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**REPORT ON A VISIT TO NIGERIA  
TO STUDY ECONOMIC ASPECTS OF  
DRIED MEAT PRODUCTION  
AND MARKETING**

15 February - 19 March 1993

U Kleih

Project No F0016

**ECONOMIC ASPECTS OF DRIED MEAT PRODUCTION  
AND MARKETING IN NIGERIA**

**CONTENTS**

ACKNOWLEDGMENTS	1
SUMMARY	2
RECOMMENDATIONS	3
INTRODUCTION	6
BACKGROUND INFORMATION	7
Background Information on the Country	7
The Livestock Sub-sector	7
Some Information on Borno State	9
Dried Meat Products from the North of Nigeria	10
KUNDI PRODUCTION AND MARKETING	10
Kundi Production	10
Processors' association	10
Main processing season	11
Veterinary control	11
Animals used	11
Location of processing area	11
Processing technique	12
Quantities processed	13
Transport from production site	13
Production constraints	14
Marketing of Kundi	14
Marketing chain	14
Transport	14
Quantities traded	15
Wholesalers	15
Packaging	17
Storage	17
Wholesale marketing costs	17
Prices	17
Retailers	19
Processors' and traders' benefit	19
Kundi Consumption	21
Household consumption	21
Restaurants and canteens	22
Bukaterias and food vendors	23
Conclusions and Scope for further Work on Kundi	24
KILISHI PRODUCTION AND MARKETING	24
Kilishi Production	24
Production areas	24
Quantities produced	25
Animals used	25
Processing steps	25
Spices used for kilishi	26
Constraints	28
Processors' benefit	28

Kilishi Marketing	28
Marketing channels and prices	28
Kilishi exports	30
Storability	30
Kilishi Consumption	30
Actual consumption patterns	30
Potential for consumption increase	31
Conclusions and Scope for further Work on Kilishi	32
<b>OTHER SIMPLY PROCESSED MEAT PRODUCTS</b>	<b>33</b>
Dried Skin	33
Suya	34
Dambo	34
Bush Meat	34

#### TABLES

1. Estimated number of livestock slaughtered, Nigeria, 1984-1990.
2. Processing and wholesale marketing benefits for *kundi*.
3. Ingredients used in *kilishi* production.
4. Processing benefits for *kilishi*.

#### FIGURES

1. *Kundi* marketing chain.
2. *Kilishi* marketing chain.

#### Graph

1. Nigeria, Livestock populations by ecological zones.

#### MAP

1. 30 States of Nigeria, August 1991.

#### PHOTOGRAPHS

1. *Kundi* grading and marketing.
2. *Kilishi* production.
3. Simply processed meat products: Dried skin, bush meat, *suya*.

## APPENDICES

1. Terms of reference.
2. People met.
3. References.
4. Federal Republic of Nigeria 1991 population census (provisional figures).
5. Nigeria, Livestock population and marketing statistics.
6. Interview guide-lines.

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## ABBREVIATIONS

FAO	Food and Agriculture Organization of the United Nations.
ILCA	International Livestock Centre for Africa.
NLPD	National Livestock Project Division.
NRI	Natural Resources Institute.
RIM	Resource Inventory and Management LTD.
INRA	Institut National de la Recherche Agronomique
IRAM	Institut de Recherche et d'Application des Méthodes de Développement
UNB	Université Nationale du Bénin

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## SUMMARY

1. The following report summarizes the results of a study carried out in February and March 1990 in Nigeria on socio-economic aspects of dried meat production and marketing. The objectives of the study were to analyse existing marketing structures and potential demand for dried meat products with special emphasis put on humid/sub-humid parts of the country.
2. At the beginning, the survey concentrated on *kundi*, a smoke-dried meat, but gradually shifted towards *kilishi* which is a spicy sun-dried product.
3. *Kundi* production depends on the supply of cheap meat which is only guaranteed during a few months of the year in particular parts of Northern Nigeria. Usually weak, old and sick cattle are slaughtered for processing into *kundi* between March and June (hot dry season) in remote areas of Northern Borno State and to a lesser extent in Sokoto and newly created Yobe States.
4. *Kundi* processing includes the following steps: slaughtering, boning, boiling, cutting meat into cubes, sun-drying, smoking. Large quantities of protein would be lost if low-value animals were not processed into dried meat. On the other hand, the quality of the product is low since the market demands low prices, even at the expense of quality. There are various constraints limiting the adoption of improved *kundi* processing technologies: origin of the raw material is sometimes dubious, veterinary health inspection is inadequate, processors have little incentive to improve quality and add value to the product.
5. There is a well established *kundi* marketing chain involving processors, wholesalers, retailers, and the catering industry. Ibadan and to a lesser degree Onitsha are the main distribution centres in Southern Nigeria where *kundi* is a well known product especially among low-income groups.
6. *Kilishi* is another dried meat product made from sun-dried sliced beef mixed with spices. It is also made under artisanal conditions but it is considered a high-value product due to its ingredients and the quality of the beef used.
7. At present processing takes place in small- and medium-scale traditional enterprises. The drudgery to cut meat into thin slices was stated as the main constraint for expanded production. Moreover, processing conditions appear unsanitary; often there is no running water at processing sites and the whole processing line is exposed to flies, dust, etc.
8. Although *kilishi* has a good reputation for its quality and appealing flavour, there is no established

marketing chain for the product. The processors sell an important part of their production directly to the consumer and only occasionally are retailers involved as well. Airports are important retail outlets in the north of the country where the product is sold to business people travelling between Northern and Southern Nigeria.

9. In Northern Nigeria, *kilishi* is a well-known traditional foodstuff whereas in the South most consumers are not yet aware of the product. *Kilishi* consumers usually belong to higher income brackets.

10. Packaging is inadequate since the product is only wrapped in paper upon sale. According to processors, *kilishi* can be stored over several months.

11. Other simply processed Nigerian meat products (such as dried skin, *suya*, bush meat, etc.) are also briefly discussed.

#### **RECOMMENDATIONS**

12. The findings of the study should be presented to concerned Nigerian authorities and further steps discussed with them.

13. Further work on *kundi* should be abandoned. By contrast work should concentrate on *kilishi* for which there is a potential for considerable added value and market penetration. The emphasis should be on production in the North while expanding consumption in the South of Nigeria.

14. Public and/or private Nigerian institutions who are interested in collaborating on future research and extension work should be identified.

15. Established *kilishi* processors in urban centres of Northern Nigeria who are willing to adopt improved technologies, with strong entrepreneurial and business abilities and with capital for necessary investments need to be identified.

16. *Kilishi* processing and marketing should be improved through the following steps:

- Improvement of plant design with special consideration given to: low-cost devices to cut beef into thin slices; improved sanitary processing conditions; appropriate packaging technology.
- Improvement of business management practices.
- Improved marketing. This may involve developing new products, new forms of packaging, finding new markets, improving distribution, product branding and promotion.

## Action Plan

17. Contact Nigerian Federal Department of Livestock and Pest Control Services concerning collaboration with NRI in second phase of study. (Action: D Silverside)

18. Send results of studies carried out in February and March 1993 to Nigerian authorities.  
(Action: D Silverside)

19. Investigate the availability of simple meat cutting and packaging machines in the UK.  
(Action: M Jones)

20. Preliminary visit of one to two weeks to Abuja, Kaduna and Kano to discuss results of NRI studies with Nigerian authorities and establish collaborative work programme for second phase of project. If possible, take model of cutting machine to Kano to show to *kilishi* associations and discuss necessary improvements with processors. (Action: D Silverside, M Jones, U Kleih)

21. Visit of one month to Kano by M Jones and U Kleih to:

- adapt meat cutting machine in collaboration with extension services and processors to work conditions in Northern Nigeria. (Action: M Jones)

- examine ways to improve *kilishi* processing line including drying of meat, mixing with spices, and packaging in order to obtain good quality product with long shelf-life. (Action: M Jones)

- develop marketing and business concept for small- and medium-scale *kilishi* processors; this would involve travelling to the south of the country, if possible with processors, to identify potential marketing chains.  
(Action: U Kleih)

- organise workshop in Kano to present results to *kilishi* processors and marketers, extension services, research institutions and government officials.  
(Action: M Jones, U Kleih)

22. Contact the World Bank's Project Development Facility and other business promoting institutions for possibilities of funding a *kilishi* project based upon results and recommendations of NRI study.  
(Action: U Kleih)

23. Compile manual "*Kilishi* Production and Marketing" which may be used for technology transfer in Nigeria and other Sahelian countries.  
(Action: D Silverside, J Coulter, M Jones, U Kleih)





Figure 1. Administrative Divisions of Nigeria as of August 1991

## INTRODUCTION

24. Although consumers may prefer fresh meat, dried meat products are considered to have some advantages in comparison to the former: prolonged shelf-life, reduced weight after drying, higher protein content, smaller units. NRI previously successfully developed dried meat products in Pakistan and subsequent work was carried out in Ghana on aspects of drying meat in the humid tropics through the use of solar dryers. The latter project raised the question of whether a market for dried meat products really exists in humid parts of tropical Africa. Nigeria was chosen to conduct a study comprising two main parts: Firstly, to analyse quality aspects of dried meat produced in Northern Nigeria and consumed in the South, and secondly, conduct a socio-economic study focusing on marketing aspects of the product. This report is the result of the work conducted in relation to part two.

25. The main part of the terms of reference<sup>1)</sup> were as follows: 1) Description of existing market for simply processed meat in Nigeria with special emphasis on supply, marketing, and consumption of dried meat. 2) Analysis of potential market for simply processed meat with special emphasis on future consumption and production in sub-humid/humid parts of Nigeria. 3) Recommendations for follow-up based on the findings of the study. It was agreed that more attention should be paid to part one of the terms of reference after the visit of David Silverside to Nigeria in November 1992, which showed that dried meat products are already well-known in the South of the country.

26. Parts of South-Western Nigeria visited include mainly Ibadan, but also Lagos and two villages in Oyo State. In total 2 1/2 weeks were spent in Oyo State mainly to study marketing aspects of dried meat products coming from Northern Nigeria. One week was spent in Maiduguri, the capital of Borno State which is a major cattle raising centre, and two days in Kano.

27. It was originally planned to undertake the study in collaboration with ILCA (International Livestock Centre for Africa) in Ibadan. However, due to time constraints of the former, a consultant, Mr. Bayo Kusanu, a student in agricultural economics at University of Ibadan, was hired as an interpreter and to carry out consumer and marketing surveys in Ibadan. In total, Mr. Kusanu interviewed 5 wholesalers, 10 retailers, 30 household consumers, plus the owners of 5 restaurants and canteens, 5 *bukaterias*<sup>2)</sup> and food vendors, and 7 beer parlours.

28. In Borno State, Professor Ogunbameru, Head of the Agricultural Economics and Extension Department

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1) See appendix 1.

2) See chapter on *kundi* consumption.

participated with two staff in the survey of production and processing of dried meat.

29. The survey was based on interview guide-lines which were prepared prior to departure but finalised in the country after discussing the content with Dr. Jabbar of ILCA and Mr. Kusanu (see appendix 6).

30. On arrival in Ibadan, the survey concentrated on *kundi*<sup>3)</sup>, but gradually other dried meat products were considered as well with special attention paid to *kilishi*<sup>4)</sup>.

## **BACKGROUND INFORMATION**

31. This section gives a brief introduction to Nigeria in general, and to the country's livestock sub-sector with special emphasis on the North-Eastern part of the country.

### **Background Information on the Country**

32. Nigeria comprises 30 states and the Federal Territory<sup>5)</sup>. The surface area of the country is 924,000 square kilometres. According to the 1991 population census, population amounts to 88.5 million and annual demographic growth is 3.3%. Since 1986, a Structural Adjustment Programme has been under way, due to which Nigeria is currently undergoing an important period of economic transition.

33. The agricultural sector employs over two-thirds of the country's work force even though it only accounts for about 30% of GDP.

### **The Livestock Sub-sector**

34. Livestock contributes around 5% to Nigeria's GDP. Livestock population figures of Nigeria show that the majority of cattle, but also horses, donkeys and camels are kept in the northern and central regions of the country. However states such as Oyo which are located in the sub-humid zone have a large cattle population as well. Small ruminants are present in almost all regions of Nigeria.

35. Graph 1 shows how Nigeria's livestock population is distributed according to ecological zones. Details of

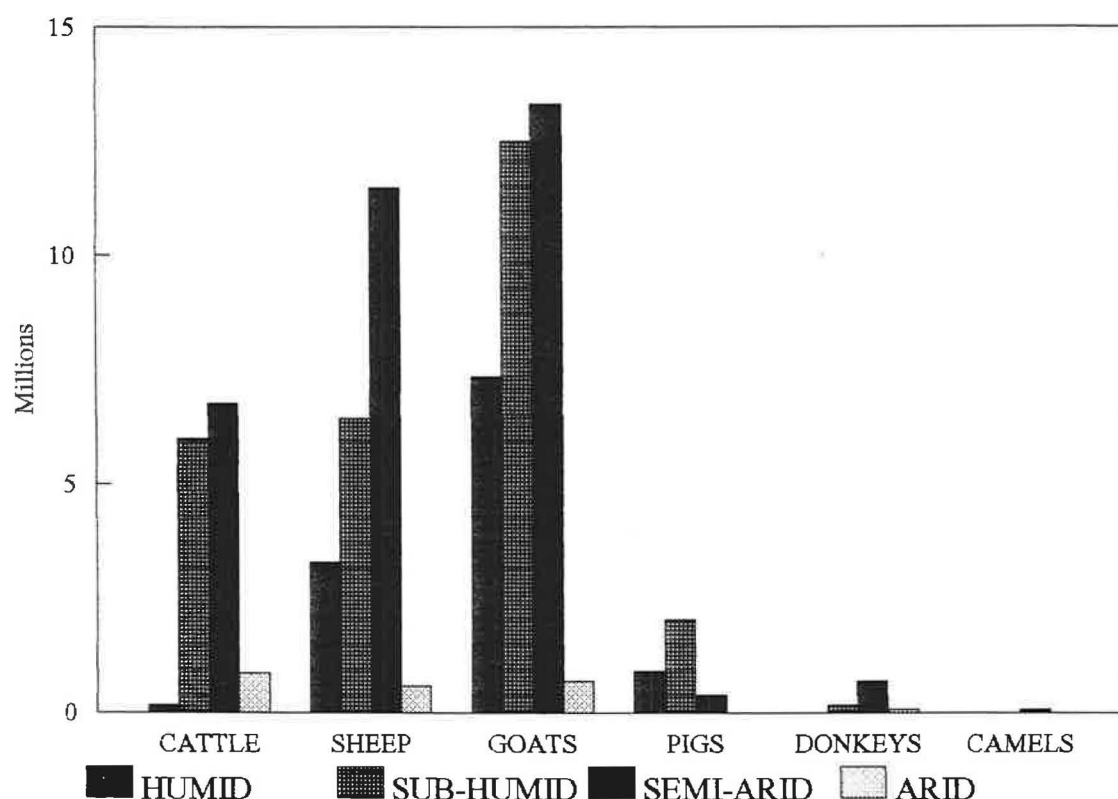
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3) Smoke-dried meat; in the study it will simply be referred to as dried meat if not specified otherwise.

4) The term *kilishi* will be kept for this dried meat product throughout this study.

5) 9 of the states were created on 27 August 1991 by subdividing the then existing 21 states; also see following map.

**Graph1: Nigeria, Livestock Populations by Ecological Zones**



Source: National Livestock Resources Survey, 1990;

Note: For details of livestock population by states see appendix 5.

**Table 1: Estimated Number of Livestock Slaughtered, Nigeria, 1984-90**

Species	Slaughterings	1984	1985	1986	1987	1988	1989	1990*
Cattle	Total	3,407,346	3,501,907	2,267,821	2,133,875	1,888,390	1,740,236	1,561,682
	Rep. & Insp.	1,623,223	1,463,616	1,981,418	1,919,737	1,007,783	1,395,794	1,443,987
Sheep	Total	2,576,795	4,357,879	3,502,741	4,203,973	4,297,454	3,846,226	4,361,745
	Rep. & Insp.	920,232	1,543,317	1,246,168	1,500,633	2,336,735	1,279,990	1,337,849
Goat	Total	6,914,477	7,405,799	4,177,965	6,793,214	7,294,688	5,379,158	5,583,822
	Rep. & Insp.	2,076,459	2,179,663	1,244,366	2,107,764	1,963,269	1,996,681	1,680,059
Pig	Total	251,425	314,904	246,753	271,493	271,553	284,799	291,132
	Rep. & Insp.	102,011	125,799	99,427	108,758	98,144	247,260	237,524
Camel	Total	99,108	118,669	59,485	40,048	41,556	26,697	30,146
	Rep. & Insp.	85,542	109,286	55,105	36,973	---	---	---
Horse	Total	12,518	4,374	4,539	4,704	5,748	5,035	4,802
	Rep. & Insp.	2,268	2,028	3,540	4,309	5,633	2,792	na
Donkey	Total	20,988	21,464	21,939	22,414	22,889	23,365	22,954
	Rep. & Insp.	na	na	6,692	3,030	4,046	7,315	na

Source: Nigerian Livestock Statistics and Market Information, 1991 Edition;

Note: Total = Estimated total number of livestock slaughtered;

Rep. & Insp. = Reported and inspected livestock slaughterings;

\* = incomplete returns, na = not available, --- = information incoherent.

the total Nigerian livestock population are presented in Appendix 5.

36. About 82% of the total cattle population are reared in pastoralist production systems whereas 17% are kept in villages. 0.4% are kept in urban areas and 0.6% in intensive production systems. The vast majority of all the other domestic animals is kept in villages.

37. There have been widespread epidemics of rinderpest in 1983 and 125 outbreaks of contagious bovine pleuromonia in 1989. Although efforts concerning vaccination programmes, etc. have been made to bring these diseases under control, veterinary public health services suffer from inadequate working conditions. Trypanosomiasis continues to constrain ruminant production systems in the southern parts of the country.

38. One of the main characteristics of livestock marketing in Nigeria is the transport of live cattle from the production areas in northern and central parts of the country to the big consumer centres in the South. Table 1 shows details of the number of livestock slaughtered per annum in Nigeria; it appears that an important portion of slaughterings are not reported or inspected.

39. Despite recent efforts to limit imports from neighbouring countries such as the Republics of Chad, Cameroon and Niger it seems widely acknowledged that Nigeria still depends on livestock supply from these countries.

#### **Some Information on Borno State**

40. Borno State constitutes one of the most important pastoral zones in Nigeria. Except for the extreme south of the State, the dominant pattern of livestock production in Borno is pastoralism, especially that of cattle (RIM, 1991).

41. Zebu are by far the most numerous variety of cattle in Borno State. Kuri are only found in the area of Lake Chad (they have distinctive bulbous horns and are well adapted to water) but there they are outnumbered by the former as well. Muturu cattle are confined to a small region in the extreme south-east of Borno State.

42. Borno State was created in 1976 from the former Northeastern State. In August 1991, in the context of the territorial reform which led to the creation of 9 new states, the State was divided into Borno State and Yobe State, the latter occupying the Western part of the original Borno territory. In 1991, the populations of Borno and Yobe States were 2.6m and 1.4m respectively (Federal Republic of Nigeria, 1991 Population census, provisional results).

43. The two most important pastoralist groups of Borno are the Fulbe (Fulani) and the Shuwa Arabs who can be found in most northern parts of Borno whereas the Kanembu and Yedina are concentrated around Lake Chad. Many of the Fulbe in northern Borno come across the border from the Republic of Niger to where they return in the rainy season to tend their fields.

44. The livestock market of Maiduguri is the largest in the Northern states. At least five trailer loads of cattle depart from here daily to the southern parts of Nigeria (RIM, 1991).

#### **Dried Meat Products from the North of Nigeria**

45. Sun-drying of meat is a traditional form of food preservation in the arid and semi-arid parts of Northern Nigeria and other Sahelian countries (Vétérinaires Sans Frontières, 1985; FAO, 1991). Attempts were made in colonial times to formalise production and marketing of dried meat products in the North-East of Nigeria.

46. This study concentrates on economic aspects of production and marketing of two dried meat products. The first product analysed is relatively well known in southern Nigeria under the name of *kundi*. Its local name in Borno State is *banda*. The term *kundi* will be used throughout this study.

47. *Kilishi* is the second product analysed. Its production and consumption is common in Northern Nigeria but it is not well known in the Southern parts of the country.

48. Other simply processed meat products will be introduced but not analysed in further detail.

#### **KUNDI PRODUCTION AND MARKETING**

##### **Kundi Production**

###### **Processors' association**

49. In Maiduguri, there are about 6 masters of the *kundi* processing business who are organized in a loose form of association or meat union. The association was originally formed to counter harassment from authorities but nowadays it mainly organises dried meat transport to southern Nigeria.

50. The individual companies are either run by male members of the owners' family or by managers. Some of the families already have a long tradition in the meat processing business. For example, the late Al Haji Adamu Niyo was known outside Nigeria and had correspondence with European suppliers of meat processing equipment.

### **Main processing season**

51. During the main processing season the masters employ large teams of workers including scouts, butchers, smokers, etc. to do all processing activities on the slaughter site. The main season for *kundi* production is March to July which corresponds with the hot dry season in Sahelian regions. During this period of the year large numbers of animals tend to concentrate in a few rangelands where pasture grass is comparatively more abundant.

52. During the hot dry season animals tend to be weaker due to climatic conditions and low feed supply. According to a processor, old or weak animals are usually preferred for processing into *kundi*. In remote areas with high cattle concentrations at particular times of the year, pastoralists do not have other markets for weak or sick animals besides the processing industry. Under these circumstances *kundi* processors can dictate their buying price to pastoralists who are desperate to sell an animal which would either die or arrive in poor condition at a market centre which would not allow them to get a reasonable price for it.

53. Supply of cheap animals appears to be a pre-condition for a functioning *kundi* processing industry. *Kundi* processors in Maiduguri said that cattle bought in the city's market would be too expensive for processing into dried meat. In remote areas processors pay only N1,000 - 2,000 for an average size cow to be processed instead of about N4,000 - 5,000 on the market of Maiduguri. This may also explain why in the past *kundi* production was abandoned in the town of Maiduguri and nowadays only takes place in more remote areas which are away from major cattle trading centres.

### **Veterinary control**

54. Although efforts are made in Nigeria to improve veterinary control of slaughtering and processing of animals it seems unlikely that the respective services have the necessary means to provide effective control of *kundi* production which often takes place in remote areas. Thus, product quality is open to improvement.

### **Animals used**

55. *Kundi* is mostly made from cattle and to a lesser degree from camels. According to hearsay, other animals such as horses and donkeys are occasionally also processed into *kundi*; however, this was not confirmed by processors.

### **Location of processing area**

56. The survey in Maiduguri took place at the end of February, just before the start of the main processing

season. Therefore, processors did not recommend visiting the production areas which are mainly located in remote areas of Northern Borno State (Baga, close to Lake Chad; Abada, close to the Nigerian border) and Yobe State (Geidam and Geshua). According to processors, Sokoto State produces about 10% of the total Nigerian *kundi* production. Processing also takes place across the border, eg. in the Republic of Chad, and parts of that production is imported into Nigeria.

57. Processors use trucks to travel from Maiduguri to the area of processing. However, travel to the actual slaughter site in the bush requires further trekking. Donkeys are used to transport tools. Boats are sometimes also used to travel along the shores of Lake Chad to places where cattle are reared. The skin of a cow is sometimes given to the owner of the donkey or the boat as payment for his service.

#### **Processing technique**

58. According to the interviews which took place in Maiduguri, processing of *kundi* involves the following steps:

- Slaughtering and skinning of animal,
- Deboning of meat and cutting either into arm-long chunks or into smaller pieces,
- Boiling of meat in drums,
- Cutting meat into cubes after cooling off on mats,
- Sun-drying on mats,
- Smoking, mostly on drums in the bush but also on large grills at the assembly point in town.

59. N400 - 500 per head of cattle are paid to the workers for the different activities.

60. The different processing steps show that *kundi* is basically a smoke-dried meat. Information obtained on the duration of the different processing steps was not very precise.

61. Meat is cooked until it is well done. The water or broth in which the meat is cooked is not changed during the whole day and only poured away in the evening after taking the fat off. Occasionally meat may also be dried and smoked without pre-cooking (Igene and Tukara, 1986). Salt is only used as a cooking ingredient when the meat is considered to be of bad quality and there is danger of spoilage. Oil drums which are cut in half are used to cook the meat.

62. After cooling off on rush mats, the meat is cut into cubes and returned to the mats to sun-dry for several hours.

63. Local drums are used to smoke the meat cubes for about 5 hours (Igene and Tukara, 1986). A wire net is



put on top of the drum, thus serving as a grill, and at the bottom a hole is cut for firewood. Since firewood is scarce in the region it has to be brought from Maiduguri and one bundle costs N25-30. 2 bundles of firewood are considered necessary for cooking and smoking the meat of one cow.

64. Other tools for processing *kundi* include: knife, hook, shovel, axe, needles, rush mat, kerosene and matches.

65. Crude baskets, called bundles, which are made from a broad-leaved rush are the standard packaging material for *kundi*. One bundle folds into a cube of about 20 to 25 cm and always contains 160 pieces of dried meat. *Kundi* pieces are generally graded according to 3 standard categories: small (1-2cm<sup>3</sup>), medium (2-3cm<sup>3</sup>) and large (3-5cm<sup>3</sup>). A medium size bundle weighs about 2 kg.

#### **Quantities processed**

66. The following information was received on the quantity of *kundi* to be obtained from one cattle : 8-10 average bundles from a small cow, 15-20 bundles from medium size cow and 25-30 bundles from a big bull.

67. There are no documents giving evidence of how many animals are slaughtered and processed into *kundi*. In addition, the masters who control the business do not keep records on the number of animals processed by their staff. Therefore, the following figures represent only rough estimates.

68. During the peak season from the end of March to the beginning of July, the work force of one master processes about 100 animals per week. Between August to November the number of animals slaughtered for *kundi* declines sharply and is estimated at 10 per week per master. Between December and February *kundi* production is practically non-existent. Thus, the total number of animals processed by the 6 principal *kundi* masters of Maiduguri can be estimated at 8000 to 9000 per year.

69. It is assumed that the remaining village butchers of Abada, Geshua and Geidam, towns in Northern Borno and Yobe States, produce approximately half of the above quantity which would bring the total amount of cattle to 12-13,000 per year.

70. According to *kundi*-masters in Maiduguri, 90% of dried meat is produced in Borno and Yobe States and 10% in Sokoto State. This means that the overall Nigerian *kundi* production would be about 14,000 animals.

#### **Transport from production site**

71. The transport of *kundi* from processing site to Maiduguri is usually done by pick-up truck or lorry

(Mercedes 911). The baskets described above or jute bags serve as a preliminary packaging material before grading and repackaging of the produce takes place in the courtyard of the *kundi*-master in Maiduguri. There, the meat is smoked for a second time on a large grill if necessary.

#### **Production constraints**

72. Asked about main problems concerning their business *kundi*-masters mentioned the lack of credit and difficulties with wholesale traders in Ibadan. The latter point will be explained in further detail below.

#### **Marketing of Kundi**

##### **Marketing chain**

73. Figure 1 shows the different operators in the *kundi* marketing chain and sites where the operators are located. The *kundi* marketing chain in Nigeria is well developed and it should be noted that processors and wholesalers are in direct contact.

74. It appears that *kundi* is only consumed in the South of Nigeria. The biggest quantities of *kundi* are marketed during the main production season end of March to June. Nevertheless, processors also store an important part of the dried meat in sheds belonging to their compound for 5 - 6 months in order to sell it in the cold season when supply of fresh *kundi* becomes scarce. According to processors, *kundi* can be kept up to 1 year if storage conditions are good.

##### **Transport**

75. The *kundi* producers hire transport facilities, usually a lorry "Mercedes Benz 911", to ship their produce to the South of Nigeria. Renting such a lorry, which can hold 2,300 bundles, costs N8,000. Each member of the *kundi*-association has a "slot" on the southbound vehicles. The fact that producers do not own transport means, such as lorries or trailers, may be a sign of limited capital endowment.

76. The masters usually send a family member or a representative southward with the load of dried meat. This person is responsible for negotiating the price and collecting the money.

77. During the main production season, 3 lorries with *kundi* leave Maiduguri every week and one lorry comes from the other production areas. During the rest of the year (August to February), the quantities marketed decline steadily, leading to a rotating transport system: every second week it is Maiduguri's turn to send one lorry full

of *kundi* and the next week it is the turn of the other smaller production centres.

### **Quantities traded**

78. An estimated 150 - 200,000 bundles per annum leave Borno State for Ibadan. This corresponds to 10 - 13,600 cattle using a conversion rate of 15 bundles of *kundi* per animal. According to processors in Maiduguri, 80% of the *kundi* produced in Borno State goes to Dugbe Market, Ibadan and 20% to Onitsha. A longer survey covering a whole year would be necessary to obtain more accurate figures on quantities of *kundi* produced and marketed.

### **Wholesalers**

79. Dugbe market is the traditional wholesale market in Southern Nigeria for *kundi* produced in the North. The association of wholesale traders in Dugbe Market seems to be in a strong bargaining position towards the producers coming from the North. The producers have to give the wholesalers credit, which the latter extend to their retail customers. They complained that they have to wait a long time till they get the money from the wholesalers.

80. It also appears that the wholesalers' association which has about 200 members is rather well organized. The number of shops occupied by the association's members is estimated at about 150. All of the shops are located in one part of Dugbe Market. It remains open to what extent a few leading members dominate the association's decisions.

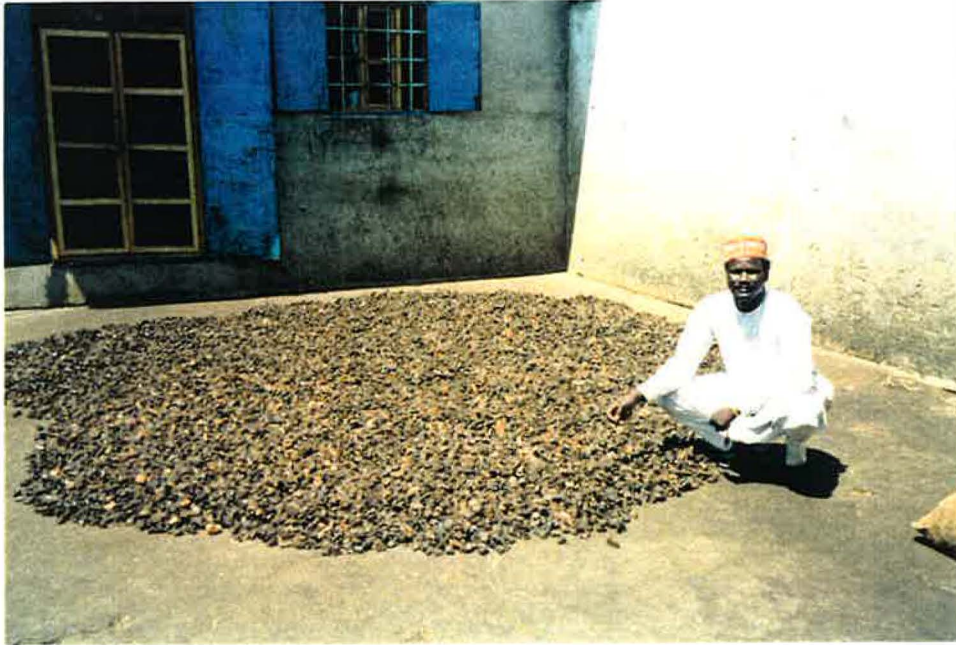
81. The majority of the wholesalers in Dugbe Market are women who constitute about three quarters of the association's members. The majority of the traders in Ibadan are Yoruba and most of them are Muslims.

82. Asked why they do not trade in fresh meat as well, wholesalers in Dugbe Market replied they preferred dried meat since it is easier to store and handle.

83. Onitsha, which is a major trading centre in South-East Nigeria, is a relatively new *kundi* market since producers from Maiduguri started to deliver to this town only in the late 1980's. The reason for opening the new outlet in Onitsha has to be seen in light of the above problems the producers had with Ibadan traders. It seems that the *kundi* producers did their own market research leading to the discovery of this new market. Onitsha could not be visited during the survey due to transportation difficulties.

### **Packaging**

84. As explained above, the main packaging material of *kundi* are baskets made of a broad-leaved rush. According



Grading of *Kundi* in Maiduguri Courtyard



*Kundi* retailer in Ibadan

to the wholesalers interviewed in Ibadan, it is important that the dried meat is packed in material which allows circulation of air. It appears that the traditional baskets are well adapted to these requirements.

85. Jute bags are used as packaging material for *kundi* transported from Maiduguri to Onitsha. Apparently the bags, which usually contain the equivalent of 22 - 23 bundles, are not too air tight for dried meat. One producer also stated that lorries with a wooden floor which allows the air to circulate are preferable to trailers with a closed metal floor.

86. Humidity and rain which lead to mould attacks are the main concern of *kundi* wholesalers. The main production season of *kundi* in the North corresponds to the rainy season in the South of Nigeria. Thus, there is always a certain risk that *kundi* transported over long distances will become wet. *Kundi* producers explained that rain is not a major problem since all lorries are covered with tarpaulins.

#### **Storage**

87. According to traders in Ibadan *kundi* can be stored for several months depending on storage conditions. The shops used by the wholesalers on Dugbe market were built only a few years ago and are in good condition. The area of one shop is about 10m<sup>2</sup> and the height about 2m. The rental fee of N50 per shop per month seems rather low. The traders said that they do not receive direct government support for their business but they consider the cheap rental fee a kind of subsidy to their business.

#### **Wholesale marketing costs**

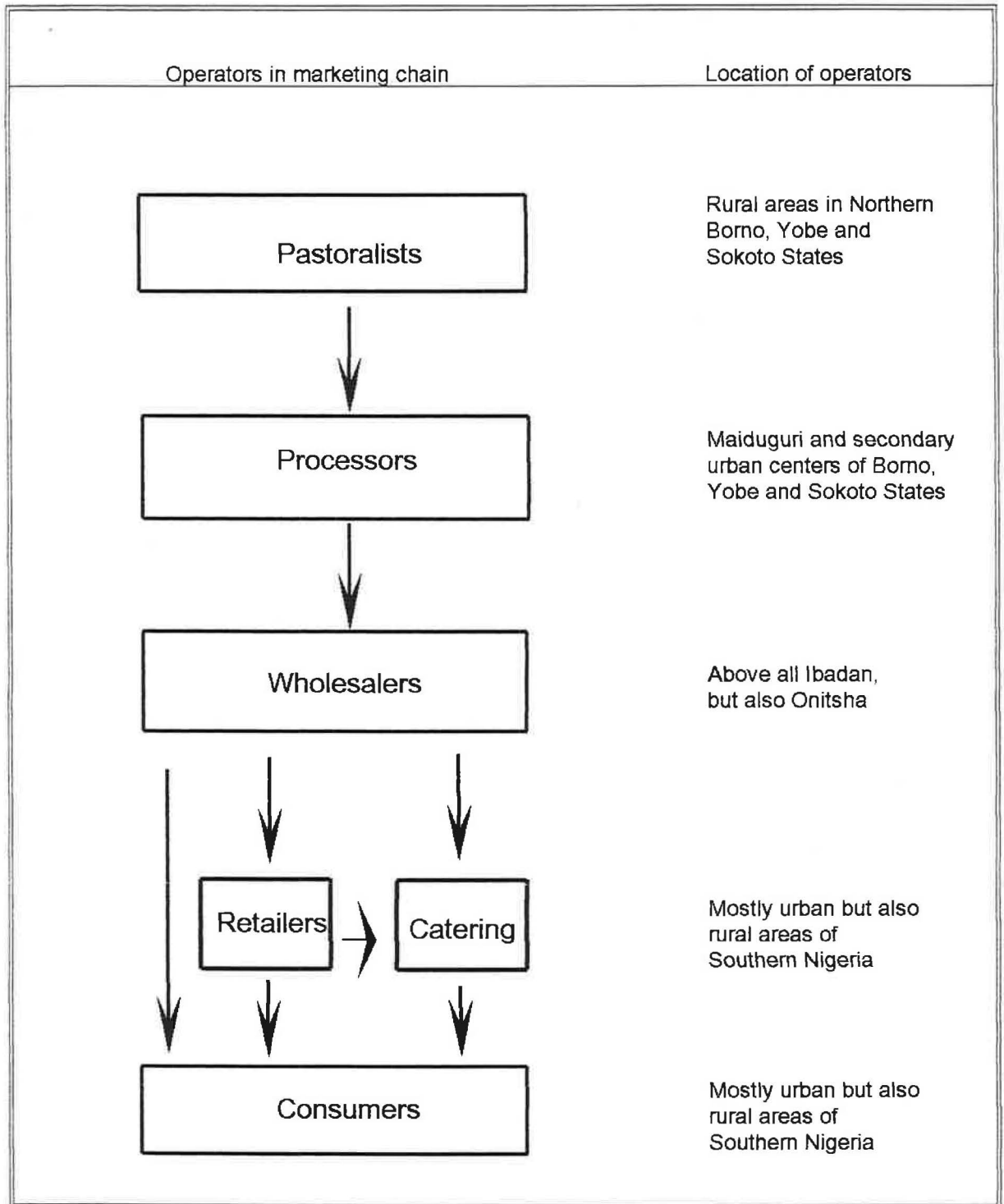
88. Opportunity costs of capital are quite high in Nigeria. This is linked to high inflation rates. Official interest rates at banks are 30% and above. However, it appears that wholesalers do not usually store *kundi* over a long period and, thus, opportunity costs of stored produce can be kept low.

89. Other wholesale marketing costs include: handling (N0.20/bundle), watchman (N20/month/store), sanitation (N10/month/store), packaging (N5-10/day). Some of the wholesalers also pay commissions (N2/basket) for middle-men (Hausa) who give directives to the producers to sell the dried meat to the wholesaler. The traders do not pay market fees.

#### **Prices**

90. According to producers, they receive N160 - 250 for one average size *kundi* bundle in Ibadan. Wholesalers said they pay N140 - 400 for one bundle depending on size and quality of the dried meat pieces. The wholesale

**Figure 1: Kundi Marketing Chain**



prices for one bundle are in the following range: N180 (little pieces), N240-280 (average size pieces), N400-450 (big pieces). In Onitsha the price per bag is N4,000 when supply is scarce and N2,500 during the main season.

### **Retailers**

91. The wholesalers of Dugbe Market sell their produce to retailers coming from the city of Ibadan or surrounding villages but also from more distant places such as Lagos. Nevertheless, Ibadan appears to be the main consumption centre in Southern Nigeria. *Kundi* is also known in areas close to the sea, but there it has to compete with comparatively cheap fish as a main protein source.

92. Retailers are present in all the main markets of Ibadan. *Kundi* is usually offered in small lots of 5 to 15 pieces on big round plates. Some of the traders prefer to do their business at the same place next to the road side, others prefer to move with their load around the markets in the hope of finding more customers this way.

93. Retail prices of *kundi* are about N8-10 for 5 average size pieces. The retail marketing margin is estimated at 15 to 20%. Other expenditures are low. These comprise mainly transport, and to some extent, treatment.

94. Concerning the external aspects of the product, retailers reported different ways of improving the appearance of *kundi* before selling it. If dried meat is attacked by mould they wash the pieces and dry them in the courtyard of their home. In addition, they use oil to give the meat a shiny appearance preferred by consumers.

95. If *kundi* is attacked by insects, repellants are sprayed in the room where the meat is stored. It is unclear whether or not insecticides are sprayed directly on the meat.

### **Processors' and traders' benefit**

96. The calculations in table 2 show how much the processor's income depends on supply of cheap meat. He can obtain a net benefit of about N1,100 for processing an average size old cow if the animal costs N1,500. However, this also shows that his benefit would become negative for cattle prices above N2,500. Compared to this, in February 1993 a medium size cow of around 250 kg liveweight cost approximately N4,000 - 5,000 on the Maiduguri cattle market. A storage period of 3 months and corresponding opportunity costs are taken into account in the calculation of the processor's benefit.

**Table 2: Processing and wholesale marketing benefits for kundi**  
(for one cow corresponding to 15 bundles of dried meat)

<b>Processing and transport from Maiduguri to Ibadan</b>		Naira
<b>Expenditure</b>		
Price of average size old cow		1500
Transport of labour and tools to slaughter site		100
Labour to process animals		500
Firewood		50
Annualised capital costs for tools		50
Transport of kundi from processing site to Maiduguri		150
Grading and packaging in Maiduguri		30
Baskets		60
Opportunity costs of stored kundi (15% for 3 month period)		370
Transport of kundi from Maiduguri to Ibadan		100
Contingencies (10%)		290
<b>Total expenditure</b>		<b>3200</b>
<b>Sale</b>		
Kundi (15 bundles at N220 each)		3300
Dried skin		700
Dried intestines		200
Bones		80
<b>Total sale</b>		<b>4280</b>
<b>Processor's benefit</b>		<b>1080</b>
<b>Wholesale marketing in Ibadan</b>		
<b>Expenditure</b>		
Purchase of products from processors		4280
Commission		30
Handling		5
Storage		3
Watchman		3
Packaging and grading		30
Opportunity costs of stored kundi (3% for 2 week period)		130
Contingencies (10%)		450
<b>Total expenditure</b>		<b>4931</b>
<b>Sale</b>		
Kundi (15 bundles at N260 each)		3900
Dried skin		1000
Dried intestines		250
Bones		100
<b>Total sale</b>		<b>5250</b>
<b>Wholesaler's benefit</b>		<b>319</b>
Note: figures are rounded		



97. The wholesaler's benefit for the same cow is approximately N300 corresponding to about 6% of his/her capital input. This is based on a wholesale price of N260 per bundle. These figures have to be seen in the light of some wholesalers having important turnover (100 bundles and more per week) and storage of *kundi* at this stage is short and of low risk. If the wholesale price of one average size bundle would only be N240 then the wholesaler's benefit would drop to about zero.

98. The retailer's margin is estimated at 15-20%. However, as mentioned above, retailers only market small quantities which explains low total incomes.

### **Kundi Consumption**

99. 30 household consumers, plus the owners of 5 canteens and 5 bukaterias were selected for interviews. Part of the randomly selected house-hold consumers were met at home others in the market.

#### **Household consumption**

100. *Kundi* is generally considered a food for low-income groups in Southern Nigeria. Although *kundi* is considered cheap in comparison to fresh meat, price was often mentioned as a major constraint to greater consumption. It seems that due to decreasing real incomes in Nigeria fewer consumers can afford meat products including *kundi*<sup>6)</sup>. Women who said they previously bought *kundi* twice a week now only buy it every fortnight. Demand would most probably increase if relative *kundi* prices would decrease.

101. Thus, a general trend towards consumption of low-quality meat products is discernible.

102. Consumers belonging to higher income brackets prefer other meat products to *kundi*: fresh meat, smoked bush meat, *suya*, *kilishi*, etc.

103. Taboos and sand in the produce are other negative factors for *kundi* demand. With regard to taboos it appears that almost all consumers in Southern Nigeria think that *kundi* is not only made from cattle but also from camels, horses and donkeys. Parts of the population consider consumption of meat from the latter animals, which are generally used for domestic labour, as taboo. However, it seems that many *kundi* consumers still prefer to taste dried meat although they know about the taboo. Often, consumers simply assume that the *kundi* they eat is made of beef.

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6) For example, a hotel worker earns N400-500 per month compared to about N300 per bundle of *kundi* sold on the retail market.

104. Almost all persons interviewed mentioned the presence of sand and small stones in *kundi* which needs to be seen in light of processing techniques where the meat is exposed to dust and sand. Meat quality analysis carried out by M. Jones also showed high quantities of sand in *kundi*.

105. Quality aspects such as mould were hardly mentioned among the negative factors. This confirms that the latter is usually removed before *kundi* is sold to the consumer.

106. Palatability and prolonged shelf-life of produce are factors positively influencing *kundi* demand. It appears that certain consumer groups are used to the taste of *kundi* having eaten it since childhood, and do not want to stop eating it. Housewives said dried meat gives soups and other dishes a better flavour. Consumers also said it "lasts long" in the mouth.

107. Prolonged shelf-life of *kundi* is certainly an advantage in comparison to fresh meat, the latter requiring immediate consumption. Housewives stated they sometimes keep small amounts of *kundi* in order to be able to entertain unexpected visitors.

108. Preparation of *kundi* at household level involves the following steps: soaking over night (sometimes), cooking for 15 to 30 minutes, washing with sponge and soap, rinsing 3 to 5 times to remove stones and sand, preparation of meat-dish which accompanies traditional foods such as *fufu*.

109. It appears that *kundi* is consumed more during the rainy season in Ibadan when dried meat is more abundant and, therefore, relatively cheaper. Some consumers stated they eat it more when there are festivities such as Christmas. The consumers interviewed said they buy dried meat one to three times a month.

110. Consumers usually buy *kundi* in small quantities. A housewife may buy 10 to 12 bigger pieces per purchase whereas she would buy 30 to 40 pieces if the pieces are small. One small piece may cost about N2 whereas larger pieces cost up to N5.

#### **Restaurants and canteens**

111. Restaurants usually do not sell foods based on dried meat. Their clients, belonging to higher income brackets, would not demand this kind of food because of its reputation. Clients and restaurant owners stated that sand is always present in *kundi* products no matter how well the product is prepared. Cafeterias which fall into the same catering category also do not sell dried meat products.

112. Canteens, which represent the second highest category within the Nigerian catering industry, occasionally sell *kundi* based dishes because of customer demand. However, it appears that the majority of canteens does not sell *kundi* for the same reasons mentioned in connection with restaurants. Thus, the canteen owners who sell *kundi*-based food-stuffs were not selected randomly but purposively identified. Some of the canteen owners buy larger quantities of *kundi* (15 - 60 bundles) which they stock for some time whereas others only buy the quantity they can sell per day (about 1 bundle). They usually buy the dried meat at Dugbe Market.

113. The interviewed canteen-owners stated that 25-40% of their customers request dried meat. Canteens are usually attended by middle- to low-income customers. In some of the canteens *kundi* is prepared every day whereas in others only once or twice a week.

#### **Bukaterias and food vendors**

114. *Bukaterias* and food vendors represent the lowest category within the catering sector of Southern Nigeria. They are characterized by lower standards of service and hygiene and a small menu which is mostly based on traditional local foods such as *amala* (made of cassava or yam flour), *iyam* (pounded yam), *eba* (gari), *fufu* (fresh cassava), etc. *Bukaterias* generally prepare low-cost food for lower-income brackets who cannot afford to attend restaurants or canteens. The majority of *bukaterias* are owned by women.

115. It appears that only some of the *bukaterias* cook dried meat because low-income groups can no longer afford the relatively high price of meat products. Thus, as in the case of canteens, *bukateria* owners who sell *kundi* had to be identified for the survey. However, it appears that relatively more *bukaterias* sell *kundi* compared to canteens. The surveyed *bukaterias* sell *kundi* almost every day of the week. It is estimated that an average *bukateria* sells about one 2 kg bundle of *kundi* daily. Some of the *bukateria* owners buy *kundi* daily from retailers whereas others buy up to 30 bundles once a month at Dugbe market. The *bukateria* owners who stock *kundi* for several weeks said this will reduce their frequent visits to the market and will compensate them during periods of *kundi* scarcity. The percentage of *bukateria* customers demanding *kundi* in their food varies between 25 and 75%. 4 out of 5 *bukateria* owners said that more *kundi* was consumed in the past which has to be seen in the light of decreasing real incomes of clients. Typical *bukateria* customers are low-income earners, artisans, and market people.

116. Food vendors usually sell the same type and quality of food as *bukaterias* except they are mobile and the scale of business is smaller. Many *bukateria* owners

started their business with capital they could save as mobile food vendors. Food vendors normally sell in the street and in the market to customers who do not want to lose time in searching for places to eat. All of the food vendors seen were women.

### **Conclusions and Scope for further Work on Kundi**

117. Despite the evidence that large amounts of protein would be lost if low-value animals were not processed into *kundi*, there are potential pitfalls for further NRI work. Efforts to improve *kundi* processing will be hampered by the following problems:

- Extending and/or monitoring of improved technologies in remote areas of Northern Nigeria where processing takes place is difficult or impossible;
- Processors try to minimize production costs and, therefore, may be reluctant to adopt new technologies involving increased expenditures;
- At present, *kundi* production benefits depend on supply of cheap meat from weak or perhaps sick animals; thus, a public health issue may be raised especially since veterinary health services do not have the means to provide effective control of slaughtering and processing.

118. However, instead of improving a low-value product like *kundi*, there appears a potential for advancing processing technology and marketing of *kilishi*. This will be examined in the following chapter.

### **KILISHI PRODUCTION AND MARKETING**

119. *Kilishi* was identified as an alternative to *kundi*. Although sun-drying also plays a role in the processing of *kilishi*, it is a product of better quality which is sold at high prices to higher-income groups. The following sections will deal with production and marketing aspects of *kilishi*.

#### **Kilishi Production**

##### **Production areas**

120. *Kilishi* is traditionally produced in parts of Northern Nigeria where cattle raising plays a dominant role in the economy (Igene, 1987). In Nigeria, the main production centres of *kilishi* are in urban and, to a smaller degree, in rural areas in the northern part of the country. The survey concentrated on Maiduguri and, to a lesser extent, on Kano.

121. Traditional meat processors based in Ibadan who know *kilishi* said processing this product in the South would not be profitable due to high cattle prices.

### **Quantities produced**

122. It proved impossible to receive a more or less exact estimate of total quantities of *kilishi* produced in Northern Nigeria. One processor in Maiduguri stated that per week he processes 6 big cows and, in total, there are about 20 processors in town most of them producing on a smaller scale.

123. In Kano, due to time constraints, it even proved more difficult to estimate the number of cattle processed into *kilishi*. One processor apparently slaughters about 5 animals per week but it was impossible to estimate the total quantity. It appears that there is a rather large number of processors in this city and some of them are organized in an association which provides assistance to members in cases of emergency.

### **Animals used**

124. According to the survey, beef, preferably hindquarters, is almost exclusively used for *kilishi* production. Occasionally, mutton or camel meat may be used as well.

### **Processing steps**

125. *Kilishi* processing involves the following steps:
- Slaughtering of cattle in abattoir,
  - Deboning of meat,
  - Transport of chunks of beef from abattoir to processing place,
  - Slicing of beef into sheets of about 80 x 40cm,
  - Mixing and pounding of spices and preparation of paste out of the mix,
  - Sun-drying of sliced beef for about two hours,
  - Infusing pre-dried beef slices in paste of spices,
  - Sun-drying of spiced slices for another two hours.
  - Smoking or heating of dried slices on grill for 5 to 10 minutes.

126. *Kilishi* processors (all of them met were men) buy directly from cattle traders good quality live animals which will be slaughtered in abattoirs. In Maiduguri it was said that only big animals costing N10,000 - 12,000 are used for *kilishi* production whereas in Kano use of average size cattle costing N5,000 - 6,000 appears more common.

127. The meat is transported from the abattoir to the processing place in large bowls containing 20 to 30 kg of beef. Processing takes place in the open air sometimes in a courtyard and in other cases at the road side.

128. A processor usually employs about 5 butchers to cut the meat into slices of about 80 x 40cm. Transforming chunks of beef (1-2 kg) into long thin slices of about

1mm thickness requires considerable skills from the butchers. Knives are the only tools they use for this task. To prepare one slice of meat takes approximately 15 to 30 minutes and butchers are usually paid per number of slices cut (about N5/slice).

129. The main complaint of processors and their workers was about the drudgery of cutting meat into slices. Workers mentioned aches of back and joints but also fever and dysentery in context with the hard work they are executing. A young processor in Kano asked whether there are machines to cut slices and had been looking for several years for this kind of machine.

### Spices used for kilishi

130. Table 3 summarizes the ingredients and spices used to prepare the paste in which dried meat slices are allowed to infuse. The quantity of ingredients would be used for approximately 4 kg of fresh beef.

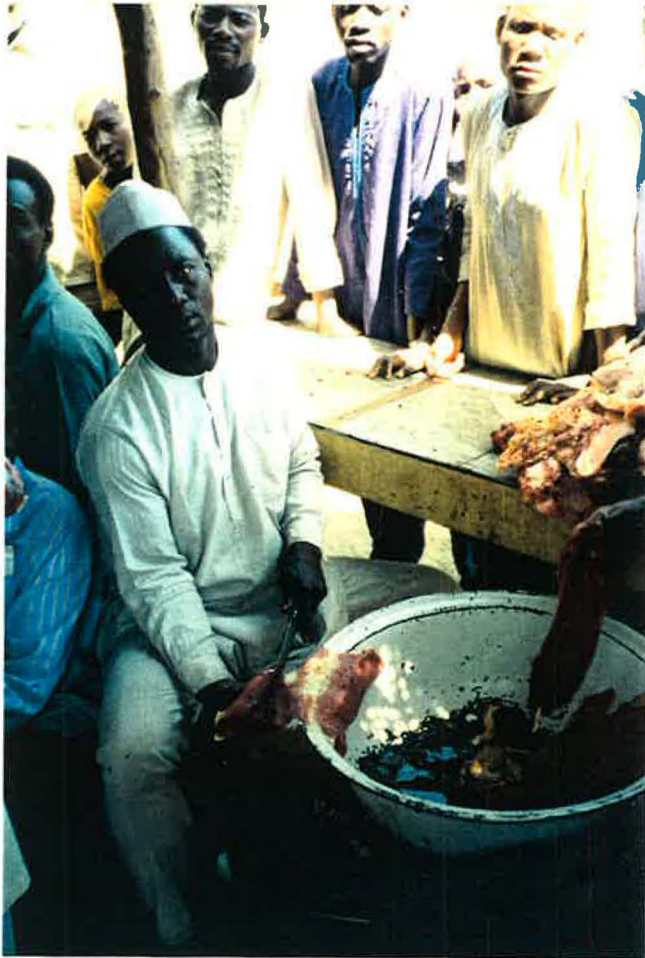
131. The dry ingredients are pounded by women in traditional mortars before they are mixed with water in bowls. There, the semi-dried meat slices are allowed to infuse for some time in the paste before they are put back on the mat to sun-dry another 2 to 3 hours.

**Table 3: Ingredients used in kilishi production**

Local name in Hausa	English & botanical name	Content (g)	% of content
Masoro	Piper quineense	50	1.17
Kanunfari	Eugenia Caryophyllata		
Chitta Miya	Afromomum melegineta		
Borkono	Capsicum frutescens	200	4.69
Tattashe	Dried Pepper	200	4.69
Kulla	Thonningia sanguinea	10	0.23
Albasa	Allium cepa	500	11.73
Pasakori	Fagara xanthoxyloides	10	0.23
Gyadar Miya		25	0.59
Chitta mai yasa	Zingiber officinale	100	2.35
Tunkusa	Defatted groundnut	1,500	35.20
Maggi	Maggi	6	0.14
Gishiri	Salt	80	1.88
Kantu	Sugar	80	1.88
Ruwa	Water	1,500	35.20
	Total	4,261	100.00

Source: Igene, 1987.

132. The final stage of the processing corresponds to smoking or heating of the sun-dried spiced slices for 5 - 10 minutes on a grill. Some processors claim that at this stage kilishi should only be exposed to heat and not to smoke. This confirms the observation that every processor has his own "recipe" of kilishi making. A processor in Maiduguri, for example, adds dried dates imported from Saudi Arabia to the spice paste. The



Cutting of beef  
into slices



Sun-drying

**Kilishi production**



*Kilishi* ready for consumption

result is that some locations such as Maiduguri or Damaturu have a reputation for good quality *kilishi*.

### **Constraints**

133. As already mentioned, the drudgery of cutting the meat into long slices is considered the main constraint in *kilishi* processing, whereas scarcity of capital was hardly stated as a major problem. This confirms that *kilishi* production is a rather profitable business.

### **Processors' benefit**

134. The benefit calculated in table 4 shows the profitability of producing *kilishi*. The case study for Maiduguri indicates a benefit of about N1,100 for processing one large piece of cattle. This requires one to two weeks of hard work and a capital input of about N15,000.

## **Kilishi Marketing**

### **Marketing channels and prices**

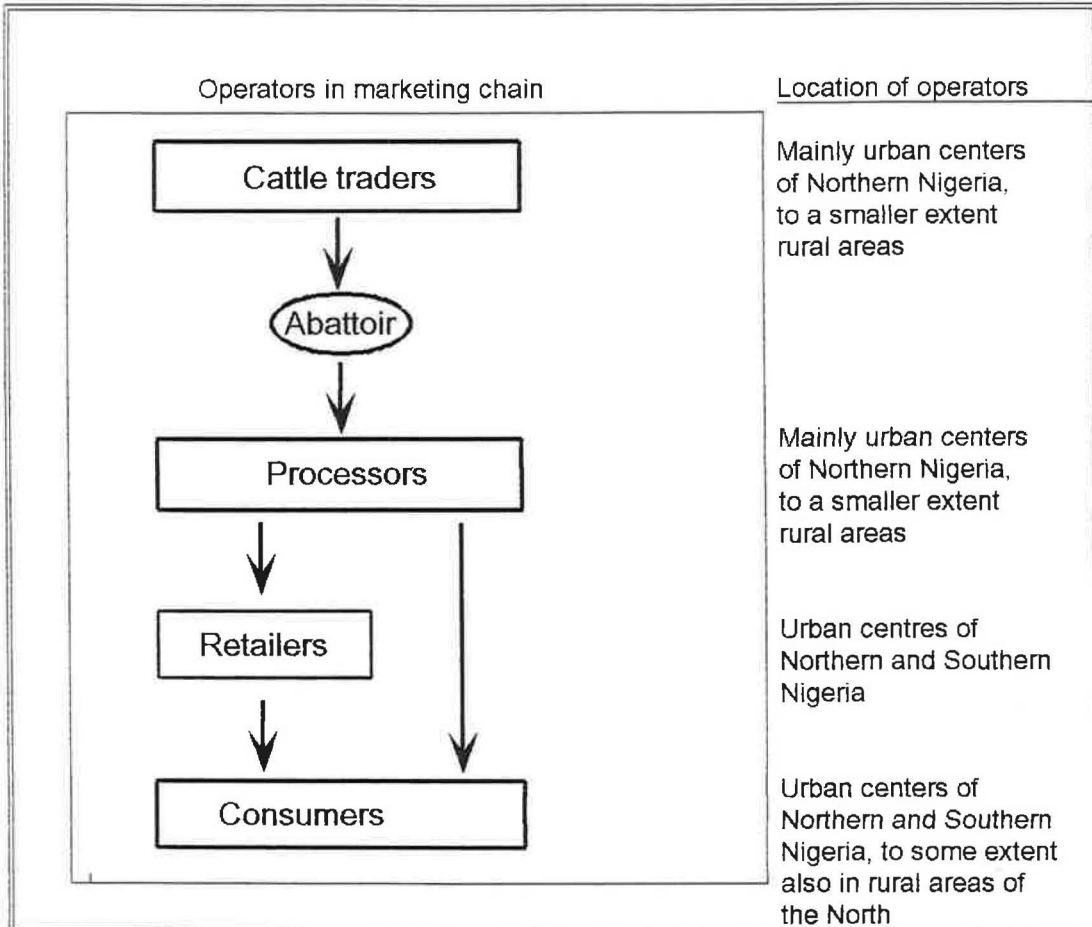
135. Figure 2 gives details of the existing *kilishi* marketing channels in Nigeria. It appears that there is no traditional marketing chain involving wholesalers and retailers for *kilishi*. In Maiduguri, processors sell directly to local consumers or to business travellers from the South who purchase a certain quantity of *kilishi* for home consumption or as a gift. Some of the business travellers may also occasionally sell the product in the South, however no functioning marketing chain could be identified. Roughly half of the *kilishi* produced in Maiduguri seems to be exported southwards.

136. *Kilishi* is considered a high value product and at present only higher income groups can afford it. In March 1993, the price per kg of *kilishi* was about N200 - 250 in Northern Nigeria. In Maiduguri it was said that Southern Nigerians sometimes buy *kilishi* for N500 - 2,000 from processors before returning by plane to their point of departure. There are two outlets rented by *kilishi* processors at the airport of Maiduguri, the annual rent for one stand being N3,000. It appears that *kilishi* sold at airports is rather more expensive than that sold by the side of the road in town.

137. Processors interviewed in Maiduguri never travel to potential consumption centres in Southern Nigeria. The main reasons given for this were as follows: firstly, clients come to buy from them; secondly, there is no marketing chain which could absorb the product; thirdly, processors prefer to stay in Maiduguri to supervise their business. However, this is also a sign that *kilishi* demand outweighs supply in Maiduguri. It needs to be



**Figure 2: Kilishi Marketing Chain**



**Table 4: Processing benefits for kilishi**  
(calculated for one large animal processed in Maiduguri)

	Naira
<b>Expenditure</b>	
Price of one big cow or bull (450kg live weight)	10,000
Slaughtering	500
Labour for cutting meat into slices	1,500
Spices	1,000
Annualised capital costs for tools	100
Stand at airport	20
Tax/License	20
Opportunity costs of stored kilishi (3% over 2 weeks)	394
Contingencies (10%)	1,353
<b>Total expenditure</b>	<b>14,888</b>
<b>Sales</b>	
Kilishi (40kg at N250 each)	10,000
Non-processed meat (100kg at N45 each)	4,500
By-products (skin, etc.)	1,500
<b>Total sales</b>	<b>16,000</b>
<b>Processor's benefit</b>	<b>1,112</b>

Note: figures are rounded

seen to what extent recent airfare increases in Nigeria<sup>7)</sup> which may have reduced the number of flight passengers will influence *kilishi* demand. Nevertheless, at this point it also should be mentioned that the recent fall of average real incomes in Nigeria did not severely affect sales since the traditional consumer groups belonging to high income brackets did not change their purchasing habits.

138. In Kano the supply situation seems to be different, some of the processors seeing themselves forced to travel to southern parts of the country in order to sell their product. One processor said that he usually travels by car to other Nigerian cities such as Kaduna and further south to sell his produce directly to consumers. Another processor mentioned that he also travels to cities in the South where he sells to retailers on credit. His daily turnover is in the range of N6,000 - 10,000. It usually takes him 5 days to sell the quantity of *kilishi* he brought from the North and up to 3 weeks to collect the money from the retailers. Lagos and to some lesser extent Shagamu, Enugu and Port Harcourt are his preferred peddling locations where he usually sells in more affluent neighbourhoods (e.g. Victoria Islands in Lagos).

139. Levantis super-markets visited in Maiduguri, Kano, Ibadan and Lagos did not sell *kilishi*, however it was mentioned that in the past the product was sold in the Levantis store of Bauchi and it was supplied by *Lantana Farms* who are based in Jos. It was not possible to confirm whether or not *kilishi* is still sold in Bauchi.

#### **Kilishi exports**

140. The survey also revealed that at present moderate quantities of *kilishi* are also exported to Saudi Arabia (mainly during Muslim pilgrimage), United States, Great Britain, and other European countries. It is above all Nigerians living and travelling abroad who export this indigenous product for their own consumption.

#### **Storability**

141. *Kilishi* processors confirmed the long shelf-life of the product, however the answers on possible storage periods varied between 3 months and one year. Igene (1989) carried out research on *kilishi* which was stored over a 60 week period.

#### **Kilishi Consumption**

##### **Actual consumption patterns**

142. As already mentioned above, it is only high income groups who can afford to buy *kilishi* on a regular basis. The fact that it is also consumed at special occasions

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7) As of March 1993.

such as marriages, receptions, etc. confirms its reputation as luxury food.

143. In Northern Nigeria, *kilishi* is a well-known traditional foodstuff. Contrary to this, most parts of the population in Southern Nigeria are unaware of the existence of the product, despite efforts made by some processors to market *kilishi* in big cities.

144. *Kilishi* does not require further preparation prior to consumption. It is usually consumed as a snack and it has a high reputation for its flavour.

#### **Potential for consumption increase**

145. Owners and customers of seven beer parlours in Ibadan who were asked to taste *kilishi* confirmed its good spicy flavour without knowing the product beforehand. Sealed packaging and branding seem necessary to promote the product for consumption on a larger scale. However, the price level at which *kilishi* currently is sold appeared as a possible constraint for middle or low income consumer groups. Breaking the product down into smaller units costing about N20 per 100gr would be a solution to this problem.

146. Beer parlours already sell meat products (eg. little fried meat cubes) as snacks accompanying drinks. Soft drink sellers, roadside food markets, and super markets were identified as other possible outlets where *kilishi* could be sold.

147. Especially urban consumers tend to prefer more variety in their food (INRA, IRAM, UNB 1991). This fact may positively influence long-term demand for a snack food such as *kilishi* not only in Nigeria but also in other urban centres of Sub-saharan Africa.

148. Potential *kilishi* consumption in Nigeria could be in the range of 1,770 tonnes assuming that 10% of the total population (88.5m) would consume 200gr of *kilishi* per annum. This would correspond to N354m or £10.09m if one kg of *kilishi* cost N200 on retail basis.

149. The number of cattle required to produce 1,770 tonnes of *kilishi* would be in the range of 49,000<sup>8)</sup> corresponding to about 3% of total cattle slaughtered in Nigeria at the end of the 1980s. This suggests that future livestock prices would not be significantly influenced through increased *kilishi* production.

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8) Assuming that live weight of one cattle would be 350kg. The corresponding carcass weight would be 165kg whereas the quantity of lean beef is estimated at 66kg before drying and 18kg after sun-drying to a moisture content of 10%. Further, it is assumed that equal quantities of dried meat and spices would be mixed to obtain *kilishi*.

## Conclusions and Scope for further Work on Kilishi

150. *Kilishi* is a high value sun-dried meat product which, at present, is only produced under artisanal conditions. Although value added is high, quality and processing technology are open to improvement. Processors generally complain about the drudgery of cutting chunks of beef into thin slices. Thus, there appears to be a scope for improvement of the processing technology which includes the following points:

- Development of low-cost technology including devices to cut meat into long and short slices, prepare spices, mix meat slices with spices, sun-dry unspiced and spiced meat, heat/smoke end-product;
- Improvement of sanitary conditions of processing, through training in sanitary methods, provision of running water at production sites and protection against flies, dust, etc.

151. With regard to current practices of *kilishi* business management, the following potential areas for improvement appear:

- Promotion of medium- and, as far as possible, small-scale enterprises;
- Development of entrepreneurial skills focusing on management, accountancy, etc.

152. Improvement and increase of *kilishi* production needs to be accompanied by the establishment of a functioning marketing chain for a high value product. In this context consideration needs to be given to technical aspects and product distribution.

153. Technical aspects of marketing should focus on:

- Presentation of a standardized product;
- Quality packaging;
- Storability.

154. Efficient distribution of *kilishi* should be based on:

- Identification of potential marketers such as wholesalers and, above all, retail outlets in Southern Nigeria where the biggest market potential lies.
- Development of marketing concept which should include product branding and promotion;
- Identification of adequate means of transport.

155. Potential beneficiaries of further NRI actions would be first of all urban *kilishi* processors in Northern Nigeria who would increase the scale of their business, and livestock producers since demand for cattle may go up slightly. Increased *kilishi* supply will also benefit traders and consumers but it should be remembered that the latter primarily belong to higher income groups.

156. It appears that *kilishi* production should take place in northern parts of Nigeria where cattle is more abundant. Visits to two villages close to Ibadan confirmed the scarcity of cattle in the South which represents a major constraint for introducing dried meat processing technologies in this region.

#### **OTHER SIMPLY PROCESSED MEAT PRODUCTS**

157. Besides *kundi* and *kilishi* which were discussed above, there are a number of other simply processed meat products in Nigeria. This section will give an overview of these products without being exhaustive.

##### **Dried Skin**

158. In Nigeria, cattle skins and hides are not only processed into leathers, shoes, glues, etc but also used for human consumption in soups (Ockerman and Agboola, 1991). Southern Nigeria is the main centre of consumption whereas production takes place in the South as well as in the North of the country. As mentioned above, skins of animals processed into *kundi* are often prepared for human consumption. Local names of dried skin vary depending on the location; in Kano it is called *ganda* whereas in Ibadan its local name is *ponmo*.

159. Processing steps may vary from location to location. According to Ockerman and Agboola (1991) they are as follows:

- *Ponmo* dealer (usually woman) buys hide from kill floor;
- Hide is sun-dried;
- Hair is burnt off and then hide is thoroughly washed;
- Hide is cut into large pieces of about 50 cm square before it is soaked in clay pot containing brine for about 5 days;
- Pieces are resoaked in fresh water and then directly sold to consumers by cutting out the desired quantity.

160. The processing technology observed in Kano differs in that small fresh pieces of hide are smoke-dried on grills by young men next to the city's abattoir where they buy one cattle skin at about N500. The smoked pieces of hide are then sold at N700 to women wholesalers coming from urban centres of Southern Nigeria. One wholesaler usually buys 10 - 30 bags containing 40 - 50 dozen of pieces each, which will then be sold to retailers in towns of Southern Nigeria. In Kano, the wholesalers buy one dozen of skin pieces at N25 and sell them at N35 - 40 in Lagos. Transport costs N40 - 50 per bag and empty plastic bags about N12.

161. Dried skin traditionally is considered a poor people's food and it is well possible that recent demand rose due to the economic recession in Nigeria.

### **Suya**

162. *Suya* (sometimes also called *tsire*) is not a dried meat product, contrary to the products analysed so far. Its preparation involves grilling spiced sheets of meat which are about 10 cm long, 8 cm wide, and 0.7 cm thick (Igene and Ekenam, 1985, cited in Ockerman and Agboola, 1991). The main spices include groundnut cake powder, salt, ginger, red pepper, and maggi.

163. *Suya* is above all a popular fast food which is widely consumed throughout the whole country. It is highly perishable and should be consumed within one day of preparation.

### **Dambo**

164. In Ibadan, a *suya* processor also showed a little known meat product called *dambo* which is packed in small plastic bags containing about 20 grams costing N5. The meat, which is usually only produced on demand, looks "fibrous" and apparently can be stored for 4 months. The processor did not want to give details of the technology.

### **Bush Meat**

165. Smoking is a common practice to preserve game meat - generally called bush meat - in Southern Nigeria. Grass-cutters are among the animals mainly used for bush meat. Smoking often takes place in rural areas along the sides of roads leading into urban centres such as Ibadan. Grills put on oil drums which are cut into half and which have an opening at the bottom to insert fire-wood are used for smoking.

166. In towns bush-meat is considered a luxury food which is reflected in its high price; a smoked grass-cutter costs N100 - 400 depending on its size. Main clients of bush-meat include travellers, local government agents, etc. Occasionally, freshly slaughtered and un-processed grass-cutters will be sold as well.

167. Due to scarcity of fuel, processors usually buy firewood; 3 dozens bought at N35 each are considered necessary to smoke a load of about 4 animals. Grass-cutters are usually smoked for about 24 hours before they are ready for consumption. If the meat cannot be sold then it is left more or less constantly on the fire to avoid spoilage.

168. Compared to the past, it appears that processors have to travel longer distances to find freshly killed animals due to the scarcity of game in areas close to urban centres.



**SIMPLY PROCESSED  
MEAT PRODUCTS**

Top left: Dried skin  
ready for sale.

Top right: Smoking  
of bush meat.

Bottom left:  
Preparation of *suya*.

**ECONOMIC ASPECTS OF DRIED MEAT PRODUCTION  
AND MARKETING IN NIGERIA**

**APPENDICES**

1. Terms of reference
2. People met
3. References
4. Federal Republic of Nigeria, 1991 population census (provisional figures)
5. Nigeria, Livestock population and marketing statistics
6. Interview guide-lines



APPENDIX 1

PRODUCTION AND MARKETING OF PROCESSED MEAT IN NIGERIA

Terms of Reference for NRI - Economist

1. Describe the existing market for simply processed meat in Nigeria. This should involve the provision of information on:
  - Suppliers, production areas, main production seasons, technologies used, quantities (if possible).
  - Market segments, e.g. consumer/catering by socio-economic class, geographic situation, consumer habits and preferences, quantities consumed, competing foods.
  - Marketing channels, systems of handling, packaging, and transport, and price structure for the different products.
  - A complete analysis of costs of production and marketing through representative cases.
  
2. Analyse the potential market for simply processed meat with special emphasis on future consumption and production in subhumid/humid parts of Nigeria; and as far as possible, assess:
  - Potential market size, broken down by target segments.
  - Suitable marketing mix ie. product characteristics, packaging, distribution, pricing and promotional support.
  - Potential suppliers and marketers.
  
3. Prepare preliminary feasibility analysis including costings and recommend follow-up based on the findings of the study.
  
4. Identify, as appropriate, suitable consultancy/market research services to be used in follow-up work; if necessary draw up consultancy briefs.
  
5. The time considered necessary to carry out the study is estimated at 7 weeks: 0.5 weeks mission preparation at NRI, 4 weeks field study; 2.5 weeks report writing at NRI.

## APPENDIX 2

### People Met

Dr. Abubakar		Head of project, National Livestock Development Project, Borno State;
Prof. Akinwumi		Professor of Agribusiness and Co-operatives, Dept. of Agricultural Economics, University of Ibadan;
Alhaji Ali Issa		Kilishi Processor, Maiduguri;
Ado Alhaji Garba	)	Kundi Processors
Alhaji Garba Adamu Niyo	)	in
Alhaji Lawal Adamu Niyo	)	Maiduguri;
Alhaji Lawan		Kilishi Processor, Kano;
Alhaji Shaaibu Sani		Suya meat processor, Sabo, Ibadan;
Alhaji Garba B. Biu		Field Officer in Charge, Fed. Dept. of Livestock & Pest Control Services, Maiduguri, Borno State;
Mr. T.W. Carrena		Managing Director, Research International Nigeria Ltd;
Dr. M. A. Jabbar		Team Leader, ILCA, Ibadan;
Mr. Bayo Kusanu		Graduate Student, Dept. of Agricultural Economics; University of Ibadan;
Dr. A. Z. Ibrahim		State Officer, National Livestock Project Division, Borno State;
Prof. J. O. Igene		HoD, Food Science and Technology, University of Maiduguri;
Mr. Isa Ibrahim Mai		Kilishi Processor, Maiduguri;
Prof. B. Ogunbameru		HoD, Agricultural Economics and Extension, University of Maiduguri;
Dr. Okike		Head of Statistics Section, National Livestock Projects Division, Ibadan;
Mr. Shehu Garba		Kilishi Processor, Fagge, Kano;
Dr. S. T. Titilola		Asst. Research Director, Nigerian Institute of Social and Economic Research (NISER), Ibadan.
Dr. U. Udiandeye		Senior Lecturer, University of Maiduguri;

## APPENDIX 3

### References

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## APPENDIX 4

FEDERAL REPUBLIC OF NIGERIA  
1991 POPULATION CENSUS  
(provisional figures)

State Name	Males	Females	Total
1 ABIA	1,108,357	1,189,621	2,297,978
2 ADAMAWA	1,084,824	1,039,225	2,124,049
3 AKWA IBOM	1,162,430	1,197,306	2,359,736
4 ANAMBRA	1,374,801	1,393,102	2,767,903
5 BAUCHI	2,202,962	2,091,451	4,294,413
6 BENUE	1,385,402	1,394,996	2,780,398
7 BORNO	1,327,311	1,269,278	2,596,589
8 CROSS-RIVER	945,270	920,334	1,865,604
9 DELTA	1,273,208	1,296,973	2,570,181
10 EDO	1,082,718	1,077,130	2,159,848
11 ENUGU	1,482,245	1,679,050	3,161,295
12 IMO	1,178,031	1,307,468	2,485,499
13 JIGAWA	1,419,726	1,410,203	2,829,929
14 KADUNA	2,059,382	1,909,870	3,969,252
15 KANO	2,858,724	2,773,316	5,632,040
16 KATSINA	1,944,218	1,934,126	3,878,344
17 KEBBI	1,024,334	1,037,892	2,062,226
18 KOGI	1,055,964	1,043,082	2,099,046
19 KWARA	790,921	775,548	1,566,469
20 LAGOS	2,999,528	2,686,253	5,685,781
21 NIGER	1,290,720	1,191,647	2,482,367
22 OGUN	1,144,907	1,193,663	2,338,570
23 ONDO	1,958,928	1,925,557	3,884,485
24 OSUN	1,079,424	1,123,592	2,203,016
25 OYO	1,745,720	1,743,069	3,488,789
26 PLATEAU	1,645,730	1,637,974	3,283,704
27 RIVERS	2,079,583	1,904,274	3,983,857
28 SOKOTO	2,158,111	2,234,280	4,392,391
29 TARABA	754,754	725,836	1,480,590
30 YOBE	719,763	691,718	1,411,481
31 ABUJA F.C.T.	206,535	172,136	378,671
<b>COUNTRY TOTALS</b>	<b>44,544,531</b>	<b>43,969,970</b>	<b>88,514,501</b>

## APPENDIX 5: Nigeria, Livestock Population and Marketing Statistics

### LIVESTOCK PRICES IN NIGERIA: 1991/1992

ANIMALS	1991		1992		diff. 1st Qrt 1991 to 2nd Qrt. 1992
	1st Qrt.	2nd Qrt.	1st Qrt.	2nd Qrt.	
CATTLE	3093	3311	4053	4402	42.3%
SHEEP	361	418	548	616	70.6%
GOATS	313	325	437	638	103.8%
PIGS	760	662	839	1017	33.8%
CAMELS	2557	2900	3096	3096	21.1%

Source: Federal Department of Livestock and Pest Control Services  
1992 Mid-Year Report (January - June)

### LIVESTOCK POPULATION BY STATES

STATES	CATTLE	SHEEP	GOATS	PIGS	DONKEYS	CAMELS
ABUJA	156,000	63,000	144,000	16,000	--	--
AKWA IBOM	7,000	516,000	816,000	89,000	--	--
ANAMBRA	64,000	425,000	1,467,000	62,000	--	--
BAUCHI	1,731,000	2,811,000	3,466,000	66,000	95,000	4,000
BENDEL	48,000	737,000	1,747,000	180,000	--	--
BENUUE	146,000	864,000	2,433,000	703,000	--	--
BORNO	2,727,000	2,424,000	3,188,000	76,000	181,000	27,000
CROSS-RIVER	10,000	117,000	351,000	68,000	--	--
GONGOLA	1,503,000	1,324,000	1,970,000	476,000	56,000	--
IMO	13,000	495,000	1,281,000	8,000	--	--
KADUNA	1,007,000	557,000	967,000	250,000	18,000	--
KANO	1,014,000	2,567,000	2,738,000	--	109,000	6,000
KATSINA	630,000	1,696,000	2,079,000	--	154,000	7,000
KWARA	563,000	843,000	1,132,000	81,000	26,000	--
LAGOS	3,000	57,000	158,000	25,000	--	--
NIGER	1,165,000	752,000	968,000	81,000	20,000	--
OGUN	27,000	340,000	904,000	149,000	--	--
ONDO	9,000	589,000	1,747,000	291,000	--	--
OYO	296,000	860,000	1,887,000	177,000	1,000	--
PLATEAU	1,054,000	964,000	1,866,000	535,000	28,000	--
RIVERS	3,000	509,000	670,000	66,000	--	--
SOKOTO	1,773,000	2,566,000	2,466,000	2,000	248,000	44,000
TOTAL	13,949,000	22,076,000	34,445,000	3,401,000	936,000	88,000

Source: National Livestock Resources Survey, 1990.

## APPENDIX 6

### DRIED MEAT MARKETING IN NIGERIA

#### Interview Guideline for Producers

- Which processing technologies are used ?
- Costs of processing (per week or per animal) ?
  - Labour
  - Tools and materials
  - Transport
  - Tax or licence
  - Others
- Quantities of meat produced per week ?
- Site of production ?
- Origin of cattle ?
- Type and breed of cattle preferred ?
- Age and condition of animal ?
- Number of cattle slaughtered per week ?
- Price of cattle ?
- Problems with supply of cattle ?
- Which are main seasons of production ?
- How many other producers exist in the area ?
- How many cattle do they slaughter per week ?
- Who buys dried meat ?
- Where ?
- Packaging material ?
- Cost of packaging material ?
- Mode of transport ?
- Transport costs ?
- At which price is dried meat sold ?

- What kind of dried meat product do consumers in the South of Nigeria prefer ?
- In which markets of the South is most of the meat sold?
- Who are the main consumers of dried meat ?  
(According to income groups, religious and ethnic background, geographic location, etc.)
- What are major problems in producing dried meat ?
- Suggestions ?
- Possible improvements concerning ?
  - Technology
  - Inputs<sup>+</sup>
  - Packaging
  - Transport
  - Marketing
- Is dried meat from Nigeria exported to other countries?
- If no, why not ?

## DRIED MEAT MARKETING IN NIGERIA

### Interview Guideline for Traders

- Is the trader a wholesaler or retailer ?
- Where does the dried meat come from ?
- Who does it sell to this trader ?
- Could the trader please explain the distribution channels of dried meat coming from the North of Nigeria ?
- Cost of marketing dried meat ?
  - Labour
  - Transport
  - Packaging
  - Storage
  - Others
- What period of the year does the trader get the meat in larger quantities ?
- Where and how long is dried meat stored ?
- At which price does producer or intermediary from the North sell dried meat in the South ?
- What quantities of dried meat does trader sell per week or per month ?
- What kind of dried meat does the consumer in the South of Nigeria prefer ?
- In which markets is most of the meat sold ?
- Which are the main consumption centers in Southern Nigeria ?
- Who are the main consumer groups of dried meat ?
- What are wholesale and retail prices of dried meat ?
- What are major problems in trading dried meat?



- Suggestions?
  
- Possible improvements concerning ?
  - Quality of product
  - Product form
  - Packaging
  - Transport
  - Storage
  - Marketing channels
  
- Is dried meat from Nigeria exported to other countries?
  
- If no, why not ?

## DRIED MEAT MARKETING IN NIGERIA

### Interview Guideline for Household Consumers

- Why does consumer buy dried meat, or why not ?
- How often does he or she buy it ?
- At which time of the year do consumers buy more and why ?
- What quantities does he or she buy per week ?
- What is the price paid per unit ?
- How often does consumer eat dried meat relative to other meat ?
- Did the consumer eat more dried meat in the past or nowadays ?
- Would he or she like to buy more dried meat ?
  - If no, why not ?
  - If yes, under which conditions ?
- How is dried meat prepared for consumption ?
- What is profession of consumer ?

## DRIED MEAT MARKETING IN NIGERIA

### Interview Guidelines for Restaurants, Food Vendors, etc.

- Type of business (restaurant, food vendor, bukateria, catering, or other) ?
- Does he or she sell foods which have dried meat in it ?
- If no, why not ?
- If yes, how often does he or she cook it per day or per week ?
- What quantities of dried meat do they buy at a time (per day or per week) ?
- Under what form is dried meat sold; how is it prepared?
- What percentage of costumers consume dried meat ?
- What affects the consumption of dried meat ?
- Does he or she stock dried meat ? If yes why ?
- What categories of consumers eat at this place ?
- Is more dried meat consumed now compared to the past ?
- Is it possible to increase sale of food based on dried meat ?
- What is source of supply of dried meat ?
- What price does he or she pay per unit of dried meat ?