment and Incomes

The employment capacities for retail and whole sale could not be ascertained. Though figures may be low in whole sale trade due to their limit in number, in the retail trade, the number is sizeable as every centre in and outside the region have retail shops which sugar is amongst the commodities sold. In the whole sale trade, employment and incomes that the trade generates mostly accrue to Mombasa residents. This is because there are no whole sale shops in the district. Setting of such establishments will hence help the region in creation of employment and incomes.

Though sugar has low elasticity of demand, all the above activities taken together, contribute significantly in development of the economy of Kenya.

Using the official sugar prices as shown in table 17, on the average the company earns over 50 million Kenya shillings gross annually. This figure could be slightly lower but Ramisi sugar company is awarded Kshs. 153 extra for every tonne of sugar it produces in order to overcome losses that the company makes. This is the amount that accrues to those who offer various services to the company. As to how much the amount remains in the region, this could not be established. But the

activities from Kenya National Trading Corporation

Table 17: PRODUCER PRICES FOR SUGAR AND TURNOVER -

1983

(Ramisi Factory)

P R I C E S	DATE OF EFFECTIVITY	
	JANUARY 1983	TURN - OVER Kshs *
Sugar price, Kshs/TS Paide to Factory	4290	48,605,700
Price to KNTC KNTC Margin	5745 50	566,500
Price to Wholesalers Wholesalers Margin	5795 80	906,400
Price to Retailers Retailers Margin	5875 425	4,815,250
Retail Price	6300	
Total turn over		54,893,850

Source: Field Research 1985

\* Using average Annual production of 11330 tonnes of sugar for Ramisi Company.

until sugar reaches the consumer is able to generate Kshs. 6,288,150 annually.

From the foregoing discussion, it can be seen that sugar cane processing has significant forward linkages. Only that to the side of its by-products ways and means should be found of using these products as raw material locally. This will not only help to strengthen the regional forward linkages but also at the national level. In doing so employment creation and income generation will be further enhanced.

#### Backward linkages (Farm level)

A look at backward linkages in the sugar industry needs to examine production aspects of sugar cane as the main raw material to the industry. In this section production levels to be examined, are two fold, the Nucleus estate and outgrower sugar cane farms. After this section Transportation will follow as a backward linkage which makes possible for farmers to convey their sugar cane to the factory. Then this section will also examine the region's infrastructure and social services and how they affect production of cane.

#### Scale of production

Sugar cane is grown both in Nucleus Estate farms and by outgrower farmers who are individual farmers.

### Nucleus Estate farms

These farms are owned by the Ramisi sugar company. The time the company was formed, it had only 2000 hectares under cane. By 1985 the hectareage had increased to 5000 hectares. There are 18 Estates in total. Total hectareage under cane for all Nucleus estate farms of the Kenya sugar industry is above 87,410. Therefore Estate farms of the Ramisi sugar company constitute about 7% of the total in the country.

To the average the Ramisi sugar company estate farms produce about 15 tonnes per acre or 31 tonnes per hectare. Production per hectare is over double the one of Ramisi in Western Kenya. Table 18 shows the nucleus estate farms performance of the seven sugar companies. By any standards, Ramisi farms rank low. For example in 1978 which was the best performance year in production (farm level) the lowest production per hectare in the other companies was that of Muhoroni 85 tonnes per hectare while Ramisi registred 45 tonnes the highest ever registered. Nzoia had the highest record amongst them all registering 161 tonnes per hectare.

An examination as to why there exist this poor production output of sugar cane from Ramisi Estate farms, the effect of which has led to capacity underutilisation

TABLE 18

Area under cane, harvested and yields per hectare

FACTORY	ZONE	YEAR											
		1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Ramisi	1. Undercane, Ha.	4,285	4,383	4,115	4,026	4,400	4,376	4,490	7,202	6,989	6,815	4,215	4,417
	2. Harvested, Ha.	3,461	3,745	3,923	3,293	4,451	3,731	4,490	5,873	5,377	5,969	4,012	3,407
	3. Yield, TC/Ha.	47	42	28	26	33	45	40	28	21	24	18	17
Muhoroni	1. "	N.A	N.A	N.A	6,086	7,712	10,846	10,155	10,393	11,026	9,627		
	2. "	"	"	"	3,245	3,133	5,227	7,006	6,766	5,482	4,559		
	3. "	"	"	"	84	76	85	75	79	71	72		
Chemilil	1. "	"	"	13,667	13,651	12,410	12,456	12,517	11,073	12,697	13,303		
	2. "	"	"	6,331	6,770	6,178	4,148	4,083	4,939	9,185	8,269		
	3. "	"	"	65	72	79	121	126	91	62	50		
Miwani	1. "	9,662	9,672	9,601	8,773	14,285	15,216	15,873	10,820	10,000	10,000		
	2. "	5,082	5,758	6,450	7,138	5,521	3,416	4,121	3,743	5,503	5,500		
	3. "	84	62	47	39	58	121	100	105	68	42		
Nzoia	1. "	-	-	-	-	-	8,286	8,408	8,302	8,400	8,400		
	2. "	-	-	-	-	-	458	2,813	2,996	2,772	3,000		
	3. "	-	-	-	-	-	161	141	136	148	143		
Sony	1. "	-	-	-	-	-	-	4,479	6,446	7,673	8,479		
	2. "	-	-	-	-	-	-	119	2,144	3,169	3,621		
	3. "	-	-	-	-	-	-	71	153	98	76		
All Zone	1. "	13,947	22,810	38,530	46,762	53,250	71,034	77,777	78,917	84,532	87,410		
	2. "	8,725	13,031	21,692	25,730	23,905	22,357	29,603	35,390	42,587	43,222		
	3. "	69	75	61	63	77	108	103	112	88	72		

Source: K.S.A. Statistical series on sugar, 1982 and field research 1985.

of the factory reveals three draw-backs:-

(a) Soils - As discussed in Chapter two, soils which dominate the Ramisi sugar zone were found to be deficient in phosphorus, nitrogen and calcium. This aspect necessitate use of fertilizers when farming. Though this is the case the use of artificial fertilizers also poses a problem. Due to the porosity of the soils the use of these fertilises is unconducive as they are quickly leached down the soil. This leaching renders nutrients not made available for the sugar cane plant.

Further more in some sections the soils have poor drainage due to rock basement being near the surface. This rock then holds water from filtering in the ground. In case of excess water, it impedes the growth of the sugar cane plants, because water logged land is cold and airless while cane needs warmth and air underground.

(b) Rainfall or soil moisture:-

Where ever grown sugar cane requires the same units of climate<sup>4</sup>, sugar cane requires a minimum effective rainfall of 1500mm during the growing period to attain good yields. By effective rainfall it is meant a well distributed precipitation in quantities which penetrate the soil to a sufficient depth to be available to reach the root system of the plant. Other factors such as

light and temperatures are very much conducive to cane growing. To the average the Ramisi sugar zone receives over 1200mm which is abit lower than the minimum requirement. Hence Ramisi is a marginal sugar growing zone. The other places in Western Kenya where sugar is grown all of them meet the minimum rainfall.

But there should be other factors to low productivity in Estate farms of Ramisi sugar zone. This is because, even where rainfall figures in a certain year tally with that of any one of the other sugar regions productivity is still low at Ramisi.

(c) Poor management of Estate farms.

An inspection of the Estate farms showed this drawback, out of the 18 Estate farms of the company, the five visited potrayed lack of good care, especially in weeding. This can be supported by the Ministry Agriculture Annual Report 1982 which stated that:

Commercial sugar cane production was seriously affected through poor management of the Company----- 5

All the above factors lead to low production, further more report from Kenya Sugar Authority ascertain that Ramisi Sugar Company is making heavy losses from its Estate farms. This can be true because production costs, be it in Western Kenya or in Ramisi are almost the same. This is due to use of nearly smimilar modes

of production. Hence if a hectare in Ramisi produces one third of what can be achieved in Western Kenya, its likely that Ramisi Company is making losses on its farms.

#### Outgrower's sugar cane farms

These are farms owned by individual farmers. At the establishment of the Ramisi Sugar Company in 1924 there was no outgrower scheme. The factory relied on sugar cane from the nucleus estate farms. But just after independence small scale farmers started growing cane. Since then hectarage under cane by outgrowers has increased - slowly. In 1967 only 567 hectares were under cane by 1985 at total of 2912 Hectares were under cane, an increase of about 130 hectares per year.

The average farm holdings in the study area was found to be about 6.9 hectares. The average under cane was 2.4 hectares per land holding. Out of all the crops grown in the Ramisi sugar zone 35% of the land is put under sugar cane. The outgrowers scheme has a radius of about 30 km. from the factory. Table 19 potrays average size of farm holdings and plots under sugar cane. From this it can be seen that land holdings are decreasing in size (see problem statement).

Table 19: Average size of farm Holding and  
Sugar cane plots. 1985

AREA	Average size of land Holding	Average size of cane plot	% of cane plot in Total land hold
Majoreni	10	3.6	36.4
Mrima	5.8	2.5	43.1
Kiruku	4.3	3.0	68.0
Mwangwei	7.0	2.6	37.2
Mamba	6.2	1.7	27.1
Kidimu/ Kiwambale	6.8	1.6	23.7
Kikoneni	8.2	1.8	22.2
Ramisi	6.8	2.7	39.7
Mgambweni	4.2	2.0	47.6

Source: Field Research 1985.

Of the sampling areas Kiruku and Mrima predominates on having the biggest area percentage under sugar cane.

Though land holdings in the sugar zone seem to be of reasonable size one has to look at the family sizes of each area to appreciate what problems will face the land holdings soon.

Table 20 therefore dramatises this aspect.

Table 20: Average Family size 1985

AREA	Size of plot (Ha)	Family size
Majoreni	10	7.6
Mrima	5.8	8.9
Kiruku	4.3	8.6
Mwangwei	7.0	6.0
Mamba	6.2	8.6
Kidimu/ Kwambale	6.8	8.1
Kikoneni	8.2	6.7
Ramisi	6.8	5.0
Msambweni	4.2	11.0

Source: Field Research 1985

At present there is still room for sugar cane expansion, both in terms of increase in hectareage for those who already grow it and for new farmers. Out of the 125 farmers interviewed 16 were new farmers. This increase will continue despite problems facing the industry. This is so because all the other crops grown within the sugar zone are faced with marketing problems and many are grown for mainly subsistence. Furthermore only 7912 Ha. are planted with cane out of the potential land of 12891 Ha.

Other crops mainly grown in the sugar zone are cashewnuts, coconuts, maize, cassava, rice and sim sim. Because of the above reason some of these crops are for subsistence and others are viewed as marginal to sugar cane as far as cash earning is concerned. Therefore sugar cane in the Ramisi sugar zone faces little competition if any.

Of all farmers interviewed in sampling areas 92.4% expressed need to expand hectarage under cane. For those who did not express the need to expand (7.6%) they had reasons as to why they did not want to expand. Two reasons were advanced, thus lack of land to expand and lack of finance, but the latter was predominant.

The fact whether farmers will expand sugar cane growing or not will mostly depend on certain problems that currently face the farmers in being solved.

#### Sugar cane agronomy

In order to achieve good yields sugar cane requires precise timing in planting and the quality of cane seedling to be planted. This will later be followed by good care of the sugar fields.

Sugar cane seedlings are got from the Ramisi company or bought from farmers who already grow cane.

There is a demonstration farm at Kiruku near Kikoneni owned by the Government. It is also supposed also to provide seedlings to farmers but it does not perform this function because of poor management.

Mostly farmers buy seedlings from other farmers. This leads to farmers acquiring poor seeds as they do not select bad seeds from poor ones. Healthy seedlings free from disease are the ones farmers are supposed to plant.

In land preparation mostly farmers got advices from fellow farmers or extension service from the factory. There are many methods of land preparation for sugar cane but the one currently used in the Ramisi region is that of cutting furrows about 5 feet apart after a well prepared land. Then sugar cane is covered with soil.

There should be sufficient soil moisture to allow germination and early growth. For full maturity sugar cane will take about 14-15 months. Incase of Ratoons it will take about 12-13 months.

To most farmers land preparation is done using simply hoe. Out of all the farmers interview 85% were found using simply hoe as means of land cultivation. 1.6% were found using ox plough while 13.4% use tractors. The lower percentage for those using tractors is attributed to, one, lack of finance to pay for the services.

Secondly, due <sup>to</sup> scarcity of tractor services it is very expensive for the affordability of the farmer. The charges ranged from Kshs. 750 per Hactare for simply breaking the land to 1400 per Hectare which include second dressing and making of furrow for planting. In case a farmer hires labour for land preparation the cost amounts to Kshs. 700 for both breaking the land and making of furrows. Tractor charge in Western Kenya are about Ksh. 600 for breaking land and cutting furrows.

From the above, it can be seen that it is cheaper to hire labour for land preparation than tractor services, though human labour will take longer time to do it and the quality of preparation can not much that of a tractor despite all the above. Most farmers 75% used farmily labour for land preparation. It is important to note that out of the 125 farmers interviewed non was found using fertilizer during planting of cane.

### Weeding

Lack of weeding can very much affect yields. This is more so when sugar cane plants are still young. Thus sugar cane farm need to be weeded about three times before a good canopy is developed which control the growth of weeds. This is one of the activities that farmers were found using hired labour, though family labour is also deployed. Only 18.4% of the farmers interviewed were

found using family labour only.

Though it can be seen that majority of the outgrower cane farmers hire labour for weeding, at the same time 66% reported lack of finance as a major problem in hiring this labour. Infact it was very common in all sampling areas seeing farms with lots of weeds. This fact affect yields, which later denies farmers extra income they could earn.

### Harvesting

This is another activity that requires labour input. After sugar is ready for harvesting, the outgrower farmer take a sample of the sugar cane to be harvested to Ramisi sugar factory laboratory to be acertained that sugar cane is mature and has the right sucrose content. If this is satisfied the farmer is given a permit to harvest.

The Ramisi outgrower farmer is faced with problems in getting the permit. Thus the system of permit giving is very slow such that it takes along time for a farmer to acquire it. 75% of the farmers interviewed reported this as a problem. This is also supported by a Ministry of Agriculture Annual report far back in 1982 when it stated that;

There is a permit system aimed at controlling cane deliveries to the factory but times farmers with mature can wait for the permit even for a period of four months resulting into cane over maturity.<sup>6</sup>

This has a great effect in the performance of the factory, because over-mature cane has low sucrose content, the factory will require more tannage to produce one tonne of sugar. It in turn affects income generated by the factory.

As noted earlier harvesting is one area where labour, in most cases is hired. Far back in the 1970's the Ramisi sugar company had devised a method to enable farmers harvest as fast as possible after getting permit. The company used to advance the farmers some money to harvest cane. Hence a farmer could easily hire labour to enable him harvest as quickly as possible. During the 1980's the company declined to offer advance, instead farmers have to look for their own means of getting money to hire labour. Because most farmers do not have any other means of income generation enough to spare for such activity, cane stays longer in the fields without being harvested. This factor also leads to cane over-maturity in case of timely permit granting. If the permit is delayed then then the problem becomes more critical.

Another problem is labour costs especially during peak harvesting times and during times of bumper harvest when people have a lot of food in their homes. Charges for harvesting cane was found to be Ksh. 15 per tonne.

But this charge is lower if a farmer happens to be near Ramisi Company Estate Camp. Because, then, he may choose to deplore workers from the camp during their free time. They charge about Shs. 10 per tonne.' But in case of peak harvesting periods and during bumper harvest labourer demand high cost per tonne. This was reported by about 13% of the farmers interviewed. In the overall farmers spent 1.6 million in engaging labour for cane harvesting in 1984/85. At the minimum wage offered by Ramisi Company the amount can employ about 380 persons for a year.

#### Volume of output

It was found out that hectarage under cane has increased five times since 1967, the increase has not been proportionate to output. Production has hardly tripled. The only years that output was greatest was the period 1979 - 1983, where in 1979 the highest output of 65589 tonnes was realised. Table 21 shows cane production from 1967 - 1984 and percentage of the same to that of Nucleus estate farms.

Table 21: Outgrowers cane production and its %  
to Nucleus estate production 1967 - 1984  
(Ramisi).

YEAR	TONNES HARVESTED	% TO ESTATE CANE
1967	20413	15.6
1968	37727	26.0
1969	41777	30.0
1970	49347	35.0
1971	41944	29.0
1972	22356	17.5
1973	40272	29.0
1974	26522	20.0
1975	17798	18.0
1976	15044	21.0
1977	19465	15.0
1978	41923	31.6
1979	65589	42.0
1980	53815	63.0
1981	56065	70.0
1982	45031	50.0
1983	61634	85.0
1984	42079	73.0

Source: Field research 1985

From all the areas of outgrower zone it was found out that farmers produce to the average 34 tonnes per hectare. Compare this figure with that of nucleus estate farms of 31 tonnes per hectare. Compared to other outgrowers, in Western Kenya, the outgrower farmer of Ramisi is badly off. South Nyanza outgrowers, to the average produces 85 tonnes. But it should not be forgotten that the problems that face the estate farms as noted earlier on, also face the outgrower farm. Further more there are more problems to the side of outgrowers than to the estate firms. However outgrowers seem to be performing well. This was evident in Kikonini region where some farmers had an average of about 80 tonnes to the hectare. Table 22 shows average tonnage per Hectare in various sampling areas of the outgrower zones.

Table 22: Average tonnage per Hectare in various  
Sampling areas of outgrower zones

Ramisi 1985

Sampling Area	Average tonnage / hectare
Majoremi	39
Mrima	36
Kiruku	39
Mwangwei	34

Sampling Area	Average tonnage / hectare
Kidimu/Kiwambale	34
Mamba	19
Kikoneni	48
Ramisi	16
Msambweni	38
Average all areas	34

Source: Field research 1985

It was noted earlier that there are some more problems facing outgrower farmers that has lead to low output. Apart from the already noted problems, poor payment system from Ramisi sugar company to outgrower farmers militate against high productivity. Out of 125 farmers interviewed 86% reported the system being poor. There are delays in paying farmers after they deliver cane to the factory. There were some farmers who had delivered cane to the factory in 1983 and got paid in 1985. Majority of the cases were those farmers who delivered cane in 1984. The situation reached critical point in 1985 when outgrower farmers ceased delivering cane to factory unless the Company paid all the money accruing to the farmers. The debt had accumulated to

3.2 million shillings. The situation was saved by intervention in between the two parties by the Minister of Agriculture.

The above has a great effect in output (see the Standard extract page 134). Delay in payments means farmers won't be able to prepare land for planting. It also means that farmers will not be able to hire labour for weeding. Further more about 80% of farmers interviewed did not have any other kind of employment that could earn them enough income to enable them carry out farm functions. Field observation showed that most cane farmers were not properly taken care of as they were full of weeds. Some farms had been abandoned all together.

Rejection of cane by factory personnel is also a problem that has led to low productivity. 14.4% of the farmers interviewed reported this practice. The number of refusal ranged from 1 - 3 times per farmer. The refusal or rejection were on grounds that cane was either over-mature or pre-mature, yet in order for a farmer to get a permit to harvest he has to bring a sample of the cane to factory laboratory. This practice by the factory personnel was spotted way back in 1982 when the Ministry of Agriculture report stated that:-

# SUGAR FARMERS 'NOT GETTING A FAIR DEAL'

**THE Kenya National Farmers Union has asked the Government to take urgent measures to save the sugar industry from collapse.**

The union's chairman, Mr Jonathan Mbugua, blamed the present crisis in the sugar industry, which has resulted in sugar shortage in the country, on delayed payment to sugar farmers for their produce and lack of other incentives.

He was addressing a Press conference in his office in Nairobi

Standard Reporter

bi yesterday.

Mr Mbugua said many sugar farmers were abandoning their sugar production because it was no longer a viable investment. He appealed to the Government to improve overall conditions for the farmers so that they can step up production and make this country not only self-sufficient in the commodity but also able to

export some of it earning foreign exchange for the country.

He cited Ramisi Sugar Factory in Mombasa as one of the factories in the country where farmers have not been paid.

The chairman asked the factories not to give too much attention to their nuclear estates at the expense of outgrowers since the estates could not produce all the sugarcane needed to enable the factories run profitably.

Mr Mbugua's remarks came in the wake of a serious sugar shortage in Nairobi and its environs. The shortage has also

been reported in the Central Province.

The chairman had called the Press conference to thank President Moi on behalf of farmers in the country, for his recent directive to the Agricultural Finance Corporation (AFC) that it should stop auctioning farms belonging to farmers who had been unable to repay loans due to the 1984 drought.

"This timely decision has put to an end the suffering of farmers, many of whom lost all their cattle and crops during this period", he said.

Mr Mbugua also said the President's decision that farmers should be paid all their outstanding arrears on maize and other produce was received by the members of the union with gratitude.

The chairman further thanked the Government for re-introducing the Guaranteed Minimum Return (GMR) scheme which he said would help the country produce more food. He also pledged the union's total co-operation to the Government on better management of this important issue.

## Discard outmoded customs — DO

THE DO for Wamba Division, Samburu District, Mr David Kasera, has advised the local pastoralists to discard the custom of keeping many animals as a source of prestige.

He advised them to aim at improving animal husbandry

and stop overstocking animals as this led to mass deaths during droughts.

Mr Kasera was officially opening a seminar on 'camels and diseases' mounted by Unep and the Arid and semi-Arid Lands Projects (ASAL) at the Wamba divisional headquarters.

He asked the extension officers to step up the development

of camel rearing in the area saying camels were useful as they were able to bear drought conditions.

Mr Kasera appealed to the Samburus not to despise camel rearing but to embark on the project as the animal was suitable to the climatic conditions prevailing in the area.

— K.N.A.

The management has a tendency of degrading sugar cane delivered by outgrowers as follows

(a)	Defective cane priced at 90 - 110/- per ton
(b)	Premature cane prices at 90 - 110/- " "
(c)	Fresh cane priced at 170/- per ton. <sup>7</sup>

Another problem is that of wild pigs and baboons. 56% of the farmers reported destruction of sugar cane by wild pigs and baboons.

In a situation where the outgrower farmer is faced with all these problems there is a likelihood of output being affected. Though soils and climate are also posing as problems, the outgrower farmer has demonstrated that he can do even better than nucleus estate farms. But some of these problems are not unique to the industry because some studies carried out in Western Kenya revealed some of them.<sup>8</sup> But all this leads to disincentive to outgrower farmers to produce more.

#### Extension services

This is a very essential service offered by the Government to the farmer in order for the farmers to adopt modern methods of farming and thereby achieve maximum production from the scarce resource land. The effectiveness of this service very much depends on the number of extension officers available and how these will communicate with farmers.

In Kwale district, extension services are frustrated due to lack of adequate staff and means to reach the farmers. There were only 6 crop officers and 11 Junior Agricultural Assistant for all the district.

Out of the 125 farmers interviewed, 50.4% reported that they were visited by Junior Agricultural Assistants at least once a month. Though this is the case only about 5% reported being given advices in cane growing. Thus these officers mainly are concerned with other crops like Maize, peas and sim sim.

One of the services Ramisi Sugar Company offers to outgrower farmers is extension services. But the company seem to be offering such services only to particular farmers. Of the 5% farmers visited and given advice on cane growing, most of them received the advices through the Company's extension officers. But those visited were only those farmers given loans by the company and all of them were found to be in Kikoneni area.

The mode of extension services given to farmers is that of take it or leave it. Method used is that of Train and Visit (T & V). Thus each region is mapped into routes which contact farmers are chosen. Each contract farmer is attached to 10 farmers, and are supposed to meet twice a month. The attendency has

been reported very poor. The target set was 40% i.e at least an attendency of 4 farmers for every group but only 20% has been achieved.

The reasons advanced for failure is that farmers misunderstand the advantage of such a service and mostly are concerned about real benefit rather than acquiring knowledge through discussions with other farmers.

The above shows that there is a breakdown in communication between extension officers and the farmers the reason which leads to poor attendency in the extension groups. Some farmers reported that they achieve nothing in attending the meetings, hence regarded as useless.

#### Employment and incomes

Sugar cane in the Ramisi region has a significant contribution interms of employment and incomes. Despite the problems that the industry face it is still remains a major cash crop. It thus supports livelihood of about 1209 families (farmers) plus those who get employment from the out-grower farms.

Average income varied a great deal within the sampling areas, but the average for the whole sugar zone was Kshs. 9562 per annum. Table 23 shows Average incomes in the sampling zones.

Table 23: Average incomes in seven sampling  
Areas per Annum.

Sampling Area	Average income
MAJORENI	12880
KIRUKU	13313
MWANGWEI	11772
KIDIMU/KIWAMBALE	4680
MAMBA	2680
KIKONENI	14289
MRIMA	7314
Average for all areas	9562

Source: Field Research 1985

According to the Civil Service Review Committee's report (1985) on Civil Servants Salaries, the Ramisi sugar cane farmer compares very well with a civil servant in job group C.<sup>9</sup> Average values may however not be a good indicator on the impact of sugar cane in the region as averages are affected by extreme values. The gross amount of income earned in the region as a result of the tonnes delivered to the factory can be a more helpful measure. In 1984 the outgrower farmers delivered a total of 42079 tonnes of cane. Using January 1983 sugar cane prices<sup>10</sup>, the outgrower farmers

earned a gross income of more than 9.5 million shillings.

Comparing incomes from sugar cane to other sources of income generating activities the farmers engage in, only three sampling areas registered low rank in sugar cane incomes. These areas were namely Kidimu/Kiwambale, Kikoneni and Mamba. The other sources of income were mainly from other crops farmers grow. The reasons for low rank in sugar cane in the three areas is partly to the various problems identified. Table 24 shows the Rank of sugar cane among the income generating activities of the sampling areas.

Table 24: Incomes from sugar cane and other sources 1985

Area	Average income per annum sugar cane	Average income per annum others	% of sugar cane To total income
MAJORENI	12880	7052	64.6
KIRUKU	13313	1000	93.0
MWAGWEI	11772	4327	73.1
KIDIMU/ KIWAMBALE	4680	10427	31.0
MAMBA	2680	3225	45.4
KIKONENI	14289	22142	39.2
MRIMA	7314	3067	70.5
Average for areas	9562	7320	56.6

Source: Field Research 1985

It thus can be seen that sugar cane is the most important cash crop of the farmers in the region. In the overall it contributes 56.6% to total income generated. Therefore an intensification of sugar cane production and good care of sugar cane in the fields will significantly increase incomes of the farmers and altermately the general living standards of the people.

#### Reinvestments of sugar cane incomes

Though it was found out that to the average a sugar cane farmer in Ramisi sugar zone earns about 800 per month from sugar cane, is this income enough for reinvestment in other activities? This section therefore will look at how a sugar cane farmer in this zone has managed to reinvest incomes from cane to improve his standards of living.

#### Housing

There is still little difference in housing standards between those who grow sugar cane and those who do not. Out of the cane farmers interviewed 66.4% had temporary houses. Where temporary house mean, a house where walls and floor are of earth and thatched roof. A half of the 66.4% cane farmer who had temporary houses had built them using money from sugar

cane. 14.4% of the farmers had semi - permanent houses, of which 50% of the houses were built using sugar cane proceeds. Semi-permanent house is taken to mean, a house with iron sheet roofing, cement floor and earth walls, or stone walls, earth floor and thatched roof. 19.2% had permanent houses where 55% of the houses were built using sugar cane proceeds.

From the above it can be noted that out of the 125 farmers interviewed only 43 farmers had improved housing ranging from semi-permanent to permanent, of which 22 farmers enjoy this improved housing due to incomes from sugar cane. This indicates that still the incomes earned by farmers are low, only enough to support the families. Hence anything that will improve productivity per hectare plus solving the already identified problems will increase reinvestment in housing.

#### Business establishment

Business is an area where some of the cane farmers have vangered to reinvest their money. Out of the income earned by cane farmers interviewed, the income from cane, has been able to generated 19 businesses. Table 25 shows the number and type of business.

Table 25: Number and type of business generated  
by sugar cane incomes 1985

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T Y P E	Number of business
Fish Monger	1
Hotel	3
Tea and Vegetable kiosks	4
Retail shops	6
Butchery	2
Tailoring	3

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Source: Field Research 1985

The above businesses have also helped in creation of employment mainly to the families of the individual farmers.

#### Other Properties

Money earned from sugar cane by the farmers is not only invested in the already noted establishments. Out of the 125 farmers interviewed 33, had bought bicycles from cane incomes. Five had bought vehicles of which one bought a pick up, three, lorries and one farmer bought a tractor. These various properties help the farmers in several ways, from land preparation, can transportation to acquiring information.

It can thus be concluded that sugar cane growing has led to property acquiring and business establishments which in turn has created employment though not significant. This is an indication that when well planned sugar industry can generate off farm activities of great variety.

#### Sugar cane transportation

This is a very crucial linkage that connects the farmer to the factory. This section therefore will examine how farms transport their cane to Ramisi sugar factory and the eminent problems from this activity. The outgrower farmers of the Ramisi sugar zone, engaged in sugar cane growing without prior arrangements of how their cane could get to the factory. That is, transportation of cane was completely a private arrangement of the farmer and the owners of transportation mainly from Mombasa.

#### The Kwale farmers co-operative society

This co-operative society was formed in 1964 after farmers had had lots of problems in transporting their cane to the factory. Its main objective was to overcome transportation problems of sugar cane outgrower farmer. But as time went by, it acquired additional

objectives. These were, buying of dry produce i.e. sim sim, chillies, cashewnuts and so on and Advancing cane farmers money for harvesting, also as a bridge between farmers and the sugar company.

It began by having its offices at Msambweni, in 1978 it shifted its offices to Kanana about 3km. from Ramisi sugar factory through a grant given by I.A.D.P.

The main source of income of the co-operative is through cess. It thus charges one shilling for every tonne of sugar cane delivered by a sugar cane farmer. It also get money by selling shares to cane farmers at Shs. 25 per share. So far only 635 farmers out of the 1209 cane farmers have bought shares.

Though it was formed to solved transportation problems facing farmers, little has been achieved in this lines. In 1970/71 the Co-operative Society bought two lorries to begin it endavour in offering transportation services to the farmers. But the two lorries were very few to satisfy each individual farmer.

By 1985 the Co-operative had no single vehicle as the two lorries were sold, one in 1975 and another in 1984. Despite the formation of the Co-operative

Society, the Ramisi sugar cane farmer is still worse off as he was before the Co-operative. Farmers are back to private transport arrangements. Furthermore due to mismanagement of funds, no advance is given to farmers for harvesting cane. Out of the farmers interviewed 98% expressed dissatisfaction by the co-operative society and most of them expressed feeling to quit the society.

The society employs only two personnel who do not have any knowledge of accounts and book keeping. As for the future of the society, it may be bright if good management and experienced personnel will be recruited. Already the Co-operative society has negotiated for a loan from the Co-operative Bank which a portion of it will be used to purchase 3 lorries and a tractor and another portion to be Advanced to farmers for weeding cane. This is an area, when well developed and managed can create employment and more incomes to the farmer as dividends.

#### Private transport and the outgrower farmers

It was found out that the Co-operative society has not met its objective of providing farmers with transport. Farmers now have been left an alternative of private transport. That is after a farmer is issued

with harvesting permit he has to look for his own transport to enable his cane reach the factory.

From the farmers interviewed only 1.6% had their own transport. Two farmers had 3 lorries each and one had one lorry. Apart from transporting their own cane, they also offer services to other outgrower farmers. This transportation means is not adequate to satisfy all farmers, hence it is supplemented by transport agents from Mombasa who bring their vehicles to seek for work. All the same transport is not adequate. This is because the transport agents are at will whether to offer the service or not. At a time when there is a booming business at Mombasa, transport becomes a problem as most of these agents work in Mombasa creating lack of transport in the sugar zone. An attempt to ascertain the number of agents was fruitless as they are not stable.

Another factor which makes transport to be inadequate, is the payment procedures. After a farmer has managed to get transport, he does not pay for transport directly but transport charges are paid by the Ramisi Company after which it will be deducted from the farmer's earnings. The same as the farmer is facing delay in payments, so do transporters. This

fact has discouraged many of them from operating in the sugar zone.

The condition of roads within the outgrower zone also limit transport availability. Thus roads are very rough and impassable during rain season and some farmers lack access roads altogether. Owners of transport reported that they sustain damage of their vehicles due to the above factors. This leaves them the choice of concentrating in Mombasa or transport cane from areas where roads are good.

The above factors aggregated together has led to scarcity of transportation means. Scarcity has inturn generated other problems especially met during time of peak harvest. Drivers of the lorries must be bribed to transport cane from the farms. Out of the total number of farmers interviewed 41.3% reported this practice. This makes farmers loose apart of their incomes they should have earned, which could go a long way in improving their standards of living. It also leads to overmature of cane as farmers stay longer without transportation means and overmature cane leads to poor performance of the factory.

#### Transport charges

These charges are universal and they vary according to

distance from the factory. They are determined by Kenya Sugar Authority. Table 26 shows charges in various zones and distance from factory.

Table 26: Zone Transport charges and distance from factory

ZONE	DISTANCE FROM	CHARGES PER
	FACTORY	TONNE
	KM.	KSHS.
Kanana	3	62
Ramisi Bridge	1½	62
Msambweni B	7	62
Msambweni A	10	64
Mamba - Mrima	15 - 20	78
Mwangwei	15	72
Mwananyamala	25 - 30	85
Kikoneni	20 - 25	81
Majoreni	15 - 20	78

Source: Kwale farmers Co-operative Society 1985

At 1984 prices of Sh. 270 per tonne of cane, transport alone takes off between 23 - 32% of the farmers earnings, depending on the zone the farmer is located. From the field research 44.9 of the farmers reported transport being expensive, especially those farmers nearer to the factory.

## Income and Employment

Transportation is one area employment is created especially in a situation where 98.4% of the farmers depend on private transport to avail their cane to the factory. Though the number of vehicles in operation could not be ascertained, the income earned is known. For example out of the 42079 tonnes harvested in 1984, the transport owners earned about 3.2 million shillings. This money was not wholly earned by those who own means of transport but those who work as drivers and labourers in the vehicles. A lorry requires about 4 workers to load and unload cane plus the driver. Due to few means of transport in the Region, most of the income earned goes outside the region mainly to Mombasa. This fact shows that the industry does not only contribute to the region but also other regions in the country.

## Infrastructure and Social Services

The development of any agricultural enterprise like sugar cane growing, necessitates considerable infrastructural and social services as inputs if it is to be successful. Thus the existence of good roads to enable cane reach the factory in good time is an important aspect. Power supplies, Health facilities, water, education facilities is a package needed not only to the development of sugar cane as a crop but the region in general.

This section examine the facilities and how these affect sugar cane development and the development of the region.

### Roads

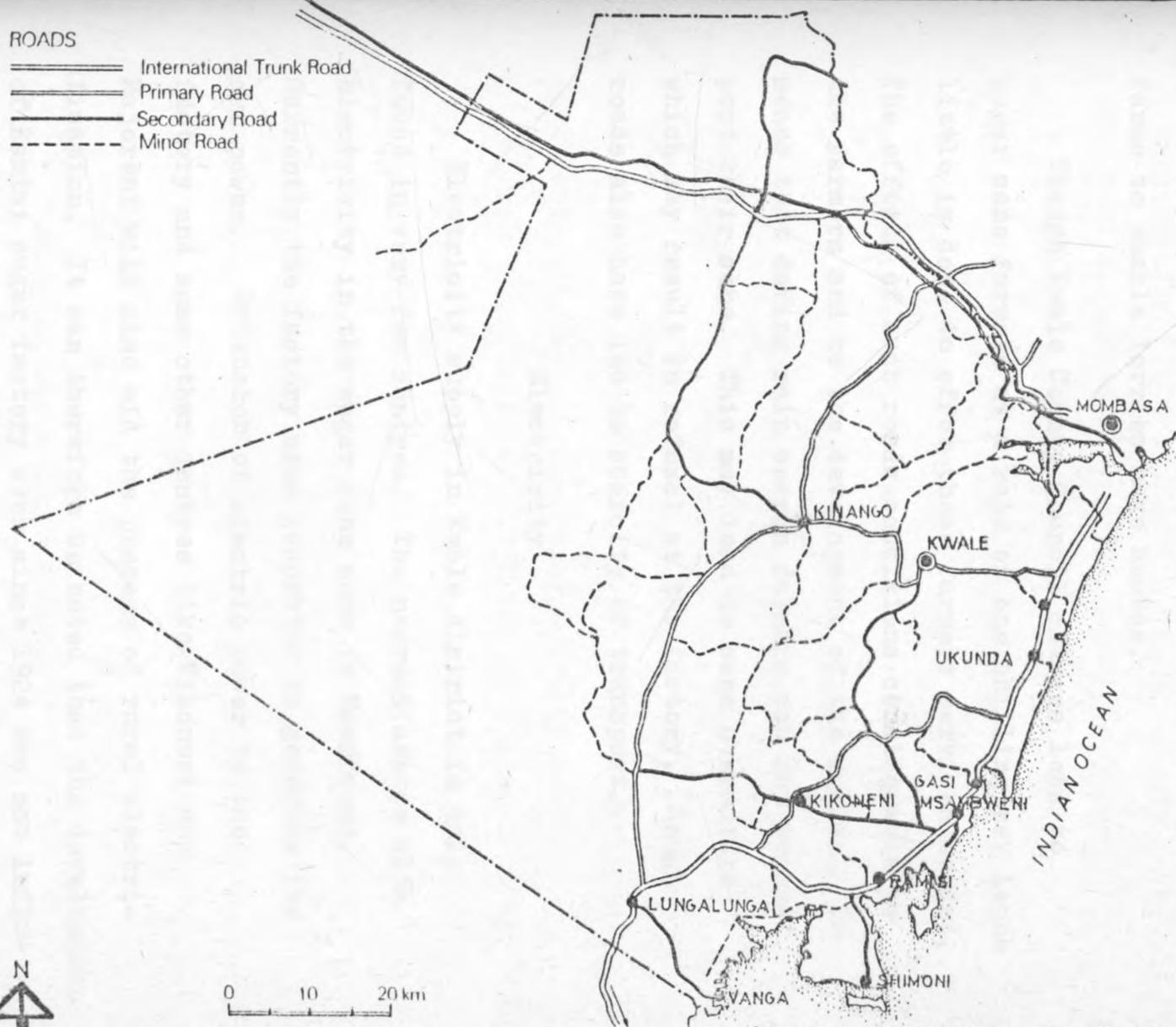
Development of roads is a crucial preliquesite venture for economic development. This is more so if such venture is accompanied with other opportunities, say agricultural development. It will not only stir such a sector into great heights but also propell further the rural economy. An area like the Ramisi sugar zone which is part of the Kwale crop lands, development of good road network will have a significant impact in the overal development of the region.

However in the Ramisi sugar zone, apart from the Mombasa Lunga Lunga trunk road which tarmaced all others are either murrum or earth roads. The later have problems. The murrum roads are very rough and in some sections impassable during rain season due to poor maintance. The earth roads, most of them unclassified, are the ones that create accessibility to the farms. These also are rough and impassable during rain season some of the farms do not have any road connection of any kind. In the latercase, if a farmer harvests cane he has either to employ labour

Map 8 ROAD CLASSIFICATION KWALE DISTRICT.

ROADS

- ==== International Trunk Road
- ==== Primary Road
- ==== Secondary Road
- - - - Minor Road



Source: Kwale District Development Report, 1984-1988

to carry cane to a convenient place where lorries can have access or cut paths from the main road to the farms to enable lorries have access.

Though Kwale County Council charges less to sugar cane farmers at a rate of one shilling per tonne little is done to offer these farmers services needed. The effects of such roads conditions considerable to the farmers and to the development of the region. It means that during rain season farmers can not transport their cane. This may lead to cane overmature which may result in refusal at the factory. Rough roads also have led to scarcity of transport.

#### Electricity

Electricity supply in Kwale district is only found in very few centres. The nearest centre with electricity in the sugar cane zone is Msambweni. Currently the factory uses generator to generate its own power. Extension of electric power to the factory and some other centres like Kikoneni and Majoreni will also aid the process of rural electrification. It can therefore be noted that the development of Ramisi sugar factory even since 1924 has not influenced provision of electricity.

### Water

The availability of potable water within convenient distances is very important to farmers both in terms of their health and number of man-hours put in the farms. Apart from Msambweni, Ramisi and a small section of Mwangwei where there is either piped or pumped-well water throughout the year, the other areas either have open wells, ponds or rivers. These sources do not last the whole year because during dry season they dry up. When this happens people are forced to travel long distances to fetch water or buy at an exorbitant price of five shillings for twenty litres. It was found out that people travel upto 10km. looking for water during dry season. Even during wet season these sources do not provide safe water for drinking. For example an area like Mamba, water is turbid and saline. If farmers have to have ample time to work in their farms especially women, safe permanent sources within a convenient distances to all have to be provided. This will enable more manhours to be devoted to farming activities.

### Telephone and Postal services

Telephone and Postal services, provided in the designated centres within sugar zone will serve a worthwhile course. Such services will facilitate

communication and thus dissemination of ideas.

Telephone service are only available in few centres in the sugar zone. These centres are namely Msambweni, Ramisi, Shimoni and Gazi. As for postal services only two centres, Msambweni, and Kikoneni, have this service. The later being a sub-post office.

#### Medical Services

This service is also important for the welbeing of the people interms of their health. Apart from the Ramisi Sugar Company dispensaries which every estate has one, catering mainly for employees of the Company, there are two dispensaries and one hospital in the sugar zone. A third dispensary is under construction at Majoreni. The health facilities are as follows:

1. Msambweni District hospital
2. Kikoneni Dispensary
3. Shimoni           "
4. Ramisi           " (Private)
5. Majoreni         " (under construction).

The District hospital is very much congested and there exist shortage of drugs. Farmers and also their families have to travel, the furthest 25 kilometres to get the services of the district hospital. Some of the journeys have to be made on foot as some areas don't

have regular public transport due to bad conditions of roads. As for the dispensaries the situation is even worse. Apart from lack of drugs a dispensary like Kikoneni lacks, water, stationary and fuel for sterilising syringes. The patients have to buy all the above in order to be treated. In a rural setting as that of the sugar zone of Ramisi the quality of medical services is very important to the farm population.

#### Education

As far as education is concerned there is only lack of Secondary Schools and Village Polytechnics in the region, though the quality of the Primary Schools need to be improved. There are only two Secondary Schools against a population of 153446 persons. The schools are, Ramisi Secondary School built and run by Ramisi Sugar Company, mainly to cater for the children of the employees and sugar canefarmers. The second one is Msambweni Harambee Secondary School. The two schools have a capacity of only 200 students each. Following the above, the farmers have to seek alternatives that are far away from the region.

There is only one Village Polytechnic in sugar zone namely Kanana near Ramisi Sugar factory. Further

it specialises in only one course, tailoring and dress making. With the volume of those who fail to go further with education after basic education increasing, more of such education facilities will be needed. This will enable more people not to be dependent of land which is already undergoing pressure.

Comparing the sugar zone to the whole Kwale District, the region can not be said to be welloff or badly off as the whole district suffers from lack of infrastructure and social services.

#### Synthesis of the Chapter

This Chapter examined the linkage structure of sugar industry in an attempt to evaluate the contribution, the industry has play in rural development.

It is clear from the study findings that the sugar industry is capable of creating significant incomes and employment in a rural economy. As far as both forward and backward linkages of the industry are concerned, the industry exhibit a fairly strong linkages. Despite this most of the forward linkages, mainly concerned with processing of the by-products are not developed yet. In the case study also it was found out that there exist problems which render the forwards and backward linkage weak-hence making the

trickle down effects of the industry minimal. Comparatively the sugar industry of Ramisi sugar zone is one of the biggest employer in Kwale district either in off-farm or on farm activities. Therefore if it were not of the problems facing the industry, the Ramisi sugar zone could be more developed than it is today. Furthermore it was found out that apart from benefiting the region where the industry is located, it does also contribute to national development.

The effects of the problems identified and their solutions will be examined in the next Chapter. This will be geared in making the industry contribute more to the rural economy.

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## CHAPTER IV

### FINDINGS, PROPOSALS AND SYNTHESIS

This Chapter is concerned with findings that emanated from the previous Chapter. It is thus a problem solving chapter, where proposals are given for the problems identified. Such proposals will go along way in strengthening the linkage structure of the industry. This will enhance the full contribution the industry could offer to development of Ramisi sugar zone and the district as a whole. Ultimately a synthesis of the whole study will be given.

#### The problem and major findings

The problem that led to this study is the turn of events of the Kwale district. That the district labour force is growing at a faster rate than the national one by far, due to rapid population growth rate and in migration into the district. This is followed by less employment opportunities. Due this population growth rate already some sections of the Eastern side of the district is undergoing population pressure. Further to these problems there is limited potential land for crop growing. This means that unless this limited potential land is developed to levels where it will produce for surplus and related agro-based industries established to absorb the unemployed labour force both on and off farm, the problem of unemployment and land pressure will develop to unmanageable heights. But to develop agriculture and the related processing industries which the district is endowed with there is need for planning and to ascertain how such establishments will contribute to the development of the district.

Following the above, the study set out to study the contribution of the Ramisi sugar industry in rural development. A number of objectives as stated in Chapter one of this study were drawn. In the light of these objectives the following are the major findings:-

(1) There has not been a proportionate increase in output of sugar cane though there has been a significant growth in nucleus estate and outgrower farms.

(2) The industry is poorly organised especially to the side of backward linkages.

(3) Following the above, the industry has not benefited the sugar zone much in terms of better housing, physical infrastructure social services, and further income generation establishment.

(4) The industry has significant relationships with other industries.

In general then, the Ramisi sugar industry has fairly strong linkage structure and this too can be said of the Kenya sugar industry, but there exists problems weakening linkage strength. This in turn has affected its contribution to rural development and that of the nation as a whole. Thus the Ramisi sugar industry supports a livelihood of above 26,000 people though majority come from outside the district. Solutions given to the problems identified will therefore strengthen the linkage structure of the industry hence contribute fully to the rural development of the region.

## Proposals

It was found out that though the growth of nucleus and outgrower farms has been significant, there has not been proportionate increase in output of cane, amongst the other major findings. Thus there exists low productivity in these farms. This lowers the full contribution the industry could have in rural development. The factors behind the above situation were discussed in the previous Chapter. Solutions to such problems are hereby proposed.

### Soils

Soils were found to be among the factors behind low productivity. This calls for a detailed study of soils of the Ramisi sugar zone to outline which types are suitable for cane growing and which are not. The soil study should ascertain the type of fertilizers to be applied where. This will provide a base for extension staff for advising farmers. Already guidelines to the study of are there.<sup>1</sup> What remains is to pick up from what exists and further it. If this is done it will help very much, because farmers will get good yields and hence benefit more from the crop. Because of the time it will take to complete such a study, this certainly is a long term proposal. The sooner the Ministry of Agriculture and the Ministry of Natural Resources set to undertake the study the better.

### Rainfall

Rainfall was also found to be a draw-back to productivity. However this is a factor we can not fully control. This study propose that farmers should be adviced when to plant sugar

cane according to water requirement of the sugar cane plant at its different stages of growth. Field extension officers of the Ramisi Sugar Company and those of the Government have both a role to play in advising farmers.

### Cane Husbandry

It was noted earlier that good yields depend very much on how the sugar cane farms will be taken care of. To the side of Nucleus estate farms, the company should employ adequate labour force to man the farms. As concerns out-grower farmers good cane husbandry is impeded by several factors which needs to be solved. Solving such problems will altemately create more employment, incomes and a general rise of living standards of people in Ramisi sugar zone.

#### Lack of finance to prepare, weed and Harvest

This problem is brought by several factors as noted earlier. First there is inadequate loan facilities. Furthermore majority of the outgrower farms do not have titled deeds though land has been adjudicated. In the short run, this study propose that titled deeds be given as soon as possible. This will enable farmers to have a variety of choces open to them for loan facilities, as the titled deed will act as a security to acquiring loans. Extention officers should educate the farmers on where and how they can get loans. Secondly the company should operate a loan scheme for farmers. This can be interms materials or hard cash. Such a loan scheme operated by the company will inable the company earn extra income as it will charge interest, but it is here proposed that the interest rate should be favourable to the farmers.

services of how farmers can use ox-plough.

In the long run, it is expected that the outgrowers Co-operative Society should also operate a loan scheme to its members, this will not only create more employment and income for those who will be working in the society but the interest earned will go back to the farmers as devidents. Loan scheme by the Co-operative Society is proposed as longtern because the Co-operative at present need reorga-nisation and this might take time.

Another factor militating against good cane husbandry is delay in payments. An efficient payment system will not only promise high production but farmers will be able to maintain their living standards well. Two systems are proposed. Payment system one, is that, farmers should be paid all their money once within one month of delivering cane. This system has been proposed mainly to cater for those farmers who deliver small tonnage of cane to the factory. Because such farmer will be able to plan well if they get money in lumpsum. It is the duty of the farmers, Co-operative Society and the Company to reach a compromise of what should be a small tonnage. The second payment system should be that of twice within one month of delivery of cane. Infact this is the system about 90% of the farmers prefered and also used to exist in 1980. This system will be very appropriate to those big farmers. It is worth while to note that farmers are normally paid by cheques, but for small farmers who do not have bank accounts it becomes a problem to them. It is better for small amounts of money to be paid in hard cash.

### Wild Animals

Another problem identified was that of wild pigs and baboons found all over the sugar zone. It is proposed that the Ministry of Tourism and Wildlife trap the animals and take them to Shimba Hills Game reserve. The Game Reserve should therefore be fenced to prevent the animals from coming out. This solution will mostly apply to wild pigs because baboons can climb and come out. Farmers therefore should be given permission by the Ministry to hunt baboons.

### Tractor Services

High tractor charges was found to a problem leading to low yields. This forces farmers to use the simple hoe to cultivate land. This tool is slow hence accumulate a sizeable cultivated land takes longer. This may lead to untimely planting, which may affect growth of sugar cane plant. It is proposed that the Kenya Sugar Authority (KSA) and the Ministry of Agriculture to work out standard charges for tractor services. This should be a short term proposal. In the short run also, the Company can play some role by giving this service to farmers as there are sometimes when their tractors are not used. This will also earn the Company some income and can create employment.

In the long run the Ministry of Agriculture should introduce tractor services in this region. To supplement this, it should educate farmers through extension

Seed-Cane

Production also can be affected by good seed plant. At present farmers buy seed plant either from other farmers or when harvesting they preserve some cane in the farms which later is used as seed-cane. But this practice is a good one if only farmers know what a good seed-cane is. Here again the extension officers are supposed to advice farmers on this issue. Alternatively the demonstration farm at Kiruku near Kikoneni should play two roles, for demonstration and for provision of seed-cane. This will require expanding the farm and good management as at present it is badly managed. This study therefore propose to the Ministry of Agriculture to acquire land for expanding the farm.

The above should be coupled with use of fertilizers. While sugar cane is known to deplete soil nutrients, no farmer out of those interview was using fertilizer to replace these nutrients. Farmers should be educated on the benefit of using fertilizers and the type they can use, when, where, and what quantities. Educating farmers on the use of fertilizer alone will not suffice, the Ministry of Agriculture should make sure that there is a dealer to provide fertilizer, as at present there is no such agent in the district. In the shortrun the Sugar Company can undertake this role but in longrun the Co-operative Society can play this role. This is because it will be serving its members hence it will be at a cheaper rate.

### Extension Services

In Chapter 3 it was found out that extension services does not effectively reach sugar cane farmers. Sugar cane extension work is not given priority and where it is, it is selective. There exists also shortage of field extension officers. In most of the proposals already given much has been pushed in the hands of field extension officers to implement. This will require adequate staff.

At present there are only 11 field officers for the whole District. This study backs the proposals of the district agriculture development plan 1984/88 of increasing the number to 32 apart from the other number of agricultural staff proposed. The field extension officers should not particularise on certain crops but give equal weight to all crops as all are important and geared to the wellbeing of the farmer. Special preference should be given to the small farmers as it is this group that the government aims at improving their standards of living. The current method of Train and Visit is not a bad one. Farmers will join groups which they feel they can communicate freely. Field officers should use a language that will be communicable to all.

### Employment and Incomes

It was found out that at the outgrowers level the Ramisi Sugar Industry sustains lives of about 1209 farmers and those who find employment in the farms which was rated at 380 using the minimum company wage. It was also found out that it is the most important cash crop in the

zone. This is because it is well paying. The industry's contribution could be higher than the above if it were not of the problems identified. Solving such problems as proposed by this study will mean growth of Employment and incomes. This will lead to more contribution of the industry than the one achieved after twenty one years of the intiation of the outgrowers scheme.

#### Reinvestment of sugar cane incomes

It was found in Chapter 3 that reinvestments of proceeds from cane was megre, but at the same time, there is an indication that the industry can contribute significantly in employment creation and in improving the general standard of living of the people of the Ramisi sugar zone. This can be attributed to various problems that have been found facing the industry. Solutions to such problems may be the conner stone to farmers earning enough to maintain their livelihood and improve further their standards of living by reinvesting in gainful ventures. Some solutions have already been given and this study will continue giving more.

#### Housing

Many people are still living in temporary houses. To improve upon this situation, it is proposed that sugar cane farmers and other people alike to be encourage to save with the National Housing Corporation (NHC) so that they can benefit from rural housing upgrading scheme. This proposal is given hoping that the proposals given by this study will eventually improve farmers incomes after their implementation. The above move will necessitate a feasibility study to be done in the setting a branch of the corporation preferable at Ukunda.

of the corporation preferable at Ukunda. This will not only be for the purpose of improving rural housing but also act as a banking facility for the entire district. Though this proposals is a longterm venture its implementation can benefit the people of the district alot.

### Business establishments

It has be found out by this study that the sugar industry of Ramisi has not contributed much to business establishments. With the solutions proposed and yet to be proposed, it is hoped that a sizeable number of people will have enough income to express the need of establishing such ventures. It is thus proposed that the Kenya Industrial Estate (KIE), make itself known, advice and aid such people on the viable ventures that will have market, be it within the district or outside. This will create off farm employment opportunities that will absorb the rapid growing labour force of the district. Also by creating off farm employment, it will ease the pressure on land that already has caught up with some sections of the eastern part of the district.

### Transportation of sugar cane

The crucial service that link the farmer's produce to the factory was also with problems.

### Delay in payments

This was a problem found to be causing shortage of transport to transport cane from outgrower farmers, to the factory. The result of which has led to malpractices of bribing, hence taking away part of the farmers incomes from cane.

In the shortrun this study propose to the Ramisi Sugar Company to pay owners of transport in time so that to encourage them come in large numbers. The payment system should be once within the month when sugar cane is transported. Availability of transportation means will ensure that cane will be delivered to the factory in time without being over mature. But to eradicate completely that problem of overmature cane the Company's system of issuing permits should be faster enough not to render cane overmature.

It is also proposed that during the time when there may exist any shortage of transport, the Company should be ready to avail some of its trucks to offer such service. In the longrun transportation means will be a responsibility of the outgrowers Co-operative Society.

### The Kwale farmers co-operative society

In the previous sections of this Chapter several solutions have been left to this society to implement. However all were longterm. This is because the Co-operative at present is financially weak and lack experienced staff.

Further more it lacks virtually all the services that were proposed that it should give to farmers. This makes it require time to reorganise it and acquire the means to offer such proposed services.

Though the society has already negotiated for a loan to buy 3 lorries and a tractor, this is the same attempt it made in 1970/71. This study propose that, the Ministry of Co-operative Development in conjunction with Kenya Sugar Authority form an interim committee to carry out a study on reorganisation, staffing, financing and how best to carry out the proposals placed upon the Co-operative Society. Such a reform will beneficial to the farms let alone creation of employment. All gains that will acruce to the society will reach farmers through devidents, and provision of cheaper services.

#### Infrastructure and social services

In any development venture like agriculture, adequate infrastructure both physical and social is part of a crusual package for it to be successful. In Ramisi sugar zone it was found out that most of such facilities have problems. This decreases the contribution the sugar industry could render to the people. In this section therefore solutions are proposed to the problems identified.

#### Roads

Apart from the Mombasa - Lunga Lunga road which is tarmaced all roads in the sugar zone were found with problems.

## Murrum Roads

It was found out that all murrum roads were very rough and in some sections impassable. This is because they lack maintainance. The Kwale County Council and the Rural road programme of the Ministry of Transport and Communication should repair these roads and set enough funds for maintainance. The County Council earns cess of one shilling per tonne of cane delivered to the factory. It will be very sensible, in return, for the County Council to maintain such roads as sugar cane is one of their source of income.

## Earth Roads

Most of these roads are unclassified. They suffer even worse problems than murrum roads, though they are ones that connect the farms to the better grade roads. All these roads need maintainance and some to be murrumed. There is also a need to construct new ones especially between Mrima and Gendo section as the land there is very fertile but underutilised because of lack of accessibility.

Ramisi Sugar Company should also aid in constructing access roads to farms, as it has the machines to do so. It is only through this dedication that the Company is assured of good quality cane.

## Electricity

In the sugar zone only few centres have electricity. Ramisi sugar factory itself does not have electricity.

Three centres are chosen to be provided with electricity through the rural electrification programme. These are namely Ramisi, Majoreni and Kikoneni. Electricity should therefore be extended from Msambweni to these centres. As concerns the electrification of Ramisi, it should be a joint venture between the Government and Ramisi Sugar Company. Electrification of these centres will help some services to be offered efficiently.

### Medical Services

It was found out that all health facilities that cater for farm population lack drugs and other services like water and stationary. Msambweni District Hospital suffers from conquestion. The Ministry of Health should provide adequate drugs to these institutions.

To alleviate conquestion at the district conquestion at the district hospital Kikoneni dispensary should be upgraded into a health centre and be provide with all facilities that a health centre aught to have. Electrification of Kikoneni will be in line of upgrading of this dispensary. This is because it will need power for refridgeration. The Ministry also should provide these institutions with adequate stationary. Majoreni dispensary should be completed as soon as possible as population from this area are served by Shimoni dispensary which is far. The Ramisi Company health facilities should be allowed to be used by the sugar cane growers and their families.

## Water

From the previous discussion in Chapter three, it found that people waste alot of time in fetching water especially during dry season. It was also found that apart from Msambweni, Ramisi and some part of Mwangwei the other areas have no safe water for domestic purposes.

An open well at Mrima (Bumbuni) should be made deeper and covered, so as to provide safe water all the year round. In the longrun a hand pump can be fixed. There is need for a second well in the interior of Mwangwei. At Majoreni there is an open well which needs to be covered and a hand pump fixed. Majoreni dispensary also will need water hence a second well is needed.

At Kikoneni, the population around it and the Health Centre will also need clean water. There is an abortive water project in this area. A wier was constructed, pipes laid, water tanks built, but the project does not function due to lack of a pump. This study propose the wier to be expanded, water pump provide so that the project can function. The expansion of the wier will enable the project provide water to Kiruku and Mwananyamala. The same should apply to the wier that exist at Mamba. Water should preferably be offered in communal points of less 3km walking distance. This study hopes that people of those areas, the Ministry of Water Development and the District Development Committee should join hands to implement these projects.

### Telephone and postal services

Telephone and postal services facilitate communication and dissemination of ideas. In the Ramisi Sugar zone some of these services are inadequate.

As far as telephone services are concerned the following centres should be connected with telephone; Kanana, Majoreni and Kikoneni. For Postal services, a sub - post office should be provided at Ramisi. All these proposed services will aid the already proposed functions.

### Education

It was indicated that there was lack of Secondary Schools. This problem affect the whole district. People of the sugar zone and those from outside should contribute and start an Harambee Secondary School at Kikoneni. This and the other two already existing will be able to cater for the rapid expanding population.. There will be need to expand these institution whenever need will arise.

Though, there are adequate primary schools, there is need to improve them as some of these are constructed with temporary materials. This burden will mostly be borne by the people within the Ramisi sugar zone themselves. That is why realisation of a fully contribution of this industry is necessary.

To create more offfarm employment opportunities will help in absorbing the district's labourforce. Some people will therefore not be depending directly on land. This will ease pressure on land. It is proposed that Kakana Village Polytechnic be expanded both physically and in terms of courses offered. It should offer those courses that can lead to self gainful employment. This will absorb those pupils that did not manage to go beyond basic education.

#### Sugar processing

At the factory level several problems were identified that directly or indirectly affect the contribution of the Ramisi sugar industry.

#### Capacity utilisation

It was found out that Ramisi sugar factory is underutilised. Only 52% of its capacity is utilised. This is due to lack of adequate raw material (sugar cane). Proposals have already been given as to how production of cane can be stepped up. In implementing the proposals given, production of cane will increase. With the present crushing capacity of 1000 tonnes of sugar cane per day, the increase in production need to be matched with an equal crushing capacity. It is therefore proposed that Ramisi Sugar Company expand the factory to a crushing capacity of 1500 tonnes per day. But it has to be noted that the capacity will mainly depend on the increase in cane production.

## Processing Machines

Ramisi Sugar Company's processing machines are old. This has led to low recovery in milling and also to a time efficient of 50.1%. The machines need to be changed, if waste of resources have to be avoided. The government should give Ramisi Sugar Company a rehabilitation fund so that new machines can be installed. This fund will also help in implementing proposals made about roads.

## Employment and incomes

Majority of those employed by the Ramisi Sugar Company are unskilled workers. These workers are lowly paid. A pay rise to this group of workers can very much help. It will help improve the standards of living of these workers and their families. It is proposed that the government should look into this problem and come up with new standard salaries for rural areas, taking coonsideration the present cost of living and inflationary trends.

It was found out that of the total employed by the company 83.5% come from Western and Nyanza provinces. To help solve the district's problem of unemployment, priority should be given to the people within the district when employing. This will strengthen the industry's contribution regionally.

### Inputs in sugar processing

In sugar processing several inputs were found to be crucial to produce sugar. It was noted that, this helps in creating demand for such inputs. The demand assures those employed in the various industries income. It will be beneficial to the economy if such inputs are manufactured locally.

In sugar bagging use of sisal bags should be encouraged. This is because it will strengthen the growth of the sisal industries. Furthermore sisal is grown locally. It will help develop the sisal industry of the district.

### Sugar by-products

A number of by-products were identified in sugar processing. It was also noted that some industries can develop to make use of the by-products as their raw materials. Though the country earns foreign exchange the by-products especially molasses, more benefits can be reaped if industries that make use of the by-products can be set. This will enable the country export the finished products to the needy countries.

### Synthesis of the study

Rural Development involves an effort in improving standards of living of the rural people. Apart from improvements of incomes, it also involves provision of both physical infrastructure and social services.

With the problems facing our country namely high population growth rate, unemployment, low levels of income in rural areas, lack of basic services to name but a few, time is long gone when urban areas used to be seen as the major cores of development in isolation <sup>to</sup> rural areas.  
^

Focus in agriculture development and the setting of related processing establishments in rural areas is important in solving some of the problems. Such ventures not only create employment as seen by this study but lead to improvement in physical infrastructure and social services, ultimately raising standards of living of the rural folk. But such establishments need comprehensive planning.

The sugar industry can contribute alot to rural development and to the nation in general. The problems that this study found out facing the industry in Ramisi clearly show that such establishments need planning for their contribution to be felt by the rural people. The Ramisi sugar industry unlike the Western Kenya one is very old but after independency no efforts were made to plan it. This fact has lead to the problems the industry faces at present.

The proposals that this study has made will go along way in strengthening the industry's contribution if implemented. With Kwale district facing problems of

unemployment, high population growth rate, population producing mainly for subsistence, land pressures in some sections of the district, lack of marketing organisation and lack of adequate infrastructure, full contribution of the Ramisi sugar industry to the development of the district will eliminate some of the district's problems.

FINDINGS AND PROPOSAL CHART

FIG NO. 4

CONSTRAINTS	AREA	PROPOSAL	AGENT	PLANNING PERIOD
1. Defficient soils	Sugar zone	(i) Detailed study of sugar zone's soils to be done (ii) Extension staff to advice farmers on measures to be taken	Ministry of Natural Resources Ministry of Agriculture.	Long term
2. Rainfall	Sugar zone	(i) Proper timing in planting needed	Field extention staff	Short term
3. Lack of Finance (Farmers)	Sugar zone	(i) Start efficient payment system (ii) Give Titledeeds to farmers (iii) Start loan scheme (company) (iv) Co-operative to start loan scheme	Ramisi Sugar Co. Ministry of Land & Settlement Ramisi Sugar Co. Sugar cane Co-op. Society	Short term Short term Short term Long term
4. Wild pigs	Sugar zone	(i) To be taken to Shimba Hills Game reserve (ii) Game reserve to be fenced	Ministry of Tourism Development	Short term
5. High tractor charges	Sugar zone	(i) Standard charges to be introduced (ii) Ramisi Sugar Co. to give tractor services (iii) Government to introduce tractor services (iv) Use of ox-plough to be introduced	M.O.A. & K.S.A. Ramisi Sugar Co. M.O.A. M.O.A.	Short term Short term Long term Short term

CONSTRAINTS	AREA	PROPOSAL	AGENT	PLANNING PERIOD
6. Poor seed cane	Sugar zone	(i) Expand Kiruku Demonstration farm to produce seed cane	M.O.A.	Long term
		(ii) Farmers to know good seed cane	M.O.A.	Short term
7. Non-application of fertilizers (Farmers)	Sugar zone	(i) Farmers to be educated on the benefit of fertilizers	M.O.A. Ramisi Sugar Co.	Short term
		(ii) Open a fertilizer Agent at Msambweni	M.O.A.	Short term
		(iii) Co-operative to Distribute fertilizer to cane farmers	Sugar cane Co-Op. Society	Long term
8. Domant Co-operative Society	Outgrowers Farmers	(i) Research to be done on staffing & how to discharge duties assigned	Min. of Co-op. Development, M.O.A. and K.S.A.	Long term
9. Extension services	Sugar zone	(i) Increase number of Field Staff	M.O.A.	Long term
		(ii) Ramisi Sugar Co. to give more extension services to all farmers	Ramisi Sugar Co.	Short term
10. Poor Housing	Sugar zone & other areas of the district	(i) NHC - rural housing upgrading scheme - Branch at Ukunda	NHC & M.O.W.H & P.P.	Long term
		(ii) Feasibility study of the NHC branch to be carried	NHC & M.O.W.H. & PP.	Short term

CONSTRAINTS	AREA	PROPOSAL	AGENT	PLANNING PERIOD
11. Business Establishments	Sugar zone	(i) K.I.E. to advice on viable employment creation establishment	K.I.E.	Short term
		(ii) K.I.E. to aid people in starting establishments	K.I.E.	Short term
12. Shortage of transport	Outgrowers farmers	(i) Start efficient payment system to owners of transport	Ramisi Sugar Co.	Short term
		(ii) Company to render transport services	Ramisi Sugar Co.	Short term
		(iii) Co-operative society to render transport services	Co-operative Society	Long term
13. Poor Roads	Sugar zone	(i) Repair & maintain all roads	Min. of Communication Rural access road programme	Short term
	Mhima - Gendo	(ii) Up grade earth roads to murrum roads	Rural access road programme	Long term
14. Electricity	Ramisi, Majoreni and Kikoneni	(i) Provide electricity to centres	K.P.& L. rural electrification programme	Short term
15. Medical services	Msambweni Shimoni Kikoneni	(i) Provide adequate drugs stationary to all Health institutions	M.O.H.	Short term
	Company dispensaries Majoreni	(ii) Upgrade Kikoneni dispensary to health centre	M.O.H.	Long term
		(iii) Complete Majoreni Dispensary	M.O.H.	Short term

CONSTRAINTS	AREA	PROPOSAL	AGENT	PLANNING PERIOD
16. Water	Mamba, Kikoneni, Mwananyamala, Kiruku, Mrima	(i) Deepen and protect well at Mrima	M.O.W.D. + people	Short term
		(ii) Provide hand pump to Mrima & Majoreni wells	" "	Long term.
	Mwangwei	(iii) Complete & expand water project at Kikoneni	" "	Short term
		(iv) Construct new water wells at Mwangwei and Majoreni	" "	Short term
		(v) Advice on safe usage of pond & open water sources	" "	Short term
17. Telephone and Postal services	Kamama Majoreni Kikoni Ramisi	(i) Construct sub-post office at Ramisi	K.P. & T.	Long term
		(ii) Extend telephone service to Kanana, Kikoneni & Majoreni	K.P. & T.	Short term
18. Education	Kikoneni Sugar zone	(i) Construct Harambee. Sec. School at Kikoneni	M.O.E. + people	Short term
		(ii) Improve structures of primary school	M.O.E. + people	Short term
		(iii) Expand Kanana Village Polytechnic	M.O.E. + people	Short term

CONSTRAINTS	AREA	PROPOSAL	AGENT	PLANNING PERIOD
19. Factory under-utilization	Ramisi Sugar factory	(1) Produce more cane	Ramisi Sugar Co. and outgrower farmers	Short term
20. Old machines (Processing plant)	Ramisi Sugar factory	(1) Give rehabilitation fund to expand capacity & Purchase new machines	Government	Long term
21. Low salaries (unskills & workers)	Ramisi Sugar factory workers	(1) New standard rural salaries to be formulated :	Government	Short term
22. Sugar By-	-	(1) Need for local processing plants to be set to make use of by-products as raw materials	Government Ramisi Sugar Company	Long term

### Future Research Proposals

No single study can be complete in itself especially when time and finance is a limitation. This section therefore proposes future research proposals. Thus future research should aim at:-

- Establishing minimum plot size of a cane farm that can support a typical family in the Ramisi Sugar zone. This help farmers not waste their energy on plots that will not reward their efforts.

- Research into spatial organisation of both outgrower and nucleus farms for the minimizing costs of providing infrastructure and social services.

- Research on other industrial crops as discussed in Chapter 2 and related industrial establishments and how these will contribute to rural development of the district.

FOOT NOTE

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APPENDIX

QUESTIONNAIRE TO OUTGROWERS

FARMERS

DATE OF INTERVIEW: \_\_\_\_\_

Questionnaire Number: \_\_\_\_\_

LOCATION: \_\_\_\_\_

NAME (OPTIONAL): \_\_\_\_\_

1. Sex \_\_\_\_\_

2. i) Are you married            Yes            No

ii) If married Number of wives \_\_\_\_\_

iii) Family size \_\_\_\_\_

3. Number of children going to school:

Type of School	Number in	Name of Schools
Primary		
Secondary		

4. What is your occupation?

- a) Farming                      b) Business  
c) Wage employment      d) Others (specify).

5. What is the size of your farm? \_\_\_\_\_

6. (i) How many hectares of sugar cane  
did you first plant? \_\_\_\_\_

(ii) How many do you have now? \_\_\_\_\_

(iii) How many tonnes of cane did you  
harvest last season? \_\_\_\_\_

7. (i) What farming implements do you use  
in preparing land? \_\_\_\_\_

- (ii) a) Ox-plough      b) Tractor  
c) Simple hoe      d) Others (specify)

(ii) How much did it cost you? \_\_\_\_\_

8. (i) What kind of labour do you use in  
your sugar cane farm?

Type of labour	Area they come from District	Number of labourers	Wages/Salaries per month/ per day
Family labour			
Hired labour temporary			
Hired labour permanent			

ii) Do you experience any problems in getting labour?      Yes              No

iii) If yes what do you think is the cause?

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9. i) Do you grow other crops?      Yes      No

ii) If yes, Name them

(a) \_\_\_\_\_

(b) \_\_\_\_\_

(c) \_\_\_\_\_

(d) \_\_\_\_\_

10. How often are you visited by Agriculture extension officers? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

11. Do you get loans for expanding production?  
\_\_\_\_\_  
\_\_\_\_\_  
(i.e. Feterlizer, preparation of land etc.)

12. i) Do you have any future plans to increase sugar cane production?      Yes              No

ii) If Yes, why? \_\_\_\_\_  
\_\_\_\_\_

iii) If No, why? \_\_\_\_\_  
\_\_\_\_\_

13. i) How do you transport your cane to the factory? \_\_\_\_\_  
\_\_\_\_\_

ii) What problems do you encounter? \_\_\_\_\_  
\_\_\_\_\_

iii) How do you think these problems can be solved? \_\_\_\_\_  
\_\_\_\_\_

14. What problems do you experience in marketing your cane?

15. i) How is the payment system after delivering cane to the factory?

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ii) What are your views about the system?

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16. i) A part from the problems already mentioned what other problems do you experience in cane growing? \_\_\_\_\_

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ii) How do you think the problems can be solved? \_\_\_\_\_

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17. i) Which of the following do you own?

- a) Permanent house      (f) A tractor
- b) Temporary house      (g) Ox-plough
- c) A shop                      (h) Other specify.
- d) A bar
- e) A bicycle

ii) When did you start owning the above?

a) Before planting sugar cane

b) After planting sugar cane

18. i) Which of the following facilities exists in your area?

a) Roads      b) Piped water

c) Electricity      d) Telephone

e) Post Office      f) Others (specify)

ii) How do you benefit from the above?

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19. i) Which of the following services are developed in your area?

a) Medical      b) Primary Schools

c) Secondary Schools

d) Village Polytechnic

e) Others (specify)

ii) How do you benefit from the above?

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20. 1) How much was the last harvest's income  
from sugar cane? Kshs. \_\_\_\_\_

ii) How much from other sources? \_\_\_\_\_  
\_\_\_\_\_

QUESTIONNAIRE TO THE FACTORY MANAGER

Date of interview \_\_\_\_\_

1. i) How many hectares of land did your  
Company start with?

\_\_\_\_\_

ii) What hectarages were under the  
following:

Nucleus Farms \_\_\_\_\_

Outgrower Farms \_\_\_\_\_

3. How many tonnes of sugar cane are needed to  
produce one tonne of (millwhite) sugar?

\_\_\_\_\_

4. i) What is the capacity of the factory?

\_\_\_\_\_

ii) Is this capacity of the factory fully  
utilised?      Yes      No

iii) If No why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. How many operatives exists in the following sectors including management staff?

a) Nucleus Farms \_\_\_\_\_

b) Factory \_\_\_\_\_

c) Others (specify) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. How many operatives are in the following categories, also housed/not housed, their minimum and maximum pay and their place of origin (District).

Category	Number	Number Housed	Number Not housed	Minimum & Maximum	No. working in factory	Number in Nucleus	District of origin
Unskilled							
Semi-skilled							
Skilled							

7. i) Do you employ any casual workers?

\_\_\_\_\_

ii) What is the average number pay day?

\_\_\_\_\_

iii) What is their pay per shift?

Kshs. \_\_\_\_\_

8. What fringe benefits does this company offer to its employees? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9) i) Who is responsible for transporting cane from outgrowers to the factory?

a) Company      b) Outgrower farmers

ii) If the company is responsible what are the charges per tonne per kilometre

\_\_\_\_\_

iii) Do you encounter any problem in transporting cane? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

iv) How do you intend to solve them?

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10. i) What services if any do you offer to outgrower farmers?

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

d) \_\_\_\_\_

e) \_\_\_\_\_

ii) How much do these services cost you?

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

d) \_\_\_\_\_

e) \_\_\_\_\_

11. i) What are your sources of power?

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

d) \_\_\_\_\_

ii) What is the average monthly power cost?

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12. Do you have any future plans in developing the following infrastructural facilities in the sugar zone?

- a) Water supply
- b) Manpower
- c) Education
- d) Medical
- e) Electricity
- f) Others (specify)

13. i) Which other industries can possibly come as a result of the sugar industry?

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ii) Have you any plans to develop any one of them?

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14. What do you use the following for?

a) Bagasse \_\_\_\_\_

b) Molasses \_\_\_\_\_

c) Bagacillo (filter cake) \_\_\_\_\_

\_\_\_\_\_

15. i) Does the Government exempt your  
company from paying taxes?

Yes            No

ii) If Yes, what are the reasons for  
exemption? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

iii) For How long? \_\_\_\_\_

16. i) Do you have any plans to expand your  
factory?    Yes            No

ii) If Yes, what will it involve? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

