

MAJOR MARKETING AND TRADITIONAL FACTORS INFLUENCING  
MARKET OFF-TAKE AND YIELD OF SLAUGHTER CATTLE IN KENYA

by 602

TIMON BONDO

B. S., University of Minnesota, 1967

---

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Economics

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1970

Approved by:

  
Major Professor

LD  
2668  
R4  
1970  
B6489  
C.2

ii

#### ACKNOWLEDGMENTS

The original appearance of this report was somewhat different in order and in content. Criticisms and suggestions of Dr. John D. Hyslop of the University of Minnesota were very invaluable in improving the report to its present form. To this I owe him thanks. Particularly I acknowledge my indebtedness to him for the time and due attention he gave me, yet he was in no way connected with my research.

I am also indebted to Dr. L. Orlo Sorenson whose criticism helped increase the clarity and quality of this report. Dr. Sorenson has been of great assistance and guidance in my academic pursuit at Kansas State University.

Probably it would have been difficult, if not impossible, to write this report if it were not for both Dr. Sorenson and Dr. Hyslop in regard to my immigration status. To this too, I owe them special thanks.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS . . . . .	ii
LIST OF TABLES . . . . .	v
INTRODUCTION . . . . .	1
General Description . . . . .	1
Objective . . . . .	3
Scope . . . . .	3
CATTLE PRODUCTION AND BEEF SUPPLY PROBLEM . . . . .	3
Supply and Demand Projections . . . . .	3
Limiting Factors: Alternative Possibilities of Increasing Meat Output from Local Cattle . . . . .	7
INADEQUACY AND POOR STATE OF MARKETING FACILITIES . . . . .	12
Stock Routes and Quarantine Grounds . . . . .	12
Transport and Handling Methods of Cattle to the Market . . . . .	19
Constraints Imposed by On-the-hoof Transport . . . . .	22
MARKETING INSTITUTIONS AND SALES METHODS . . . . .	28
Imperfections in the Markets for Livestock and Meat . . . . .	29
TRADITIONAL REGARD FOR KEEPING CATTLE . . . . .	51
Source of Food . . . . .	51
Protection of the Family . . . . .	54
Status Symbols . . . . .	55
INFLUENCE OF TRADITIONAL REGARD TOWARD LIVESTOCK ON YIELD OF SLAUGHTER STOCK . . . . .	57
Excessive Increase in Number of Cattle . . . . .	57
Unsound Animal Husbandry . . . . .	58

	Page
Effect on Livestock Condition . . . . .	60
Economic Justification of Controlled Grazing Scheme . .	62
SUMMARY . . . . .	64
CONCLUSION . . . . .	67
BIBLIOGRAPHY . . . . .	69
APPENDIX I . . . . .	72



## LIST OF TABLES

Table		Page
1	Estimated Beef Production, Quantity of Beef Consumed, and Cattle Population in 1963 and 1970, with Percentage Change, Kenya . . . . .	5
2	Estimated Balance of Beef Available and Domestic Consumption Demand, with Allowance for Increase in Per Capita Consumption, 1963 and 1970 . . . . .	6
3	Resultant Increase in Yearly Off-take with New Development and Improvement of Movement Facilities, by Region, 1966-70 to 1970-71 . . . . .	17
4	Comparison of Two Modes of Transport by Herd Age Distribution in Northern Australia and West Africa, 1966 . . . . .	27
5	Total Cattle Sold from Non-scheduled Areas to the Kenya Meat Commission, 1957 to 1966 . . . . .	36
6	Total Deliveries of Slaughter Stock from the Former Scheduled Areas and all Geographic Market Areas to the Kenya Meat Commission, 1961-1969 . . . . .	44
7	Total Canning Production for Export, 1965-1968 . . . . .	47
8	Production and Sales of Meat by the Kenya Meat Commission, 1961-1969 . . . . .	48
9	Grades of Cattle from Areas of Commercial Production Compared with Grades in Areas of Traditional Attitudes toward Livestock, Kenya, 1958-1966 . . . . .	61

## INTRODUCTION

### General Description

Kenya, which attained independence on December 12, 1963, from Great Britain, lies evenly on the equator in East Africa. It is bounded on the north by Ethiopia and Sudan, on the west by Uganda, on the south by Tanganyika, and on the east by the Indian Ocean and Somaliland (Appendix I). Its total area is 224,960 square miles, including 219,790 square miles of land area.

Most of Kenya is located in the central plateau where the elevation averages 4,000 feet. The northern and northeastern parts of the country are about 60 per cent desert, and, occasionally, rainfall is under 10 inches here. These areas comprise over half of the total land area of Kenya. The nomadic people comprise the majority of the 1.5 million people in this area. The southern part lies in the coastal region and in the highland plateau. There the elevation ranges from 3,000 feet to 10,000 feet. This region is inhabited by more than 80 per cent of the population of the country. It is also in this area that almost all economic activities take place. The annual average rainfall in this zone southward and westward is around 40 inches, although toward the Indian Ocean it is quite dry. The annual mean temperature is about 70°F. This varies with altitude. Despite little seasonal variation in temperature, there occur both long and short rains between the months of April and June and between October and December, respectively.

Kenya has a total population of 9,948,000 people, as estimated in 1968, with a growth rate of 3 per cent per year. Only slightly above 3 per cent of the population lives in the towns.

With limited mineral resources, Kenya is primarily dependent upon agriculture. This is likely to remain so in the future because of the insignificant contribution of the manufacturing sector to the net national product.

In the past, much of the development effort in agriculture has been concentrated on coffee, tea, sisal, pyrethrum, and cotton because of their relative economic importance. However, in the last few decades, there has been an increasing tendency toward giving due attention to the development of other industries in order to diversify the economy. One of these is the beef cattle industry.

Expansion of the development of the beef cattle industry has been justified because of population increases and rising purchasing power. The beef cattle industry also provides about 12 per cent of the country's export earnings. In order to increase beef output, much emphasis has been placed on improvement in production practices of beef cattle. Despite these efforts, indications are that the shortages of meat supplies persist. The government has responded to this problem of shortages with several cattle development programs. While this has been done, not all the sources of concern have been eliminated. Among the major sources of concern which are to be examined in this report are: (1) responsiveness of production to market requirements, (2) marketing facilities, (3) marketing systems

and sales methods, and (4) the traditional regard for keeping cattle.

### Objective

The objective of this paper is to attempt an investigation of the major marketing and traditional factors influencing market off-take and yield of slaughter cattle from the national herd. The off-take here may be defined as the annual proportion of cattle in the national herd sold and slaughtered for their meat to satisfy both the domestic and export needs.

### Scope

Since beef cattle are of far greater importance in the monetary sector of the economy than all other forms of livestock, the scope of this paper is confined only to the analysis of beef cattle. Use of the term "livestock" is synonymous with cattle in this report.

## CATTLE PRODUCTION AND BEEF SUPPLY PROBLEM

### Supply and Demand Projections

For the purpose of this investigation, reference to the cattle industry applies to the industry's commercial output. According to a 1967 report of the United Nations on a livestock survey in East Africa, the success of the development of the beef cattle industry can be measured only in terms of the ability of the industry to meet domestic demand and export

requirement.<sup>1</sup> It was estimated in that report that a "serious shortage of meat" would prevail in Kenya through 1970. The local supply of meat available in 1970 would be inadequate to satisfy not only the domestic consumption but also export needs. Local demand has been rising rapidly owing to an ever-increasing human population.<sup>2</sup> Even if an assumption is made that there will be no rise in per capita consumption, a short supply situation still prevails.<sup>3</sup> Data assembled in Tables 1 and 2 show the supply and demand situation, assuming constant per capita consumption. On the basis of observation of data in Table 1, between 1963 and 1970, consumption was estimated to grow as much as production with no change in per capita consumption.

This table also shows that the total quantity of beef available for export in 1970 was expected to fall by approximately 43 per cent from its level in 1963. Another significant observation was that the increase in total volume of meat production from 1963 to 1970 was estimated as 8 per cent. This appears to be the same figure representing the proportionate increase in the number of cattle in the national herd in 1970 over 1963. Thus, the total market off-take of cattle for

---

<sup>1</sup> Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. I (Rome), 1967, p. 53. This concerns "development requirements" in Uganda, Tanzania and Kenya. This publication comes in three volumes. Volume III consists of maps.

<sup>2</sup> Food and Agriculture Organization, op. cit., Vol. I, p. 80.

<sup>3</sup> Ibid., p. xxi.

TABLE 1  
ESTIMATED BEEF PRODUCTION, QUANTITY OF BEEF CONSUMED,  
AND CATTLE POPULATION IN 1963 AND 1970,  
WITH PERCENTAGE CHANGE, KENYA

Observation	Quantity in Pounds		Per cent Change
	1963	1970	
Total Domestic Consumption	180,700,000.0	225,000,000.0	24.5
Per Capita Consumption	20.4	20.4	0
Production for:			
Domestic Consumption	164,700,000.0	208,700,000.0	26.6
Export	61,500,000.0	35,100,000.0	-42.9
Total Production	226,200,000.0	243,800,000.0	8.0
Total Domestic Deficit			
(total production for domestic consumption less total domestic consumption)	16,000,000.0*	16,300,000.0*	15.8
Cattle Population	6,600,000.0	7,100,000.0	8.0

Source: Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. II, pp. 134-135.

\*Figures represent quantities imported to make up for domestic deficit. Source of imports is unknown.

slaughter was projected to rise only in direct proportion to an increase in the number of cattle.

It has not been easy to calculate with accuracy the responsiveness of production to consumption of meat:

The annual off-take of stock is difficult to determine because statistics are lacking. One way to estimate the off-take is to calculate the annual increase and to consider this the off-take. The calculations are based on intelligent guesses and assume that total livestock numbers remain the same each year. This is not quite true

TABLE 2

ESTIMATED BALANCE OF BEEF AVAILABLE AND DOMESTIC CONSUMPTION DEMAND, WITH ALLOWANCE FOR INCREASE IN PER CAPITA CONSUMPTION, 1963 AND 1970

Year	Production for Domestic Consumption Minus Consumption Demand, pounds		Level of per Capita Consumption, pounds	Resulting Deficit, pounds
	Production for Domestic Consumption	Total Demand		
1963	164,700,000	180,700,000	20.4	-16,000,000
1970	208,700,000	225,000,000	20.4	-16,300,000
1970	208,700,000	233,800,000	21.3	-25,100,000
1970	208,700,000	253,800,000	23.1	-45,100,000

Source: Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. II, pp. 134-136.

because the numbers increase in some years and decrease in others. Whatever the inaccuracies, the estimates are given to show the general magnitude of animal production and consumption.

If one considers that the calf crop is 80 per cent each year and that it takes five years for an animal to reach marketing condition, then the annual increase would be 80 for each 500 animals in the herd. Mortality probably reduces the number raised to 60. This is a 12 per cent increase and it may also be a fair estimate of the percentage off-take each year.<sup>4</sup>

Kenya's human population has been increasing at an annual average rate of approximately 3 per cent.<sup>5</sup> The average annual rate of increase in cattle population has been 1 per cent, according to

<sup>4</sup> H. F. Heady, Range Management in East Africa, printed by the Government Printer, Nairobi, Kenya, 1960, p. 97.

<sup>5</sup> Dr. I. Mann, Food and Agriculture Organization of the United Nations, AN:AFA/69/19, October 13, 1969. This is a "Second FAO African regional conference on animal production and health" held in Kinshasa, Congo - November 28 to December 6, 1969, p. 23.

Table 1. These rates are not expected to change in the foreseeable future. It seems that in the past such an annual increase in animal population has not provided enough meat for the human population with an annual increase of the order just mentioned.

Kenya's production of slaughter livestock is lagging behind the increase in internal demand for meat. The objective of this paper is to investigate possibilities for increasing off-take and liveweight through improvement in the performance of the marketing system for cattle and through changes in the traditional bases for the keeping cattle in Kenya.

At present, consumption per capita is as low as 20 pounds.<sup>6</sup> In 1963, when consumption also was estimated as 20 pounds per person, the beef deficit was only 16,000,000 pounds, but in 1970, with the same level of consumption per head, the deficit rose by 300,000 as shown in Table 2. However, the deficit increased markedly when consumption per capita was increased to approximately 21 pounds and 23 pounds.

#### Limiting Factors: Alternative Possibilities of Increasing Meat Output from Local Cattle

If measures are to be taken to improve this situation, it is better first to understand the major factors limiting an increase in the output of meat from local cattle. These factors have been enumerated as low market off-take, low yield per

---

<sup>6</sup>Animal Production Division, Ministry of Agriculture, Government Printers, Nairobi, Kenya, June, 1969, p. 2.



slaughter animal and small cattle population. It has been suggested that a larger volume of meat can be produced only if the levels of each of these factors are raised.<sup>7</sup>

Expanding the level of cattle population requires the development of more than 5,500,000 acres of vacant range lands and other pastures suitable for use to fatten more cattle. But while this is being suggested, it is similarly pointed out that there are vast areas in Kenya such as Kitui and Samburu districts where overstocking is widespread and where reduction in the number of cattle is badly needed. In this case, therefore, a redistribution of cattle rather than a simple increase is needed.

It has also been suggested that the quickest way to increase the number of cattle is to improve the veterinary services and to improve range lands.<sup>8</sup> There, too, it is pointed out that all these have been undertaken. For example, a half a decade ago some of the range lands referred to above, which carried only 40,000 cattle per year, today carry up to more than 200,000 cattle per year. Further efforts to expand the development of range lands cannot be possible (or could not be effective) without the development and improvement of cattle marketing.<sup>9</sup> This suggests that the size of herd is not a limiting factor in meat production today in Kenya.

---

<sup>7</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 53.

<sup>8</sup>Ibid., p. 55.

<sup>9</sup>Beef Production, Kenya Ministry of Agriculture, Government Printers, May, 1970, pp. 2-3.

Range lands, as referred to above, have been well-defined as follows:

Range areas are peculiar unto themselves. They are not responsive to the agricultural practices used on ley pastures including cultivation, intense rotations with crops or with livestock and other general farming techniques. The plant species are different, the growing periods are often short, rainfall is low and erratic, the weed species are different, and production per acre is inherently low. In these semi-arid areas, management must be geared to the natural complex of vegetation, soil, animals and climate.  
 . . .<sup>10</sup>

A second possibility involves raising the liveweights of slaughter cattle from the present herd. The ideal way of doing this is to move both mature and immature cattle from the areas where pasture conditions are poor to potentially productive areas for fattening. This has been done successfully in other countries. Even in Kenya, between 1957 and 1966, commercial ranchers moved young animals from the pastoralists and fattened them under more favorable conditions. This helped increase average cold-dressed weight to 430 pounds while the average weight was only 270 pounds for animals from pastoral areas. It is said that if young animals were taken off the least potential lands, say at the rate of 30 per cent per year, to potentially productive pastures, a substantial volume of beef would become available simply as a result of gain in liveweight.

Attention has also been given to the possibility of moving old animals from distant pastoral areas to assembling points with "more reliable pasturage." This allows these animals to be

---

<sup>10</sup>H. F. Heady, op. cit., p. 7.

fattened and finished before slaughter, thus diverting them from being walked over large areas in search of water each day. It has been found that when old Zebu animals are put under better grazing conditions for one year, they grade much higher. At the same time, they have also been found to gain extra liveweight, averaging at least 200 pounds as a result. But this figure is increased twice as much when old "thin" cattle from pastoral areas are treated similarly.

Unfortunately, however, over-all beef production can be increased quickly only after improving "marketing facilities" to enable a steady flow of a larger bulk of both young and old cattle from remote pastoral areas to areas where rearing conditions are favorable for fattening.<sup>11</sup> There seems to be much scope for increasing beef production in Kenya.<sup>12</sup> But unless alternative and better stock routes and assembling grounds are established, a shortage of beef supplies will continue to prevail. Improvements of these facilities also would help reduce greatly the number of animals which have been slaughtered or have died prematurely and those cattle which have declined in "liveweight" en route.<sup>13</sup>

Nevertheless, even if cattle marketing were markedly improved, it is said that traditional factors still would limit

---

<sup>11</sup>Food and Agriculture Organization, op. cit., Vol. II, pp. 54-55.

<sup>12</sup>Animal Production Division, op. cit., p. 2.

<sup>13</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 55.

the number of cattle taken off the producing areas for fattening elsewhere. Cattle often are kept for such purposes as an indication of a person's wealth and as a source of food. These factors encourage the keeping of large numbers.<sup>14</sup>

Finally, suggestion has been made that meat supplies can quickly be increased by raising the proportion of salable cattle for slaughter from the present herd size.<sup>15</sup> This could be done by culling males which are not productive and/or cows which are not fertile. It has been estimated that the districts of Kitui and Samburu alone could provide a total of 40,000 head of such animals each year. Considerable volume of meat would be made available to the market if this were carried out without a decrease in the number of calves to be produced later. At the same time this would increase the feed available to uncultured animals, thus increasing the likelihood that they will be marketed at higher weights.

It has been suggested also that the off-take can be raised by improvement of marketing facilities. This is needed in order to reduce shrinkage when cattle are held in quarantine in transit to the market.<sup>16</sup> But here too, the limiting factors are still cultural concerns and marketing problems,<sup>17</sup> as will be seen later.

---

<sup>14</sup>Beef Production, op. cit., p. 3.

<sup>15</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 53.

<sup>16</sup>Ibid., p. 54.

<sup>17</sup>Ibid., p. 53.

Undoubtedly, marketing problems and the reluctance of herders to sell their cattle seem to be strong factors affecting alternative solutions to the shortage of meat. It is on these factors that attention is focused next.

#### INADEQUACY AND POOR STATE OF MARKETING FACILITIES

##### Stock Routes and Quarantine Grounds

In order to prevent the proliferation of disease-infected cattle which may result in unsuccessful marketing due to ensuing high mortality and condemnation rates,<sup>18</sup> movement of cattle to the market has been restricted by establishing special routes. Along these routes quarantine areas have been developed where livestock are inspected and vaccinated.<sup>19</sup> However, holding livestock in these quarantines cause great inconveniences in marketing animals from remote areas. Quarantine regulations have caused long delays. When these delays occur, it is obvious that the regular flow of cattle is interrupted. Three weeks are required for each animal to be immunized against such diseases as foot and mouth infections, anthrax, rinderpest and blackleg. The incubation period may be at least 35 days, owing to uncertainty in the effectiveness of simultaneous use of all vaccines. It is required to be at least 60 days. Serological tests and vaccinations against certain other diseases may delay further the

---

<sup>18</sup>R. F. Burdette and J. C. Abbott, Food and Agriculture Organization Marketing Guide No. 3, "Marketing Livestock and Meat" (Rome), 1960, p. 16.

<sup>19</sup>H. F. Heady, op. cit., pp. 100-101.

quarantine time. These delays may be needed for the recovery of young animals which have been driven over long distances to the quarantine grounds before reaching the place where they are to be fattened.

Moreover, it takes a considerable amount of time to notify buyers at auction sales where much of the slaughter cattle changes hands. Additional time also is required to fix the date for these sales after sufficient cattle have gone through the minimum quarantine period. Consequently, these delays must have held up a steady flow of slaughter cattle to the market. Furthermore, the fact that buyers must be notified of auction sales and the dates fixed for these sales suggests that sales are irregular.

In general, it is noted that quarantine grounds are not large enough to accommodate a large number of animals at one time. Only a small number can be held in them and only for a certain length of time. Experience shows that where the number of animals quarantined or the period of quarantine has been considerably increased, some animals have deteriorated both in weight and in quality, and others have died. It has been suggested that if present quarantine grounds were to be improved and alternative ones provided with proper water, dipping, yarding and crushing facilities, greater numbers of slaughter cattle would be moved to the market steadily. The argument is that it is not likely that movement restrictions will have to apply to all of them at the same time.<sup>20</sup>

---

<sup>20</sup>Food and Agriculture Organization, op. cit., Vol. I,  
p. 102.

However, the number of quarantine grounds is limited by an inadequate number of stock routes. A typical example is the northern districts which are served by only one or two routes as shown in Fig. 1. Here restrictions are quite tight.<sup>21</sup> It is in the northern part of the country where livestock is produced in great numbers.<sup>22</sup> Concentration of human population per square mile in the northern areas is low, relative to the southern part of the country. Therefore, the main consuming area lies in this latter part, particularly in urban areas and Central and Nyanza Provinces. Due to the aridity of the region, animals can be moved to the market only during the brief rainy seasons of the year. Even if sufficient water supplies were permanently provided to permit constant movement of cattle to the market through most of the year, as has been suggested, marketing would still be held up due to inadequate cattle routes. It has already been pointed out that the existence of disease does not have to interrupt marketing practices if alternative routes were opened up. Lack of alternative cattle routes and quarantine areas, for example, led to a reduction of sales in 1965. This happened despite the anxiousness of cattle raisers to offer their animals for sale because of an insufficiency of

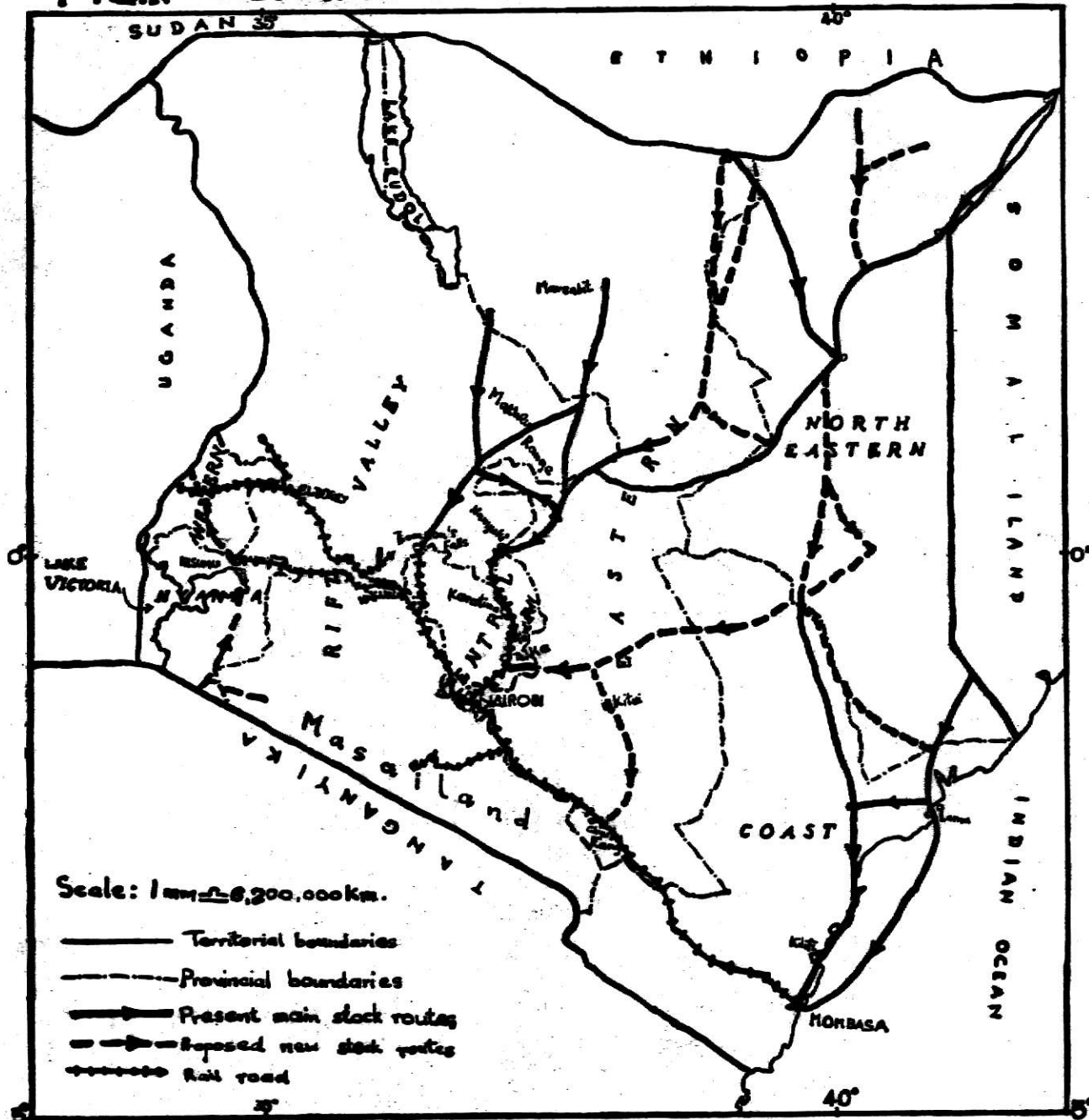
---

<sup>21</sup>Food and Agriculture Organization, op. cit., Vol. I,  
p. 102.

<sup>22</sup>Sir Michael Blundel, African Land Development in Kenya,  
1946-1962. This is published by the Ministry of Agriculture,  
Animal Husbandry and Water Resources, Nairobi, Kenya, 1962,  
p. 272.



**FIG.1. KENYA'S PRESENT AND PROPOSED NEW STOCK ROUTES**





fodder in that year.<sup>23</sup> All this attempts to indicate that inadequate stock routes and quarantine grounds have been disrupting the marketing of cattle.

In effect, this calls for the establishment of more movement facilities, stock routes and quarantine and holding areas in order to allow more cattle to be sold steadily.<sup>24</sup> It has been stated that such "facilities have a strong priority claim on resources available for the development of the beef industry."<sup>25</sup> Table 3 attempts to indicate the effect of developing new and improving existing movement facilities on the number of cattle marketed from pastoral areas. The rate of off-take is increased by 2 to 3 per cent or by a total of 71,500 head of cattle per year. This supports the contention that inadequate and poor condition of movement facilities are in part responsible for a small number of cattle traded annually. It is also probable that inadequacy of these facilities has contributed to the low yield per head of slaughter stock.

It was said earlier that one of the ways to increase meat supplies is to increase the liveweight of animals. But since it was pointed out that "quarantine forces destocking,"<sup>26</sup> and since it has been mentioned that quarantine grounds and stock routes

---

<sup>23</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 104.

<sup>24</sup>H. F. Heady, op. cit., pp. 100-101.

<sup>25</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 102.

<sup>26</sup>H. F. Heady, op. cit., p. 100.

TABLE 3

RESULTANT INCREASE IN YEARLY OFF-TAKE WITH NEW DEVELOPMENT  
AND IMPROVEMENT OF MOVEMENT FACILITIES, BY REGION,  
1966-70 TO 1970-71

Region	Movement Facilities		Resultant Increase in Off-take Head of Cattle
	New	Improved	
Northern	Quarantine areas	Water supplies	36,700
Coast	Quarantine areas Stock routes		12,800
Masailand	Holding grounds	Stock routes	14,000
Northwest	Holding grounds Stock routes		8,000
Nyanza and Western	Quarantine areas		--
Total			71,500

Source: Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. I (Rome), 1967, pp. 119-120.

are inadequate, it is thus probable that all this has contributed to the low yield per head of slaughter stock. The productivity of beef per head of animals slaughtered has been approximately 27 pounds per year in Kenya<sup>27</sup> compared to 155 pounds in North America and Western Europe.<sup>28</sup> This low yield is attributed to

<sup>27</sup>Food and Agriculture Organization, AN/IWP/AF/2, Vol. 2, "The Livestock Industry of Africa South of the Sahara," 1968. This deals mainly with "Tables of Production, Consumption, Trade and Value of Animal Products 1961-63," p. 33.

<sup>28</sup>Food and Agriculture Organization Africa Survey. This is a "Report on the Possibilities of African Rural Development in Relation to Economic and Social Growth" (Rome), 1962, p. 94.

overstocking.<sup>29</sup> Keeping great numbers of cattle on the land beyond a certain carrying capacity has had destructive influence on pastures thus leading to soil erosion.<sup>30</sup> This is said to be the worst use of grazing. Animals reared under these circumstances have been in extremely poor condition due to lack of adequate feed.

Solution to this problem has been "to balance the numbers of livestock with feed supply and thereby improve condition and production."<sup>31</sup> This has been done by reducing the number of livestock. Cattle sold as a result of a reduction in their number are those whose condition has been the worst. Pointing up the significance of stock reduction, the following statement illustrates it well:

This is good husbandry, but at the same time such animals do not find markets. It fits, even though small, they should find market . . . . The price received may be low, but the need for destocking is sufficiently great that it must be done even if subsidy is necessary. Experience with destocking in the Rift Valley Province of Kenya indicates that disposal of poor quality stock can be accomplished even if they go for hides and skins.<sup>32</sup>

Under proper land and animal husbandry practices the problem of poor-condition animals will solve itself. . . . eventually better breeding and feeding will produce animals readily marketable.<sup>33</sup>

---

<sup>29</sup> Walter Deshler, Geographical Review, "Cattle in Africa: Distribution, Type and Problems," 1963, p. 58.

<sup>30</sup> A. T. Grove, Africa South of the Sahara, published by Oxford University Press, 1967, p. 56.

<sup>31</sup> R. F. Burdette and J. C. Abbott, op. cit., p. 14.

<sup>32</sup> H. F. Heady, op. cit., p. 99.

<sup>33</sup> Ibid., p. 100.

It is well recognized that a scheme designed to improve rangeland can be successful only if surplus cattle are moved to the market continuously.<sup>34</sup> However, for decades cattle "sales" have been interrupted in Kenya, "often prolonged, by veterinary quarantine" aimed at preventing outbreaks of animal diseases. Veterinary controls (as has been stated above) have had the effect of overstocking complicated by inadequate stock routes and holding grounds. It is this situation that has contributed to low production of meat from local cattle in Kenya.

#### Transport and Handling Methods of Cattle to the Market

In Kenya as well as throughout Africa the common way of transporting cattle to the market is "on the hoof," simply because this is the most economical method. One explanation for this is that in some areas there are only about 5 head of cattle per square mile as compared with from 102 to 250 head per square mile in Western European countries.<sup>35</sup> It has also been explained that where animals are moved on the hoof the routes along which they are driven to the market have been too inadequately and poorly developed to allow for the development of mechanical methods of transport used in the developed parts of the world.<sup>36</sup>

---

<sup>34</sup>Ibid., p. 100.

<sup>35</sup>Food and Agricultural Organization of the United Nations, Economic Commission for Africa, "African Agricultural Development," 1966.

<sup>36</sup>Ibid., p. 105.

The use of this mode of transport in Kenya, however, cannot be explained by low density of cattle since in most areas of Kenya the concentration of cattle ranges from 100 to over 250 head per square mile.<sup>37</sup> Movement on the hoof is due to the fact that the main producing areas have not been adequately linked by modern systems of transport.<sup>38</sup> Other areas have had no such systems at all.<sup>39</sup>

The remote regions of Kenya which supply the more densely populated central areas with beef cattle for slaughter or "fattening" are: (a) some areas of Nyanza and the Western Provinces, (b) Masailand, (c) Northwestern areas (Turkana, West Pokot, Elgeyo and Marakwet and Baringo), (d) Coastal areas (Kilifi, Kwale and Teita) and (e) Northern Province, which runs to the east from Lake Rudolf to the boundary of Somalia and southeast covering areas of Lamu and Tana River. This latter region is over half of the total areas of Kenya and is said to be "the most important source of both immature and slaughter stock." There are no viable alternative methods of transport in most of these beef cattle areas. It is pointed out, for instance, that railroads serve "only small parts of these areas."

---

<sup>37</sup> A. M. O'Connor, An Economic Geography of East Africa, published by Frederick A. Praeger, 1966, p. 108.

<sup>38</sup> Judith Heyer, Dunstan Ireri and Jon Moris, Institute for Development Studies - Social Science Division, University College of Nairobi, "Rural Development in Kenya." This is "A Survey of Fourteen Districts with Recommendations for Intensified Development," December, 1969, pp. 97-98.

<sup>39</sup> Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 24.

The use of "road" trucks is costly and therefore not practicable.<sup>40</sup> Shipping beef cattle by air is far "too expensive."<sup>41</sup> Shipping by waters involves mostly those cattle delivered from Lamu to Mombasa.<sup>42</sup> He further illustrates:

. . . The ultimate objective should be the substitution of road, rail, sea or lake transport both for slaughter and immature stock. The meat producing areas, and particularly the beef cattle breeding areas of the pastoralists, are, unfortunately, the least well served with communications and it is likely to be many decades before it will be economically possible to eliminate altogether the long distance treks on the hoof. For most of these areas road transport, using heavy vehicles of large capacity, requiring all-weather standards of roads and bridges, is probably the only possible eventual alternative.

Even now, however, there are some areas served with road communications of sufficient standard, which could, without prohibitive cost be brought up to the standard required, to permit the transport of cattle by vehicle. Whether it would be economical to do so depends on the length and other circumstances of each particular trek. It is not possible to generalize and the comparative economics governing the different methods of livestock movement need to be worked out in each case. When comparing the costs of transport by road, rail or water with those on the hoof, factors have to be taken into account such as, for example, herdsmen's wages, grazing feed, inoculation charges, comparative losses from shrinkage, loss of condition, thefts or deaths from disease, accident, or predators, all of which will vary according to conditions of temperature, distance, travel time, security, disease and so on. Interest charges on capital tied up in cattle moving on the hoof will be greatly reduced by quicker means of transport and the capital and recurrent charges involved in the establishment and operation of the water supplies, . . . holding grounds, fenced routes, dips, etc., on stock routes required only for movements on the

---

<sup>40</sup> Food and Agriculture Organization, op. cit., Vol. I, p. 104.

<sup>41</sup> R. F. Burdette, and J. C. Abbott, op. cit., p. 14.

<sup>42</sup> Food and Agriculture Organization, op. cit., Vol. II, p. 88.

hoof must be calculated. Estimates must also be made of the disease losses incurred in areas through which stock routes pass due to infections transmitted by livestock moving on the hoof. The question of whether or not return loads can be obtained for vehicles transporting livestock to abattoirs or quarantines will also affect the comparative economics.<sup>43</sup>

### Constraints Imposed by On-the-hoof Transport

It is said that where the common mode is on-the-hoof transport it is not likely that critical shortages of meat supplies can be overcome. Trekking animals over great distances (under great heat) causes greater shortages of meat than alternative means of transport in two ways. The first one involves heavy losses from deterioration in weight and quality, death and bruising.<sup>44</sup> The other entails deferred off-take resulting from age constraint imposed on young animals.<sup>45</sup>

Concerning weight and quality, it is noted in Kenya that transporting slaughter cattle by motor trucks does not incur as much loss in weight as by trekking overland.<sup>46</sup> Loss in weight is greater when animals have been unusually strained, or made to fear, or have been excited or subjected to dry, hot weather. Data are not available to determine the extent of weight loss

---

<sup>43</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 103.

<sup>44</sup>Ibid., p. 103.

<sup>45</sup>Food and Agriculture Organization of the United Nations, E/CN.14/AGREB. 10, Agricultural Economics Bulletin for Africa, No. 10, July, 1968, p. 57.

<sup>46</sup>H. F. Heady, op. cit., p. 101.



under each of these circumstances when animals are being driven.<sup>47</sup> However, many studies have come out with different estimates concerning loss in liveweight. One of these studies found that 62 pounds are lost in trekking 813 miles. In 1962, it was reported that over 30 per cent of the total weight per head was lost when driving cattle on foot between Upper Volta and Accra.<sup>48</sup> Others have found that when walking animals as far as from 500 to 800 miles under different "conditions" of the journey, weight loss varied from 84 to 168 pounds for each animal trekked.<sup>49</sup> In Kenya where a starting live weight averages 270 pounds<sup>50</sup> for one third<sup>51</sup> of 180,000 slaughter animals handled by the commission<sup>52</sup> trekking 700 miles,<sup>53</sup> involving total movement of about 60,000 head of such animals per year, such a figure means enroute losses of between 31 and 62 per cent or an average loss of 47 per cent for the trek. Using this average rate, the resultant total loss would be 7,614,000 pounds.

---

<sup>47</sup> R. F. Burdette and J. C. Abbott, op. cit., p. 39.

<sup>48</sup> Agricultural Economics Bulletin for Africa, No. 10, op. cit., p. 57.

<sup>49</sup> Ibid., p. 57.

<sup>50</sup> Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 24.

<sup>51</sup> Ibid., p. 17.

<sup>52</sup> Mwai Kibaki, A Guide to Industrial Investment, Ministry of Commerce and Industry, Government Printer, Kenya, Dec. 1967, p. 13.

<sup>53</sup> Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 24.



This represents 28,200 head of such cattle lost during on-the-hoof journeys. Commercial traders do not expect a loss in liveweight to exceed 6 per cent for animals covering 188 miles on foot.<sup>54</sup> The magnitude of such a loss in Kenya is considerable, thus indicating that on-the-hoof movement has been one of the factors limiting volume of meat supplies available for consumption in Kenya.

In addition to weight loss, reduction in "fat and finish" is said to be considerably higher than if the animals were transported by other quicker means of transport. This requires slaughter to be delayed; the result of which is meat shortages in the meantime. For example, in northern Australia it has been noted that the condition of the animals deteriorates so much after a long journey to the slaughtering installations that they have to be delayed one more year of grazing, whereas the grades of those transported by air remained consistent or constant.<sup>55</sup>

Bruises and deaths en route to the market also cause great losses. It is not easy to eliminate losses completely regardless of the method of transport. But there is a level of loss from death which can be tolerated when animals are either railed or trucked. The level stated is that for every 10,000 cattle, losses from death should not be in excess of 30 young or 5 old animals.<sup>56</sup> In this case, it is easy to assume that premature

---

<sup>54</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 43.

<sup>55</sup>Ibid., p. 43.

<sup>56</sup>Ibid., p. 40.

death losses en route when animals are moved on the hoof as is the case in Kenya must be so great as to be a contributing factor in the short supply of beef available for consumption.

Losses from bruises when animals are moved on foot also can be assumed to be greater than would be under modern modes of transport. The extent of waste pertaining to bruising is not easy to determine except after the animal has been slaughtered. Sale of meat must be preceded by removal of bruised parts. It is stated that in many cases the proportion of beef carcass lost following removal of bruised areas is between 10 and 20 per cent. This rate of waste represents a considerable cost to the buyers; it makes them reject buying such cattle. In light of this, bruising probably has hindered sale of cattle thus limiting production of meat from local cattle in Kenya even though pertinent data are lacking. A typical case in South Africa can help illustrate this conclusion:

. . . Rejections for bruising once reached such serious proportions as to retard the development of the South Africa beef export trade. The average of beef carcasses rejected for export shipment due to bruises exceed 12 per cent. An investigating committee observed that this high percentage was caused by . . . improper handling during transport and inadequate transport facilities . . .: it was of the opinion that better handling and transport methods could reduce bruising losses to about 1 or 2 per cent.<sup>57</sup>

Walking cattle over long distances to the market presents great difficulties so that only mature ones are able to undertake the journey.<sup>58</sup> Death and loss in immature cattle are

---

<sup>57</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 42.

<sup>58</sup>Food and Agriculture Organization, Agricultural Economics Bulletin for Africa, No. 10, op. cit., p. 59.

"exceptionally high" thus they are held up much longer to build up the strength for the trek. In 1950, it was found in Nigeria where cattle are held up for 6 years before they are walked to the market that this "constituted a major limitation on output . . . ." <sup>59</sup> Table 4 illustrates the limitation imposed by on-the-foot movement. In northern Australia, where trucks are used to transport slaughter stock to the market, the age of such animals does not exceed 4 years. However, in West Africa where cattle are moved on foot it appears that mostly those which are much older can undertake the trek. In terms of yield per head slaughtered, it has been found that when both methods of transport are compared, they differ by 44 per cent. In West Africa where bulls are marketed at a much older age, the yield for each animal slaughtered is no more than 32 pounds of carcass weight of which the proportion of exportable grade is said to be approximately 5 per cent. This means that in Kenya where animals are driven on foot, and as such the journey must be undertaken only by the more mature animals, it can safely be concluded that this mode of transport has been a real factor limiting meat output. It is vividly pointed out that:

. . . Introduction of truck transport and elimination of older animals, male and female, could either free scarce water and range resources or permit a more economic age/sex distribution with the same number of cattle as are presently held. <sup>60</sup>

---

<sup>59</sup> R. F. Burdette and J. C. Abbott, op. cit., p. 27.

<sup>60</sup> Food and Agriculture Organization, Agricultural Economic Bulletin for Africa, No. 10, op. cit., p. 59.

TABLE 4  
COMPARISON OF TWO MODES OF TRANSPORT BY HERD AGE  
DISTRIBUTION IN NORTHERN AUSTRALIA AND  
WEST AFRICA, 1966

Category and Age of Livestock Category      Age (in years)		Per cent of Total Livestock Population	
		Northern Australia: Truck Transport	West Africa: On-the-hoof Transport
Cows and Heifers	2 and above	33.7	31
Heifers	1 and 2	10.9	9
Heifer Calves	Below 1	11.4	10
Bull Calves	Below 1	10.4	8
Bulls	1 and above	2.5	10*
Bullocks	1 to 3	19.6	14
Bullocks	3 to 4	9.5*	6
Bullocks	4 to 5	-	5
Bullocks	5 to 6	-	5*
"Spayed and Culled Cows"		2.0*	2*
Total		100.0	100

Source: Agricultural Economics Bulletin for Africa, Food and Agriculture Organization of the United Nations, Bul. No. 10, July, 1969.

\*Category of animals constituting commercial sales in Northern Australia approximately 12 per cent off-take and in West Africa 8 per cent off-take.

. . . A saving of one year in the marketing age there would permit an immediate increase in herd output of 10 to 15 per cent from the same feed resources.<sup>61</sup>

In fact, driving animals on foot has been a factor in curtailing the supply of needed "numbers of store and immature stock for fattening and breeding" in Kenya. Ultimately, this has hindered development of commercial ranches in the country, thus making it

<sup>61</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 27.

difficult to increase the productivity of slaughter stock.<sup>62</sup>

The loss and waste resulting from on-the-hoof transport may be eliminated by locating slaughtering factories near the producing areas and by moving meat by refrigerated trucks to the main consuming areas.<sup>63</sup> Another alternative is to move live cattle by vehicle. As has already been stated, most of the producing areas are presently not served by mechanical methods of transport. In any case both of these suggestions must await the economic analysis of comparative costs which is non-existent at the present time. In this regard it has been recommended for Kenya to:

. . . Undertake a detailed survey of comparative costs on all routes where livestock are at present trekked in substantial numbers and where road communications are (or can readily be made) suitable for the passage of seven ton vehicles during most of the year.<sup>64</sup>

#### MARKETING INSTITUTIONS AND SALES METHODS

There are three marketing institutions which are involved in the cattle trade in Kenya. These institutions, which are the only link between the main producing and consuming areas, are: (a) butchers and/or traders, (b) the Livestock Marketing Division of the Veterinary Department, and (c) the Kenya Meat

---

<sup>62</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 27.

<sup>63</sup>R. F. Burdette and J. C. Abbott, op. cit., pp. 86-87.

<sup>64</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 104.

Commission.<sup>65</sup> Each of these institutions operates within its own designated geographic market area.

#### Imperfections in the Markets for Livestock and Meat

The way livestock marketing and sales method is arranged in Kenya has encouraged the existence of market imperfections sufficient to limit the off-take of slaughter cattle. These are not apparent without further examining the market of both cattle and their products in each geographic market area. The main category of geographic market areas is both the former Non-Scheduled Areas and the former Scheduled Areas.

The former Non-Scheduled Areas are the areas which during the British rule were reserved for settlement by the Africans. These areas are intermingled with the former Scheduled Areas. Subsistancy farming in the former Non-Scheduled Areas is still widespread.<sup>66</sup> Nevertheless, these are the main cattle-producing areas of Kenya. As of 1967, there were around 6,707,800 beef cattle owned by many independent individual small-holders and pastoralists.<sup>67</sup>

On the other side of the cattle market, "buying in the former Non-Scheduled Areas has been left almost exclusively in

---

<sup>65</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 27.

<sup>66</sup>Hans Ruthenberg, IFO-Institut fur Wirtschaftsforschung, Munchen Afrika-Studien Nr. 10, "African Agricultural Production Development Policy in Kenya 1952-1965. Published by Springer-Verlag Berlin-Heidelberg, 1966, pp. 3-6.

<sup>67</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 31.

the hands of traders and local butchers."<sup>68</sup> Traders and/or butchers are individuals who have been granted license to freely participate in the cattle trade. These local individuals are neither permitted to buy cattle in the former Scheduled Areas nor in the Northern and Northeastern districts in the former Non-Scheduled Areas. Purchasing of cattle in these areas is open only to the Kenya Meat Commission and the Livestock Marketing Division, respectively, as will appear later. Most cattle bought by butchers and traders are re-sold and slaughtered for local consumption. The rest is re-sold to the Kenya Meat Commission.<sup>69</sup>

Data are not available on specific annual volume of sale destined for slaughter. However, it can be calculated that since only one third<sup>70</sup> of the total 180,000 head of slaughter stock handled by the Kenya Meat Commission per year<sup>71</sup> comes from the former Scheduled Areas, and since total annual cattle purchases by the Commission account for 25 per cent of the total cattle sold in Kenya,<sup>72</sup> the annual volume of transaction from the former Non-Scheduled Areas is 660,000 head of cattle. This

---

<sup>68</sup>Food and Agriculture Organization, op. cit., Vol. II,  
p. 85.

<sup>69</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit.,  
p. 25.

<sup>70</sup>Ibid., p. 24.

<sup>71</sup>Mwai Kibaki, op. cit., p. 241.

<sup>72</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit.,  
p. 23.



represents an off-take of about 9.8 per cent,<sup>73</sup> in comparison to the total national rate of 12 per cent mentioned earlier. This low percentage off-take from the former Non-Scheduled Areas is due not only to the imperfections of the market, but also to the traditional attitudes of producers in these areas which are discussed under Sections V and VI of this report.

In all the former Non-Scheduled Areas throughout Kenya, cattle have been traded through auctions (or organized markets). Selling animals by auctions offers many advantages.<sup>74</sup> These advantages have been stated as follows:

The seller is reasonably sure of securing the market price, and does not experience the waste of time involved in prolonged haggling which is common in sales by private treaty. He runs no financial risk of not being paid for his stock - a risk which can be present in private dealings. The market authorities can lay down and control quality standards, and disease control measures can be more readily enforced. Moreover, the open selling at markets contributes greatly to an improvement in market information, particularly with reference to price differentials for quality.

In recognition of these advantages, auction markets have long been organized in the cattle-producing areas throughout Kenya and are operated by the local authorities.<sup>75</sup>

Even though it appears that there are many independent producers facing many independent buyers on the cattle market, there are imperfect-market practices which have restricted the off-take in the former Non-Scheduled Areas. These imperfections

<sup>73</sup>Percentage based on total holdings of 6,707,800 head of cattle including the Northern and Northeastern Areas.

<sup>74</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 109.

<sup>75</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 85.



include (a) collusion by buyers, (b) high market fees, (c) irregularity of scheduled sales and (d) unsuitable site and time of markets.

It may be argued that prevailing prices at auction markets are competitive because of the presence of many independent buyers. However, the fact that purchasing of animals at auctions in the former Non-Scheduled Areas has been left solely in the hands of traders and butchers has resulted in a tendency among these buyers to form a collusion to keep livestock prices down. Of the 22 districts surveyed, it was found that the average price per slaughter stock sold through auction markets rose by approximately 35 per cent in 1965 over 1962, whereas that of meat with bone per pound increased by 78 per cent in the same period.<sup>76</sup> This means that a percentage increase in price of meat more than doubled that of cattle. Figures on prices are not available to allow for comparisons of marketing margins within the former Non-Scheduled Areas or with the other geographic market areas. Precisely:

The margin between the price received by the producer and that paid by the consumer, which may appear to offer a satisfactory quantitative measure of the efficiency of different marketing organizations, does not in fact do so. This is because the margin includes charges for different levels and types of services provided by the marketing system. Thus, it can be expected to vary with the costs of cattle buying (distances, transport facilities, size of lots and so on), the costs of transport, the degree of hygiene and disease control, the need to even out intra-year flows of stock, and the degree of sophistication of the presentation of the final product to the consumer

---

<sup>76</sup>Food and Agriculture Organization, op. cit., Vol. II, pp. 86-87.

(packing, refrigeration, grading). It is not generally easy to put a value on these services.

The description of the present marketing system (and thus also the conclusions . . . based upon it) is made difficult by the lack of quantitative information. It is not in every case possible to be precise concerning the relative importance of the various marketing agencies or the prices paid for livestock and for meat, and also some agencies are reluctant to provide such information. The . . . analyses . . . are based upon the best data available.<sup>77</sup>

In any case, the existence of low prices resulting from a tendency of collusive action seems to have been a factor forcing stock suppliers to hold back their animals from organized markets.<sup>78</sup> Furthermore, where "only a few animals offered are actually sold," the likelihood is that only a limited number of purchasers will attend such auction markets. In view of this, it is suggested that:

. . . The best protection is the presence of a large number of buyers and the existence of alternative outlets to which farmers can turn if they are suspicious.<sup>79</sup>

However, such has not been the case in the areas not formerly scheduled.

The other imperfections of the cattle markets which have impeded the percentage of off-take are: (a) high market fees, (b) irregularity of auction sales, and (c) unsuitable site and time of "markets." Far too high a fee is charged on all sales to help cover the cost of operating and maintaining open

---

<sup>77</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 85.

<sup>78</sup>Ibid., p. 85.

<sup>79</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 111.

"markets." This has been discouraging the cattle owners from using auctions as an outlet through which they can sell their animals. In South Nyanza, for instance, a fee of U.S. \$0.57 is charged on each animal as it enters the "sales ring." When the opposition alone to these high fees has not been effective, producers have been forced to hold back their cattle from the market. Irregularity of scheduled sales also has been a factor. At times when open markets have been scheduled or cancelled, cattle raisers are not informed. Where this is the contrary, as it has been found in the district of Kericho, trade transactions have been much higher. Moreover, limited attendance by farmers at organized open markets because these markets have always been poorly sited and timed has also been one of the reasons for small sales. Insufficient "attention" is given to the importance of the convenience of sellers and buyers when arranging time and location of the market. In Kericho District, where information has been as good as can be expected, more cattle producers attend organized markets. Elsewhere, only a "few buyers" have been able to attend these markets. This, also, has led to formation of buyers' rings.<sup>80</sup>

Effects of these imperfections have become evident through some developments which have taken place at auction markets. For example, it is by mere direct participation of the Kenya Meat Commission at the open markets in some farming and pastoral districts in the former Non-Scheduled Areas starting sometime in

---

<sup>80</sup>Food and Agriculture Organization, Vol. II, op. cit., p. 85.

1964, that there was a considerable rise in the number of animals purchased by the commission from such areas. Before that year animals exported from the former Non-Scheduled Areas had been bought and re-sold to the commission only by the traders and the Livestock Marketing Division. Table 5 tends to indicate that if direct operation of the Commission were extended to all the areas or if new alternative outlets were created, more cattle would be sold for slaughter thus leading to increased production of meat. Over the four years beginning from 1961 to 1964 the total number of cattle bought by the Commission ranged from 167,000 to 180,000 head per year (shown later in Table 6). But from 1961 to 1964, only about 60,000 of these animals were delivered from the former Non-Scheduled Areas to the Commission through the traders and the Livestock Marketing Division. Most of these were animals bought from Somalia by traders in the Lamu market and delivered to the abattoir located at Mombasa. By contrast from 1965 to 1966, due mainly to direct purchases of the Kenya Meat Commission as an alternative outlet, the number of cattle disposed of from these areas increased to approximately 110,000 to 140,000, respectively. This increase in sales suggests that operation of alternative outlets can increase the proportion of cattle traded from the former Non-Scheduled Areas. Therefore, so long as there are no better alternative marketing outlets to which animals withdrawn from auction can be sold, the proportion of animals traded annually in these areas can only be expected to remain low.

TABLE 5

TOTAL CATTLE SOLD FROM NON-SCHEDULED AREAS TO THE KENYA  
MEAT COMMISSION, 1957 TO 1966

<u>Year</u>	<u>Total Sale (Head)</u>
1957	23,818
1958	25,321
1959	43,501
1960	53,818
1961	58,997
1962	62,390
1963	62,520
1964	52,321*
1965	109,891**
1966	139,341**

Source: Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. II, 1967, pp. 37-38.

\*Based on estimates only. 1964 was the first year of direct participation by the commission in the organized markets in the former Non-Scheduled Areas.

\*\*Estimates for November and December, other months in these years are actual figures.

Moreover, in 1963, according to data from Eastern Province, particularly the areas of Kitui, Machakos, Meru and Embu show that there were only 2,169 slaughter stock traded through auctions as compared with 68,888 exports of hides from these areas. In 1964, total animals offered for sale by auction numbered 31,121 in contrast to 71,466 exported hides. It may be assumed that 50 per cent of all hides exported from this province came from animals "which had died or were slaughtered" and consumed locally. Given that this assumption is true, these data still indicate that a considerable bulk of "slaughter" animals had not been sold through auctions.

It has also been noted that use of auction to sell young and "breeding" cattle has lost popularity. From 1962 to 1965, for instance, data from Kericho District revealed that no more than 43 per cent of all cattle sold was for slaughter through the organized market. The rest included: 17 per cent for cows; 15 per cent for young "breeding" animals; and 25 per cent unaccounted for. In 1963, animals traded in Machakos District varied from 20,000 to 40,000 head of which "only" 5 were sold by auction while 8,000 were sent "direct" to the Kenya Meat Commission.<sup>81</sup> The rest were sold outside organized markets. All these illustrations tend to indicate that producers have held back their animals from the market.

In the former Non-Scheduled Areas there has been a tendency toward monopoly power on the markets of meat products. Imperfections of monopoly control in this case are the exorbitant prices charged the consumer for the product while producing at less than the capacity of the plant and thus wasting resources, a situation which would not otherwise exist under competitive conditions. In Kenya, it is undoubted that there exists a degree of monopoly control in local sale of meat products by the butchers. The butchers are free to process and sell meat in the local areas and towns not served by the Kenya Meat Commission. As sellers of meat, they are characterized as having monopoly control simply because of their common use of public

---

<sup>81</sup>Food and Agriculture Organization, op. cit., Vol. II,  
p. 85.

or municipal slaughtering installations. Since in Kenya many independent producers are forced to use the same slaughtering facilities<sup>82</sup> opportunities for collusive action are frequent.

This conclusion is justified by the following illustration:

Undoubtedly a contributing factor is that they must all use the same or adjacent premises for slaughtering and meat sales and thus cannot act completely independently without their rivals knowing immediately. In the face of continuous group pressure there would be a tendency for them to maintain a common front to both producers and retailers; each having established supply sources and outlets which the others respect.

It is not easy to see how greater competition can be introduced into such a situation so long as meat can only enter the city through one slaughterhouse.<sup>83</sup>

Buying animals in the Northern and Northeastern Districts within the former Non-Scheduled Areas is not open to the butchers and traders coming from outside these areas but only to the Livestock Marketing Division of the Veterinary Department.<sup>84</sup> The Division was created to develop and organize cattle markets in remote pastoral areas. In some cases producers were not willing to sell their animals in these areas. In others, traders were not operating due to heavy loss associated with on-the-hoof transport or were not allowed to operate in these areas owing to stringent disease control regulations imposed by the government.<sup>85</sup> Purchasing "at the markets is undertaken by private treaties

---

<sup>82</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 23.

<sup>83</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 125.

<sup>84</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 25.

<sup>85</sup>Ibid., p. 19.



between . . . [the Division's] personnel and the owners or local traders operating within the area."<sup>86</sup> Today the Livestock Marketing Division buys young animals, averaging up to 22,000 each year, and sells them to the commercial producers who undertake to fatten them. The Division also buys slaughter cattle, averaging 20,000 per year.<sup>87</sup> All these cattle are re-sold to the Kenya Meat Commission.<sup>88</sup> The Division operates as a monopsony in that it is the only exporter of animals from the Northern and the Northeastern areas of the country.<sup>89</sup>

Monopsony may be defined as a situation in which there is only a single buyer present in the markets for factors used to produce other goods or which can be converted into other products. Thus, this buyer has the power and motivation to pay lower prices for these factors than those which would prevail under competitive buying. Consequently, owners of such resources are discouraged from selling them. The existence of monopsony power suggests that only low prices are paid for slaughter animals.

Thus producers have been discouraged from increasing the annual number of cattle sold from the Northern and Northeastern areas. In fact, it is stated that after a considerable period of time, the Livestock Marketing Division has not succeeded

---

<sup>86</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 87.

<sup>87</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 19.

<sup>88</sup>Ibid., p. 20.

<sup>89</sup>Ibid., p. 25.



"in making substantial purchases in some districts."<sup>90</sup> Owing to lack of data as stated earlier, quantitative analysis which would help determine the effect of monopsony power on off-take of animals from the Northern and Northeastern Districts is impossible.

It has already been stated that there are many independent cattle raisers in the former Non-Scheduled Areas. In light of this and since monopsony power of the Livestock Marketing Division is lawfully protected in Kenya, it has been cautioned that:

. . . it is in-advisable that any existing system should receive special legal protection or be able to prevent the growth of another. The existence of alternative marketing channels is also valuable as a protection to farmers and consumers against monopolistic exploitation. Unless a large part of the livestock producers are organized in a co-operative system like that of the Danish farmers, it is most important that they have several outlets for their livestock. If all the livestock from a particular area move through the hands of one buyer, this buyer will have a monopoly and will be in a good position to push down the price paid to farmers.<sup>91</sup>

Cattle from the Northern and Northeastern areas are moved largely on the hoof, although part of the journey may be undertaken by rail from Nanyuki or Thomson's Falls to Athi River for slaughter or to commercial farms for fattening.<sup>92</sup>

Finally, the third geographic market area is known as the former Scheduled Areas. These are the best lands of Kenya which,

---

<sup>90</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 87.

<sup>91</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 103.

<sup>92</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 88.

during the colonial times, were settled by Europeans.<sup>93</sup> It is in these areas where large-scale commercial farming and ranching enterprises of at least 20 acres exist in Kenya.<sup>94</sup> These large farms are important in Kenya's economy. From 1954 to 1963 they accounted for approximately 33 per cent of the entire production from agriculture and 80 per cent of market sales.<sup>95</sup>

In the former Scheduled Areas there are also many independent cattle producers. The total number of beef cattle kept in that area is 451,000 head<sup>96</sup> with total annual sale of 69,750 head,<sup>97</sup> representing an approximate off-take of 15 per cent from such area.

The Kenya Meat Commission is the buyer of cattle from the former Scheduled Areas. This Commission is a statutory organization created in 1950. Its ordinance grants it virtual monopsony power in the commercially ranches areas (the former Scheduled Areas). The operation of the Commission is not intended to make profit nor are there shareholders.

Regardless of source of supply, stock suppliers are required to send all animals not slaughtered and consumed locally direct to the Commission's appropriate meat plant. Other than

---

<sup>93</sup>Hans Ruthenberg, Afrika-Studien Nr. 10, op. cit., 1966, pp. 3-6.

<sup>94</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 37.

<sup>95</sup>Hans Ruthenberg, Afrika-Studien Nr. 10, op. cit., p. 3.

<sup>96</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 31.

<sup>97</sup>Ibid., p. 38.

from commercial areas, cattle bought by the Livestock Marketing Division from the north are walked to the closest railhead, Nanyuki or Thomson's Falls and sent direct to the Commission's main plant near Nairobi. Those supplied by traders from the former Non-Scheduled Areas also moved direct to the appropriate factory either on foot or by rail or by ship where these facilities are available. Almost all of the animals from the former Scheduled Areas are "normally railed direct by producers to the main" factory not far away from Nairobi.<sup>98</sup>

The Kenya Meat Commission buys slaughter stock strictly "on a cold dressed weight and grade basis, at prices fixed by" the government.<sup>99</sup> In this regard, the Commission is said to be the leader in setting prices in the industry for the entire country. But prices which producers are paid for their cattle by the Commission are too low to encourage increased volume of sale to the Commission.<sup>100</sup> In fact, the effect of low prices has lead to illegal sales.<sup>101</sup> Experience has shown that producers will withhold their animals from the market where they are faced with a monopsony at prices fixed by the government as in Kenya. In the 1940's for example, African stock raisers in Southern Rhodesia were required by law to sell their animals

---

<sup>98</sup> Food and Agriculture Organization, op. cit., Vol. II,  
p. 88.

<sup>99</sup> Dr. I. Mann, Food and Agriculture Organization, op. cit.,  
p. 21.

<sup>100</sup> Animal Production Division, op. cit., p. 3.

<sup>101</sup> Food and Agriculture Organization, op. cit., Vol. II,  
p. 89.

only to the Cold Storage Commission at prices set by the government. Sale by private dealing or by auction, except in rare cases, was not permitted. The effect of this policy "lead to a considerable amount of illegal traffic . . . on the open market."<sup>102</sup> In order to effect improvement:

In 1956 the marketing system was changed. The market was integrated. Grades were reclassified and prices were raised for the lower grades. African cattle could be sold at auctions in the African areas which were to be open to all buyers on a competitive basis. At the same time the Cold Storage Commission stood ready as a residual buyer, thus providing a floor price for cattle. Grazers who wished to acquire livestock had to buy them in open competition with other bidders at auction sales.

The effect of these changes in policy was to sharply increase the prices paid for African cattle. Average prices rose by 25 per cent between 1955 and 1956 and there was a 10 per cent increase in the numbers offered for sale.<sup>103</sup>

Here again statistics on prices paid by the Commission, not only for cattle from the former Scheduled Areas, but also from other sources are incomplete, making a reliable comparison with those paid by the main marketing system in other geographic market areas impossible. But available data on sale of livestock to the Commission assembled in Table 6 suggest the effect of low prices. This table indicates that in 1965 and 1966, supplies from the former Scheduled Areas have fallen substantially.

---

<sup>102</sup>Montague Yudelman, Africans on the Land. This volume covers "Economic Problems of African Agricultural Development in Southern, Central, and East Africa, with Special Reference to Southern Rhodesia." Published by Harvard University Press, 1964, p. 190.

<sup>103</sup>Ibid., p. 191.

TABLE 6

TOTAL DELIVERIES OF SLAUGHTER STOCK FROM THE FORMER  
SCHEDULED AREAS AND ALL GEOGRAPHIC MARKET AREAS  
TO THE KENYA MEAT COMMISSION, 1961-1969

Year	Total from Former Scheduled Areas	Total from all Geographic Market Areas
	Head	Head
1961	116,000*	174,000
1962	111,000*	173,000
1963	120,000*	182,000
1964	115,000*	167,000
1965	69,000*	194,000
1966	70,000*	194,000
1967	n.a.**	217,000
1968	n.a.**	188,000
1969	n.a.**	185,000

Source: Beef Production, Kenya Ministry of Agriculture, Government Printers, May, 1970, p. 2.

\*Figures are from Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. II (Rome), 1967, p. 38.

\*\*Figures not available.

At the same time, the total number delivered from all sources in the last two years is on the declining trend.

Probably an increase in the percentage off-take from local herds lies in changing the present policy of dividing livestock market by geography to free competitive markets without geographic barriers to buyers and sellers.

The law does not only protect the Kenya Meat Commission, allowing it to exercise a monopsony power in the cattle market from certain areas, but also a monopoly in supplying meat to the export market and locally to urban areas of Nairobi, Thika, Nakuru, Eldoret and Mombasa. Apart from Nairobi and Thika, the

Commission owns and operates slaughter factories at each of the urban markets. The one at Athi River, 20 miles away from Nairobi, is the largest one in the country; it is the only one well equipped "with slaughtering, processing, chilling, freezing, canning, and meat extract production facilities." Its subsidiary is at Mombasa with only slaughtering facilities and sends about 40 per cent of its output annually to Athi River to be canned. The smaller plants at Nakuru and Eldoret are 100 and 200 miles, respectively, from Nairobi.<sup>104</sup>

Regarding production of meat, of Kenya's roughly 7,000,000 total head of cattle with a total annual rate of off-take of 12 per cent, only 25 per cent of this total off-take is handled by the Kenya Meat Commission. The rest is slaughtered by the local butchers and consumed there.<sup>105</sup> Other than fresh meat, the commission produces various kinds of "canned meat products."<sup>106</sup> Nearly all of Kenya's canned meat products are sold to the United Kingdom and other European countries<sup>107</sup> while chilled meat is sent mainly to such countries as the former Belgium Congo, Mauritius, Aden, Cyprus, and Hong Kong. The United

---

<sup>104</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 23.

<sup>105</sup>"Republic of Kenya," Development Plan 1966-1970, by Government Printers, Nairobi, Kenya, 1964, pp. 187-197.

<sup>106</sup>John C. deWilde, Experience with African Agricultural Development in Tropical Africa, Vol. II, "The Case Studies." Published for the International Bank for Reconstruction and Development by the John Hopkins Press, 1967, p. 26.

<sup>107</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 22.

Kingdom has been one of the export markets offering good prospects for the Commission's products. This is because the Kenya meat has been able to meet this market's health "standard." As such, the Commission has not been barred by import restrictions.<sup>108</sup> Since slaughter cattle are not highly priced in Kenya, the Commission can afford to sell its meat product at the London market more cheaply than comparable quality products sold in the United Kingdom. The following quotation can help illustrate this:

The wholesale price of Argentine chilled beef on the London market is taken as representative of the world price level. The 1965 wholesale price paid by the Kenya Meat Commission (K.M.C.) for a 600 lb. cold dressed weight carcass from a Boran steer destined for domestic consumption sh 786.00. Its value on the London market would have been sh 1,518.00 (sh 1,318.00 net of freight). Thus, the divergence between world and K.M.C. domestic prices is of a startling magnitude: the K.M.C. price is only about 52 per cent of the world market price (57 per cent, if freight charges are taken into account).<sup>109</sup>

Despite these advantages, it appears that the Kenya Meat Commission has not increased production of canned meat products in order to capture the United Kingdom import market. Table 7 reveals an inconsistent trend in the output of these products. In this regard, it is questionable as to why the London high margin business is not expanded by the Commission. It is worth noting that:

. . . where all meat offered to consumers must come under the control of a single enterprise, that enterprise will

---

<sup>108</sup>African World, "Devaluation Hits Kenya Agriculture," Feb., 1968, p. 10.

<sup>109</sup>Food and Agriculture Organization, *op. cit.*, Vol. I, p. 13. Exchange rate: US \$1.00 = sh 7.00 of Kenya's currency.



TABLE 7  
TOTAL CANNING PRODUCTION FOR EXPORT, 1965-1968

Year	Total Canned Beef 12-ounce Cans	Total Beef Export (by-product of Meat Canning) Pounds
1965	10,194,122	312,816
1966	11,338,148	354,816
1967	13,666,452	438,144
1968	11,852,666	355,600

Source: Dr. I. Mann, Food and Agriculture Organization of the United Nations, AN: AFA/69/19, October 13, 1969. This is a "second FAO African regional conference on animal production and health" held in Kinshasa, Congo - November 28 to December 6, 1969, p. 22.

be greatly tempted to take monopolistic profit in distribution.<sup>110</sup>

From 1963 to 1966 the Commission was operating at only 80 per cent of its capacity.<sup>111</sup> In fact the proportion of total meat output at Mombasa factory and delivered to Athi River plant for canning in 1962 and 1963 averaged 43 per cent. In 1964 this figure dropped to 23 per cent.<sup>112</sup> All this has occurred despite increased prospects for increasing export sales resulting from a reduction of the incidence of disease, which is normally a cause for import restriction.<sup>113</sup>

<sup>110</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 103.

<sup>111</sup>Food and Agriculture Organization, op. cit., Vol. II, p. 89.

<sup>112</sup>Ibid., p. 91.

<sup>113</sup>Sunday Nation, May 31, 1970, published in Nairobi, Kenya, p. 9. This is a Sunday sery of the daily circulation of this newspaper Nation.



Table 8 shows a declining trend in production of meat for export market. Not only has the Commission restricted production of meat for export requirements, but also it has restricted production for domestic markets.

TABLE 8  
PRODUCTION AND SALES OF MEAT BY THE KENYA MEAT  
COMMISSION, 1961-1969

Year	Total Production Cold Dressed Carcass Weight		Total Sales of Meat	
	Total Car- cass Weight (Million Pounds)	Average Car- cass Weight (Million Pounds)	Domestic Sales: (Million Pounds)	Export Sales (Million Pounds)
1961	n.a.*	349	n.a.*	9.0
1962	n.a.*	387	n.a.*	n.a.*
1963	58.7	271	24.8	7.7
1964	55.4	360	27.1	5.9
1965	56.0	314	28.2	4.4
1966	59.5	324	27.3	6.6
1967	66.9	314	28.4	2.0
1968	61.0	328	35.9	4.8
1969	62.0	344	31.8	4.0

Source: Animal Production Division, "Beef Production,"  
Ministry of Agriculture, Printed by government printer, Nairobi,  
Kenya, May, 1970, p. 2.

\*Information not available.

Between the period of 1963 and 1969, except 1967, when 217,000 head of cattle were slaughtered by the Kenya Meat Commission, Table indicates that the total production was approximately 60 million pounds. In this same period, according to this table, production for domestic sales has increased but not markedly. In fact, domestic sales decreased in 1969 despite

the fact that local consumption of beef increased by 20 per cent from 1968 to 1969 even though meat prices rose.<sup>114</sup> All these illustrations only tend to lead to the assumption that the Kenya Meat Commission acting as a monopoly has not expanded its scale of operation to take advantage of growing internal and external markets.

In order to increase production of meat, the Commission will have to increase its purchases of slaughter cattle. Indeed, the Commission may have to supply meat to other local areas too instead of its present sole right to sell meat only to certain urban areas and export market. In fact:

It is argued that, since meat from livestock bought liveweight in the markets by the K.M.C. is graded and subject to strict health inspection at the factories, the K.M.C. cannot be expected to compete at these markets with traders and butchers whose purchases are not liable to such grading and inspection, and who therefore do not suffer losses from condemnation and downgrading. The answer to this problem lies partly in extending the K.M.C.'s consumer markets to other urban areas (such as Kisumu) and to areas of high population densities (e.g. the Central Province) where consumption of meat is high, thus giving the K.M.C. a greater share of the total Kenya domestic market. . . .

So long, however, as there is a substantial surplus of meat in Kenya for export at prices higher than obtained on its domestic markets, and so long as the K.M.C. retains the monopoly of that export market, it should be able to compete in the livestock markets with traders purchasing for the remaining domestic consumer markets in Kenya. It is worth noting that Tanganyika Packers Ltd. are able to buy on a liveweight basis in the open markets in Tanzania in competition with traders. Their case is not quite comparable, however, with that of the K.M.C., since they purchase for canning only and do not grade meat and supply it in fresh or chilled form to the local market. If the K.M.C. were able to buy livestock in the open markets and

---

<sup>114</sup>Sunday Nation, op. cit., p. 9.

devote it entirely to canning, then it might be in a better position to compete with the prices traders are able to pay. It is also worth noting that the K.M.C. is able to purchase slaughter cattle and sell them live to Uganda, where the purchasers have to carry the costs of losses arising from measles and death . . . .

But (as has already been indicated) if the Commission is to live with the competition from traders and butchers supplying the rural areas and small towns with meat, it may have to acquire a greater share of the domestic market than is at present provided by the exercise in certain major urban areas of its sole right to sell meat wholesale. The K.M.C. should therefore consider the construction of two new abattoirs to serve the needs of other areas of dense populations where the per capita consumption of meat is rising rapidly.

One of these might be on the railway line near Kisumu. There are 1.3 million cattle in the Nyanza Province, from which the take-off has hitherto been very low. A K.M.C. abattoir near Kisumu and the improvement of local live-stock marketing facilities would encourage sales of this Province and from the Kilgoris section of Masailand, west of the Soit Ololol escarpment, whence the only present market outlet is the distant Athi River abattoir. Meat surplus to local consumption requirements could be railed from Kisumu to Athi River for canning.

The other possible site for a new abattoir would be in the middle of the Central Province on the Nanyuki-Nairobi railway at (say) Karatina . . . . If an abattoir were constructed at or near Karatina cattle could be brought to it by rail, and fresh or chilled meat supplied from it wholesale, by means of refrigerated road vans, to retail butcheries in the small towns of Nyeri, Fort Hall, Karatina and, possibly, Thika, and to those nearby rural parts to which road communications are good.<sup>115</sup>

The foregoing argument seems to suggest that monopoly power of the Kenya Meat Commission should be extended. In reality it suggests that competition should be increased between the Commission and traders and/or butchers without geographic restrictions. In effect it calls for a change in the present

---

<sup>115</sup>Food and Agriculture Organization, op. cit., Vol. II, pp. 92-93.

policy to a freely competitive system.

But even if the present arrangement of marketing institutions and sales methods and marketing facilities was improved, the effect of other factors would still limit the percentage off-take and liveweight. These factors are examined next.

#### TRADITIONAL REGARD FOR KEEPING CATTLE

Production of animals occurs mainly in the pastoral area.<sup>116</sup> In technical terms, the quantity of meat output can feasibly be expanded more quickly by simply raising the rate of off-take of slaughter stock. But the obstacle here is that the traditional regard for which the pastoralists keep animals has imposed restrictions on the percentage of cattle which can be taken off for sale.<sup>117</sup> Other than for commercial purposes, motives for keeping animals are: (a) the source of main diet, (b) protection of the family, and (c) social standing and personal prestige.<sup>118</sup>

#### Source of Food

First, the animals are kept because they represent food of which milk and blood comprise a large part of the diet of nomad people.<sup>119</sup> However, probably due to primitive dairy husbandry,

<sup>116</sup> Sir Michael Blundell, op. cit., p. 272.

<sup>117</sup> Food and Agriculture Organization, op. cit., Vol. I, p. 11.

<sup>118</sup> A. T. Grove, Africa South of the Sahara, published by Oxford University Press, 1967, p. 56.

<sup>119</sup> Ibid., p. 185.

milk yields per cow are said to be extremely low.<sup>120</sup> Consequently, this has encouraged the keeping of a higher proportion of "breeding females" in the total cattle population in order to keep the nomad population alive. Of Kenya's total cattle population of 7.5 million, up to 70 per cent (of which about 35 per cent is of old Zebu cattle only) accounts for both young and old "females."<sup>121</sup> This figure is much more than double the 25 per cent of "breeding females" found in areas where proper management prevails.<sup>122</sup>

Not only large numbers of "female calves" are kept, but they are also cared for better than their counterpart males because the former are kept for future milk supplies. As a result, there has been greater death rate among the immature males. In this case, the percentage off-take can be increased only by increasing the survival rate among young males. This would help lead to a decline in the ratio of animals kept for milk production. But for the pastoral people, this only reflects a reduction in the proportion of animals kept in the total herd for milk production. Experience has shown that:

Even if the males were sold as immatures to be fattened elsewhere, their rearing would involve a reduction in the available supply of milk for human consumption.

---

<sup>120</sup>A. M. O'Connor, op. cit., p. 119.

<sup>121</sup>Animal Production Division - Dairy Industry, Ministry of Agriculture, Government Printer, Nairobi. This deals with "Relationship of Dairy Industry to other Agricultural Industries," June, 1969, p. 1.

<sup>122</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 20.

This could not be offset by a general increase in cattle numbers, because pastoral areas are often overstocked at the moment. Although an improved economic status for the pastoral peoples would be possible if they switched from primitive dairying to the production of meat or store cattle for the market, such a change is a formidable one. For farmers in settled agricultural areas increased crop production is largely a matter of 'more and better' of the same thing, but for the pastoralists progress involves a change in their whole pattern of production and in their way of philosophy of life. These changes will occur . . . ; but inevitable resultant expansion of meat production will not be achieved quickly.<sup>123</sup>

. . . At present, because the diet of many pastoral tribes is largely based upon milk, and the milk production of the poorly managed indigenous zebu cow is woefully low, it is essential that the livestock owner should keep a large proportion of his herd as females. . . . While milk remains the staple food of his wives and children, and milk production per cow remains at its present low level, the present unbalanced age and sex structure of the herd is inevitable.<sup>124</sup>

Dependence on milk as the main source of livelihood is attributed largely to a narrow range of consumption goods. The animals are sold only when the owner needs cash for emergency situations and/or when he has to acquire some simple items. Specifically:

Only when he has to pay cash for school fees, taxes, or his limited range of consumer goods (e.g. beads, tea, sugar, beer and an occasional blanket) does the pastoralist need to sell an animal and obtain a different currency. If his appetite for goods values in money could be cultivated, his willingness to sell cattle . . . would be correspondingly increased. It may be possible, for example, to encourage the purchase of more efficient housing materials, a few basic items of furniture, a variety of metal or plastic cooking and domestic utensils and a wider range of foods. . . . A change in food habits, in which an increased intake of fruit, vegetables, cereals, and tinned

---

<sup>123</sup>Food and Agriculture Organization, op. cit., Vol. I, p. 11.

<sup>124</sup>Ibid., p. 20.



and processed products would partly substitute for milk, would have the advantages of "a) stimulating a demand for the money with which to purchase the foods, (b) enabling a smaller proportion of breeding females to be carried in the herd and thus allowing the increased production of steers and slaughter stock, (c) reducing the domestic demand for milk, thereby leaving more available to the calves and increasing their survival and growth rates.<sup>125</sup>

### Protection of the Family

Another traditional reason for keeping cattle is to protect the family, particularly in meeting marriage obligations.<sup>126</sup> In general, the marriages are paid for by "installments over several years and the transactions act as a bond between the families."<sup>127</sup> To elaborate on this phenomenon, when a son marries, his parents or relatives must give the bride's parents or closest relatives a certain number of cattle. This practice helps to protect the marriage from breaking down. For example, in cases where the wife did not receive good treatment, she may divorce the husband without her parents or relatives having to return the animals. On the other hand, if the woman cannot bear children or has not behaved properly the bridegroom is entitled to divorce his wife and get his animals back. Thus stock owners are forced to hoard cattle in large numbers. This seems to be a reasonable explanation, for parents have to be prepared to part with enough livestock to meet marriage obligations of their

---

<sup>125</sup>Food and Agriculture Organization, op. cit., Vol. I, pp. 20-21.

<sup>126</sup>A. T. Grove, op. cit., p. 56.

<sup>127</sup>Sir Michael Blundell, op. cit., p. 6.

children and to pay the husband back when he calls for them. It may be argued that cash payment could be used as a substitute. However, cash is regarded as a non-reproductive thing; its use as such has not been widespread. The emphasis is that "money is too abstract a symbol of wealth." Thus, investing in cattle is regarded as entailing the highest return.<sup>128</sup>

Cattle also are viewed as the best insurance against unforeseen circumstances. For example, animals are needed to save the family in times of "famine."<sup>129</sup> Moreover, livestock are looked upon by the society as the most valuable "old age" security.<sup>130</sup> Furthermore, each family must keep sufficient numbers of cattle which male children can inherit so that they also may be able to have the basis of establishing themselves.<sup>131</sup>

### Status Symbols

Finally, cattle are regarded as prestige symbols of individual wealth. Visibility of cattle makes them to be considered as the best indicator of wealth.<sup>132</sup> Thus, accumulation of large

---

<sup>128</sup>Hans Ruthenberg, IPO - Institute fur Wirtschaftsforschung Africa - Studienstelle, Nr. 2 "Agricultural Development in Tanganyika," 1964, p. 36.

<sup>129</sup>Sir Michael Blundell, op. cit., p. 5.

<sup>130</sup>Hans Ruthenberg, "Agricultural Development in Tanganyika," op. cit., p. 36.

<sup>131</sup>Paul Bohanan and George Dalton, Markets in Africa. Published by Northwestern University Press, 1962. Second printing in 1965, pp. 522-523.

<sup>132</sup>Sir Michael Blundell, op. cit., p. 5.



numbers of cattle automatically enhances status of an individual in his community. Expansion of herd size also is considered important as far as social and ceremonial associations are concerned. These social aspects of cattle in the African societies are of ancient origin:

The social status of a homestead head and his influence in community affairs were largely dependent on his wealth. A rich man . . . was respected and listened to, while a poor man . . . was despised, at least covertly, and ignored. This pattern of invidious distinction is most explicit . . . . A rich man would . . . slaughter a bull to feed visitors from far away . . . and a poor man, merely a chicken. These differences in capacity to entertain guests were among the most important economic differences within a community, for the lavish hospitality of the wealthy . . . attracted many guests, particularly lineage elders . . . who would congregate at his homestead to eat and adjudicate disputes. The wealthy host often dominated such judicial proceedings and people would bring their cases to him because of his dominant position. Thus was wealth translated into power in the local community.

The rich man exercised power in other ways as well. The leader of the young men in a cattle-village, was often a son of the richest homestead head represented in the cattle-village, since his cattle formed the largest part of the joint herd.<sup>133</sup>

Even today these social plays are still effective. Herd size is still expanded for social motives<sup>134</sup> and this has had the effect of restricting cattle sale for commercial purposes.

---

<sup>133</sup>Paul Bohannon and George Dalton, op. cit., p. 523.

<sup>134</sup>Walter Deshler, Geographical Review, "Cattle in Africa: Distribution, Types and Problems." Published by the American Geographical Society, 1963, p. 58.

## INFLUENCE OF TRADITIONAL REGARD TOWARD LIVESTOCK ON YIELD OF SLAUGHTER STOCK

### Excessive Increase in Number of Cattle

Breeding cattle not so much for commercial sales as for expanding the herd size for social considerations leads to cattle areas being seriously overgrazed; this depletes pastures.<sup>135</sup> Soil erosion is prevalent in such overstocked areas, the consequence of which has been inadequate feeding resources.<sup>136</sup> Baringo District being one of the semi-arid areas included in the 166,000 square miles where overstocking is experienced in Kenya has been singled out as an example:

Baringo District has in fact reached an 'over-grazing end point' where most of the grass and the topsoil has already gone over large stretches of the country, and the ground is blanketed with thornbush, largely useless to man and beast alike, which cannot be eradicated without the expenditure of large sums of money . . . . Land in a 35-40 inch rainfall, once capable perhaps of supporting a stock unit to 4-5 acres, is now scarcely capable of carrying a stock unit to 20 acres, a deterioration of 300 per cent. In the drier parts of the district, with a 20-25 inch rainfall, land once capable of supporting a stock unit to 10 acres is now scarcely capable of supporting one to 30-40, again a deterioration of 200-300 per cent. The general overall degree of deterioration in Baringo District is of the order of 300 per cent . . . .<sup>137</sup>

. . . Baringo is a case where the human population, in an attempt to maintain enough stock for their needs, have

---

<sup>135</sup>Montague Yudelman, Africans on the Land. This volume covers "Economic Problems of African Agricultural Development in Southern, Central, and East Africa, with Special Reference to Southern Rhodesia." Published by Harvard University Press, 1964, p. 191.

<sup>136</sup>John C. de Wilde, op. cit., p. 93.

<sup>137</sup>Ibid., p. 175.

already to a large extent destroyed their own habitat.<sup>138</sup>

### Unsound Animal Husbandry

Moreover, often there is persistence of unsound animal husbandry where livestock are kept for their traditional significance. As an account of this:

Open bush, neglected grazing, fallow land and refuse from the harvest provide the basic fodder. The animals are put to grazing late in the morning. At night they are kept in the village 'boma' which provides protection from wild animals and thieves. Each day the cattle must cover long distances from the village to grazing areas and watering places. Fodder is abundant during the rainy, scarce in the dry, season. Annual burning of grass and bush regularly destroys fodder which might otherwise be used in the dry season. Fire contributes to the deterioration of the natural vegetation. On the other hand, the use of fire for reducing bush and doing away with useless grass is almost unavoidable. Cultivation of fodder crops and animal feed are practically unknown. In the rainy season the animals gain weight, and in the dry season they lose weight.<sup>139</sup>

But this situation goes further. The more the size of the herd is increased, the more it becomes necessary to communally graze cattle on the land. In this case, stockowners each without individual rights to grazing areas still:

. . . will increase the number of cattle they keep upon the traditional grazing lands, without considering the effect of excessive grazing by all the herds, since their own herds are only a small part of the total.<sup>140</sup>

The traditional view is that land and surface water are free resources; no effort and money were required to obtain them.

<sup>138</sup>Hans Ruthenberg, op. cit., pp. 47-48.

<sup>139</sup>Hans Ruthenberg, Afrika-Studien Nr. 2, op. cit., p. 34.

<sup>140</sup>Edith H. Whetham and Jean I. Currie, The Economics of African Countries, 1969, p. 37.

As a result, these resources have been irrationally used, leading to further deterioration in condition.<sup>141</sup>

Communal grazing does not only lead to further reduction in fodder supply, but also to an increase in the possibility of spreading disease. Lack of adequate fodder and disease have the effect of impairing cattle condition<sup>142</sup> such that these animals ". . . when presented for sale, they will be condemned . . . the whole or parts of the carcass will not be passed for human consumption."<sup>143</sup> They also grade lower both in terms of weight and meat productivity per head as will be seen below.

In order to improve yield of slaughter stock, attempts have been made in Kenya to limit the number of animals which a given grazing area can carry and to control stock movement within designated areas only. However, the influence of traditional regards for cattle where number is more important than quality has helped abort controlled grazing schemes throughout Kenya.<sup>144</sup> For example, in 1960 there were 9,100,000 acres under "grazing control." But in 1963, this area was reduced to just 800,000 acres.<sup>145</sup>

The major social customs whose effect resisted destocking have been cited as follows:

---

<sup>141</sup>Edith H. Whetham and Jean I. Currie, The Economics of African Countries, 1969, p. 37.

<sup>142</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 14.

<sup>143</sup>Ibid., p. 16.

<sup>144</sup>John de Wilde, op. cit., p. 93.

<sup>145</sup>Hans Ruthenberg, Afrika-Studien Nr. 10, op. cit., p. 51.

The reduction in stock numbers at first reduced the supply of milk . . . for the household. The grazing schemes were usually imposed on the most denuded locations, i.e. where a comparatively long time was required to reap the benefits of the culling programme. The herdmen and their families apparently did not have the means to bridge the time between the reduction in stock and the higher return in milk . . . as a result of it.

Pastoral societies are built on an intricate system of human bonds established by the lending, renting, exchanging, and presenting of cattle for different reasons in different situations, the bride price being only one of them. Culling programmes simply do not fit into the traditional social pattern. . . .

. . . The reduction in stock numbers put the greatest relative strain on the man with a lot of cattle, who was frequently an open or 'hidden' leader of the clan or tribe. Therefore, grazing schemes were often opposed by those who had the say in their communities.<sup>146</sup>

#### Effect on Livestock Condition

From the foregoing discussion it becomes clear that continued expansion of herd size, largely as a reflection of social status, material wealth and availability of the source of main means of livelihood, leads not only to deterioration of grazing land but also to the spread of animal diseases.

All this has affected quality of an animal raised under such practices of animal husbandry.<sup>147</sup> Beef yield per head slaughtered is found to be extremely low.<sup>148</sup> Table 9 shows that the average beef productivity of animals purchased from where

---

<sup>146</sup>Hans Ruthenberg, Afrika-Studien Nr. 10, op. cit., p. 50.

<sup>147</sup>R. F. Burdette and J. C. Abbott, op. cit., p. 14.

<sup>148</sup>William A. Hance, African Economic Development, 1967. This is a revised edition published for the Council on Foreign Relation by Frederick A. Praeger, pp. 26-27.

TABLE 9

GRADES OF CATTLE FROM AREAS OF COMMERCIAL PRODUCTION  
COMPARED WITH GRADES IN AREAS OF TRADITIONAL  
ATTITUDES TOWARD LIVESTOCK, KENYA,  
1958-1966

Year	From Areas where Breeding is for Commercial Sale		From Areas where Breeding is Mainly for Traditional Motives		Average of Total Cold Dressed Weight Pounds
	Total Slaugh- tered Head	Average Cold Dressed Weight Pounds	Total Slaughtered Head	Average Cold Dressed Weight Pounds	
1958	81,942	463	25,321	311	422
1959	96,805	437	43,501	277	385
1960	100,902	429	53,818	262	366
1961	115,970	398	58,997	259	349
1962	111,081	448	62,390	289	387
1963	119,077*	427	62,520	282	371
1964	115,077*	400*	52,321*	283*	360*
1965	68,953**	-	109,891**	-	319**
1966	69,750**	412**	139,341**	246**	320**

Source: Food and Agriculture Organization of the United Nations, "East African Livestock Survey," Vol. II, 1967, p. 38.

\*Based on estimates only.

\*\*November and December are only estimates; others are actuals.

livestock have been kept for their traditional plays is lower than that from the areas where they have been raised for commercial motives. An overall average cold dressed weight of cattle from areas where traditional regards for them prevail is 270 pounds in contrast to 430 pounds for that from commercial ranching areas.<sup>149</sup> Moreover, from 1960 to 1963, the average

<sup>149</sup>Dr. I. Mann, Food and Agriculture Organization, op. cit., p. 17.

condemnation rate of cattle from areas where regard for them is relatively more for social customs than for commercial sales, ranged from approximately 3 to 5 per cent. The comparable figure for animals raised primarily for the market is only 1 per cent.<sup>150</sup>

#### Economic Justification of Controlled Grazing Scheme

Efforts to restrict numbers of livestock which an area is capable of carrying and to improve pastures have been justified because of their financial pay-off. In the first place, it has already been mentioned that there are 166,000 square miles occupied by the pastoral cattle herders. This area as a whole contributes around U.S. \$4,285,714 annually to Kenya's national income largely from selling skins and hides. Such a figure represents up to U.S. \$1.00 per acre per year. According to estimates, if this area were developed up to its optimum potential, the gross earning per acre would actually be U.S. \$3.00.<sup>151</sup> The cost of developing and managing a grazing scheme of 10,000 acres with 10 acres capable of supporting one "stock unit" has been estimated to be U.S. \$1.43 per acre. This cost is a result of providing "perimeter fencing, five paddocks" to provide a minimum of control, water supplies in each paddock, a dip, and a minimum amount of necessary buildings on the 10,000 acres.<sup>152</sup>

---

<sup>150</sup>John C. de Wilde, op. cit., p. 31.

<sup>151</sup>Hans Ruthenberg, Afrika-Studien, Nr. 10, op. cit., p. 48.

<sup>152</sup>John C. de Wilde, op. cit., p. 184.



Gross return per acre as a result of the controlled grazing scheme is U.S. \$1.57 per acre, while that under unrestricted cattle numbers and unimproved pasture is only U.S. \$1.00 per acre. Therefore, development of controlled grazing schemes has economic justification.

In cases where herdsmen may still be reluctant to sell their livestock which are in excess of a desirable carrying capacity per acre, a tax levy on each animal kept beyond a certain age should be applied.

According to one study, it has been found, for instance, that from a "random sample" of 50 cattle raisers each owning from 4 to 26 head, 60 per cent responded that they would not be induced to sell their cattle at all as a consequence of a 25 per cent rise in price for their animals. The other 40 per cent said they would be affected to sell their "surplus" cattle. However, only 50 per cent of this latter group responded that they would be induced to sell if the price rose only by 15 per cent.<sup>153</sup> In light of these responses, therefore, applying a tax levy would make it costly to keep surplus animals in an area for social customs. This would lead to a forced increase in off-take and improvement in animal condition as a result of reduction in grazing pressure. Revenue obtained this way may be used to import live slaughter stock or meat from other sources until local producers are willing to sell their stock.

Since all this proposal has not been implemented anywhere,

---

<sup>153</sup>Montague Yudelman, op. cit., p. 100.



its application must await the availability of appropriate data to evaluate its economic justification. Nevertheless:

. . . a graduated tax on livestock, could improve resource used and raise revenue. It could be levied so as to rise sharply after livestock reach a specified age. A tax of this kind would discriminate against old animals, raise the cost of keeping them, and so encourage producers to sell. Sale of old animals would reduce pressure on limited grazing resources, and make room for the younger livestock that can utilize grazing land to greater economic advantage. The sale of old livestock would also ease conservation problems in the grazing areas . . . . Nevertheless this kind of tax -- which has never been tried in Africa or elsewhere -- is one that could produce revenues and improve resource use. As such it has obvious merits.<sup>154</sup>

#### SUMMARY

The present projection of supply and demand situations show that there is a short supply of meat available for current domestic consumption and export requirement. Production of meat has not increased rapidly relative to demand. Even without accounting for increase in per capita consumption, a shortage still persists.

On the basis of percentage increase, meat production over time has increased only in direct proportion to the increase in cattle numbers. Meat output would be increased more rapidly by increasing the size of the national herd, the weight of slaughter stock and the rate of off-take.

It is recognized that since at the present time some range areas are overstocked and others are still vacant, a redistribution would partially compensate for an increase in cattle

---

<sup>154</sup>Montague Yudelman, op. cit., p. 164.

numbers in the national herd. In connection with this is the improvement of rangelands and veterinary services. However, further improvement is being hampered by poor state of livestock marketing.

Liveweight also cannot easily be increased without improving movement facilities. This is because in order to increase weight, immature and mature animals must be moved from where pastures are not favorable to potential areas for fattening and finishing before slaughter. At present, poor and inadequate marketing facilities do not permit movement of a larger number of cattle. An increase in the percentage off-take also is affected by movement facilities, marketing systems and sales methods and traditional regards toward livestock.

The poor state and inadequate movement facilities not only prevent a steady flow of cattle to the market but also lead to a forced overgrazing in the producing areas thus contributing to a low yield per head slaughtered. Improvement and new development of holding grounds and stock routes would undoubtedly lead to an increased off-take.

Evidence available shows that driving animals on foot over long distances to the market involves heavy losses and wastes. On-the-hoof movement can be undertaken only by the very old cattle to the exclusion of young ones. Improvement of transport facilities would decrease meat losses. At present only a few areas are served by modern methods of transport. Locating meat factories near production areas so that meat is moved to the main consuming areas should be considered. The

economic ground for this should be explored.

The present arrangement of the marketing system and sales method also is uneconomic. It encourages existence of market imperfections. As such it restricts cattle suppliers to only a small off-take and leads to illegal trade; such that the rapidly increasing demand remains unsatisfied.

Since the effect of this imperfect practice is to limit output of meat available for consumption and high prices charged the consumers, the present policy needs an urgent change to an open competition.

Traditional motives for keeping animals also have affected the off-take. Viewing animals as the source of main diet consisting mainly of milk and blood has lead to keeping relatively large numbers of females in the national herd. The range of consumption items also are limited in the main cattle producing area, thus there is limited need for selling cattle.

In addition, livestock are kept to protect the family concerning marriage obligations, famine, old-age security, and inheritance by children. Furthermore, animals are looked upon as status symbols. All this has lead to keeping large numbers of cattle. Since numbers are more important than quality, productivity per animal slaughter from areas where it is kept for traditional motives has remained relatively low. It has been estimated that there would be significant financial returns from the development of controlled grazing schemes.

## CONCLUSION

The present marketing system is very wasteful. It involves heavy losses resulting from on-the-hoof movement of cattle to the market. This suggests that transport and handling methods of cattle should be modernized and given priority as part of the development of the beef cattle industry. However, analysis of comparable cost of on-the-hoof and mechanical methods should be explored.

At the same time, the present marketing system and sales methods of cattle and meat also call for modernization. The present policy based on geographic division of the market has resulted in market imperfections. As a result, resources are being misallocated. Competitive transaction without legal geographic restrictions should be implemented to induce greater sales than exist presently.

Traditional attitudes toward cattle in Kenya will become less and less with the disappearance of the present older generation and as the younger generation widens its range of consumption goods. Therefore, as the social significance of keeping livestock disappears, owning cattle will be mainly for commercial sale. As this becomes the case, stock raisers will require regulation of grazing density.

In light of this, controlled grazing schemes in the semi-arid areas should be developed. Their development is economically justifiable. There probably will still be some resistance to change, thus causing setbacks. But this may be diminished by

establishing local grazing institutions to police grazing. More industrial goods should also be introduced in the main cattle-producing areas to give incentive to sell and thus help reduce resistance to selling. If these changes are not undertaken, shortages of meat will persist.

## BIBLIOGRAPHY

African World. "Devaluation Hits Kenya Agriculture," February, 1968. This is a monthly journal.

Animals Production Division - Dairy Industry, Ministry of Agriculture, Government Printer, Nairobi, Kenya, June, 1969. This deals with "Relationship of Dairy Industry to other Agricultural Industries."

Blundel, Sir Michael. African Land Development in Kenya, 1946-1962. This is published by the Ministry of Agriculture, Animal Husbandry and Water Resources, Nairobi, Kenya, 1962.

Bohannan, Paul, and George Dalton. Markets in Africa, published by Northwestern University Press, 1962. A second printing was published in 1965.

Burdette, R. F., and J. C. Abbott. Food and Agriculture Organization of the United Nations, Marketing Guide No. 3, "Marketing Livestock and Meat" (Rome), 1960.

Deshler, Walter. Geographical Review, "Cattle in Africa: Distribution, Type and Problems," published by the Geographical Society, 1963.

de Wilde, John C. Experience with African Agricultural Development in Tropical Africa, Vol. II, "The Case Studies," published for the International Bank for Reconstruction and Development by the John Hopkins Press, 1967.

Food and Agriculture Organization of the United Nations, "East African Livestock Survey" (Rome), 1967. This concerns "development requirements" in Uganda, Tanzania and Kenya. This publication comes in three volumes. Volume III consists of maps.

Food and Agriculture Organization of the United Nations, "Africa Survey (Tome), 1962. This is a "Report on the Possibilities of African Rural Development in Relation to Economic and Social Growth."

Food and Agriculture Organization of the United Nations, AN/IWP/AF/2, Vol. 2, "The Livestock Industry of Africa South of the Sahara," 1968. This deals mainly with "Tables of Production, Consumption, Trade and Value of Animal Products, 1961/63."

Food and Agriculture Organization of the United Nations, E/CN.14/AGREB.10, "Agricultural Economics Bulletin for Africa," No. 10, July, 1968.

Food and Agriculture Organization of the United Nations,  
Economic Commission for Africa, "African Agricultural  
Development," 1966.

Grove, A. T. Africa South of the Sahara, published by Oxford  
University Press, 1967.

Hance, William A. African Economic Development. This is a  
revised edition published for the Council on Foreign  
Relations by Frederick A. Praeger, 1967.

Heady, H. F. Range Management in East Africa, printed by the  
Government Printer, Nairobi, Kenya, 1960.

Heyer, Judith, Dunstan Ireri, and Jon Moris. Institute for  
Development Studies - Social Science Division, University  
College of Nairobi, Rural Development in Kenya. This is a  
"Survey of Fourteen Districts with Recommendations for  
Intensified Development," published in December, 1969.

Kenya Ministry of Agriculture, Beef Production, published by the  
Government Printers, May, 1970.

Kibaki, Mwai. A Guide to Industrial Investment, Ministry of  
Commerce and Industry, Government Printers, Nairobi,  
Kenya, December, 1967.

O'Connor, A. M. An Economic Geography of East Africa, published  
by Frederick A. Praeger, 1966.

Mann, Dr. I. Food and Agriculture Organization of the United  
Nations, AN:AFA/69/19, October 13, 1969. This is a  
"Second FAO African regional conference on animal produc-  
tion and health" held in Kinshasa, Congo - November 28 to  
December 6, 1969.

Republic of Kenya, Development Plan 1966-1970, printed by  
Government Printers, Nairobi, Kenya, 1964.

Ruthenberg, Hans. IFO-Institut fur Wirtschaftsforschung,  
Munchen Afrika-Studien Nr. 10, African Agricultural Pro-  
duction Development Policy in Kenya 1952-1965, published  
by Springer-Verlag, Berlin-Heidelberg, 1966.

Ruthenberg, Hans. IFO-Institute fur Wirtschaftsforschung  
Africa - Studienstelle, Nr. 2, Agricultural Development in  
Tanganyika, published by Springer-Verlag, Berlin-  
Heidelberg, 1964.

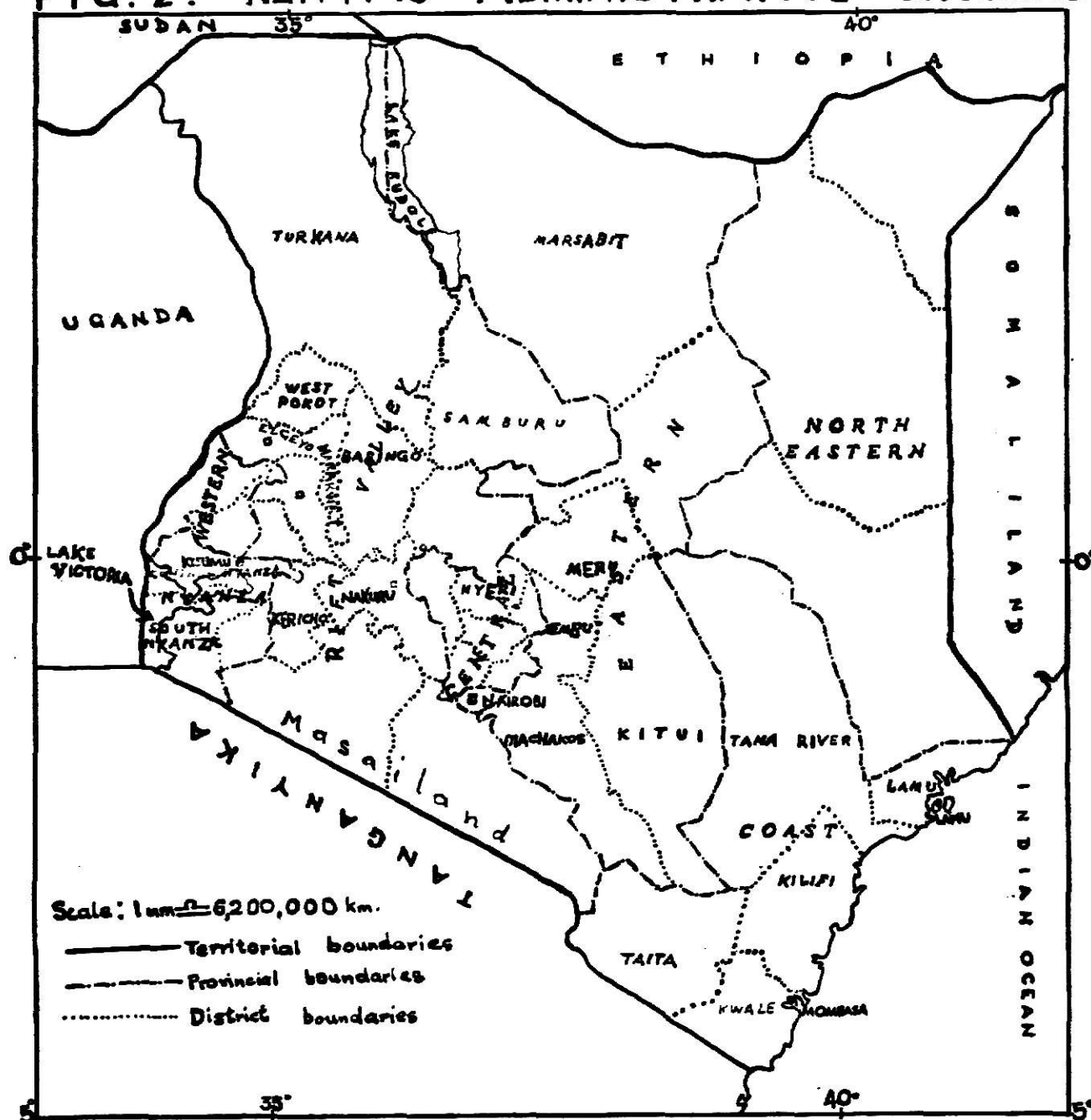
Whetham, Edith H., and Jean I. Currie. The Economics of African  
Countries, 1969.



Yudelman, Montague. Africans on the Land. This volume covers "Economics Problems of African Agricultural Development in Southern, Central and East Africa, with Special Reference to Southern Rhodesia," published by Harvard University Press, 1964.

**APPENDIX I****Map of Kenya's Administrative Divisions**

**FIG. 2. KENYA'S ADMINISTRATIVE DIVISIONS**



MAJOR MARKETING AND TRADITIONAL FACTORS INFLUENCING  
MARKET OFF-TAKE AND YIELD OF SLAUGHTER CATTLE IN KENYA

by

TIMON BONDO

B. S., University of Minnesota, 1967

---

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Economics

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1970

The beef industry is Kenya's largest agricultural industry. Annual value of production of meat is estimated at about U.S. \$68.6 million. However, when domestic consumption and export possibilities are taken into account, it is evident that Kenya, throughout the 1970's, faces serious deficits in meat supplies. Prospect of meat shortage is one of the most serious agricultural problems for Kenya.

The volume of meat production is determined by the number of cattle in the national herd, the rate of market off-take and the live-weight of slaughter stock. Past increases in these factors have been limited by livestock marketing problems and social customs related to the keeping of cattle in Kenya. The examination of these issues was the concern of this report.

Evidence available indicates that the present marketing system involves great losses resulting from driving animals on foot to the market. At the same time, on-the-hoof movement can be undertaken exclusively by the very mature animals. In order to effect improvement, modern means of transport will have to be introduced. In any case, comparative costs of various modes of transport need to be explored.

Government regulation divides markets for cattle and their products into geographic market areas. This policy has lead to the existence of market imperfections sufficient to be a factor contributing to a smaller off-take of slaughter stock. Unless and until such a policy is changed, the resulting misallocation of resources will continue.

However, even if the present marketing system is improved, traditional significance of owning cattle will still affect the off-take and live-weight of slaughter cattle. In most cases livestock is regarded as the main source of diet. Animals also are kept to protect the family. Furthermore, cattle are considered to be status symbols.

These traditional factors have not only lead to hearding an excessive number of cattle but also to irrational animal husbandry.

The effects of all these factors on off-take and on live-weight of slaughter cattle have been examined accordingly in this report.