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Final Report

**OPPORTUNITIES FOR STRATEGIC INTERVENTIONS
IN LIVESTOCK/MEAT PRODUCTION, PROCESSING,
AND MARKETING IN THE GAMBIA**

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EXECUTIVE SUMMARY

The purpose of this report is to review and make recommendations on improvements in The Gambian livestock/meat subsector, with particular emphasis on the roles for private firms and public agencies. The findings are based on personal interviews with key livestock subsector representatives, field trip observations, and an extensive literature review. Based on these sources of information in combination with first-hand knowledge about livestock systems in other countries, the report recommends technical and economic alternatives in terms of adding value to the meat produced from Gambian cattle, sheep and goats.

Livestock are an important capital asset to the Gambian economy and are closely linked with agricultural (crop) activities. For this reason, livestock are an important part of the equation in agricultural development, as well as environmental and resource management. Livestock left unmanaged and underfunded will continue to be a major destructive force on the fragile ecosystem of The Gambia, its river and estuaries, and rangelands. For this reason, the report recommends that an agriculture and natural resource strategy include livestock production, management and marketing interventions.

The cattle inventory in The Gambia has stabilized at around 300,000 to 350,000 because of land constraints and competition for fertile land from other agricultural enterprises. At the same time, the human population's annual growth rate is estimated at 4.1 percent which means that the demand for important foodstuffs and protein; e.g., meat, is outpacing domestic production. Thus, improvements in livestock production and marketing are important to an overall food strategy for The Gambia.

The recommendations in this report are based on the premise that improvements in livestock production, commercialization, and marketing will necessarily be driven by viable markets for livestock, red meat, and livestock by-products. Market channels, flows of information, and capital will have to be operating efficiently to generate the required responses from livestock producers.

Closer linkage between the end-users and livestock producers will require more coordination and greater use of production contracts where specific types of animals are destined for target markets, whether this is for the domestic or export markets. The more exacting meat requirements of hotels and supermarkets in the greater Banjul area cannot be met by the existing types of cattle currently finding their way into the terminal market. At present, sheep and goats being produced in The Gambia are also not acceptable for these more up-scale niche markets at this time.

Grades and standards for meat are needed to send the proper market signals about the types of animals required for slaughter.

The Gambia relies on meat imports to fulfill segments of its domestic demand. In 1992-93, 1,300 mt of meat products were imported, and of this amount, 40 percent was fresh, chilled, and frozen meat (481 mt). Imports of high-quality meats are for the supermarket and hotel trades. At present, neither the types of animals being raised in The Gambia nor the production system itself has the capacity to displace these imports.

To address the supply issue of high-quality domestic meats, the feeding of livestock was evaluated. Feedstuffs are available in The Gambia for limited fattening of livestock. (Groundnut hay, sesame cake, corn, and cotton seed are produced, but these products need to be purchased during harvest and stored.) Negative financial returns were estimated for three types of feeding systems: confinement in a feedlot, supplemental feeding with irrigated pastures, and grass fattening on native pastures. Each of the hypothetical systems tested was specifically designed for low capital infrastructure and use of local materials.

Though negative returns were the outcome in each instance, it is felt that more information is needed on input/output relationships to definitely conclude that feeding of cattle is not viable.

Sheep fattening has been a successful activity with rams fattened for the Tabaski religious feast. It is estimated that financial returns of over 70 percent have been realized in some instances. Based on the success realized in this feeding program, there is the possibility that year-round fattening of sheep could be encouraged if a market can be developed. The same opportunity may exist for cattle if a system is structured that is cost-effective and in which market premiums are paid for the finished animal.

Improvements in livestock production and marketing will occur only when incentives and disincentives are placed squarely on those owning livestock and on the agents responsible for the distribution, processing, and marketing of livestock and meat. The food security of The Gambia is at risk by doing anything less.

A logical course of action must encourage the private sector to lead efforts to improve the marketing channels for livestock. The Government's role is to support the process by providing technical assistance, applied research, and policies to ensure that efficiencies occur at all stages of the production and marketing system.

Finally, this report sets important goals for the livestock/meat subsector to be realized by the year 2000. The proposed

strategic interventions (Chapter V) will lead to these necessary improvements. In the proposed program of interventions, priorities are placed on the tasks to be undertaken so that limited funds and time can be allocated most effectively.

The important first step is to begin the process now. The important participants from government, the private sector, non-governmental entities, and donor agencies need to come together to implement the necessary changes. In most cases, it is not a question of funding, but rather, the institutional will and guidance sustained over the long term to implement change in the subsector. The agency best suited for this role is the Department of Livestock Services.

I. MARKET OVERVIEW AND DEMAND ANALYSIS

OVERVIEW

Population growth in The Gambia (estimated at 4.1 percent per annum) continues to outpace the growth and productivity of the Gambian national cattle herd, which is believed to have stabilized at around 300,000 head. Unfortunately, the national herd and its productivity are constrained by limited land resources, competition from alternative, higher-value agricultural opportunities, and an inadequate marketing system. For these reasons, the national livestock herd needs to be recognized as an asset which requires greater productivity to meet the challenges of:

- supplying animal protein for the fast-growing local population;
- reducing reliance on imported meat and meat products; and
- long-term development of niche markets for livestock, meat, and by-products.

Strategic interventions to modernize the Gambian livestock and meat sub-sector must be founded on a market-oriented approach.

The interaction between the livestock-meat sub-sector and agriculture as a whole is illustrated schematically in Figure 1. Flows of product and price/market information are the key aspects of the chart. Products originate from the production activities where inputs are combined. The driving forces are the market and price signals emanating from domestic and export markets. The linkages between crop and livestock activities (manure, crop residues, and by-products) are important, and for this reason, livestock issues need to be addressed within an overall strategy for agriculture and natural resources by The Government of The Gambia (GOTG) and donor agencies.

Domestic and potential export markets for Gambian livestock and meat products are examined in this report. The domestic market has its locus in the greater Banjul area where population and income levels are the major factors affecting demand. It will be this market in the short term, and export markets in the longer term that will be the driving force behind the commercialization of the Gambian livestock sub-sector and offer the greatest opportunities for private sector development.

In the remainder of this chapter, the domestic and export markets are evaluated as to their level of activity, opportunities for entry, and profitability.

THE DOMESTIC MARKET FOR MEAT

The Greater Banjul Market

Banjul and its environs constitute the major magnetic "pull" for livestock from the production zone in the eastern part of the country to the coastal market. According to the 1993 Gambian census, the greater Banjul area has 350,618 people. This represents 34 percent of the entire Gambian population. Total annual meat consumption for the greater Banjul area, estimated from the 1992/93 Household Economic Survey (Table I.1), is 2,343 mt of

Table I.1 Meat Consumption, Greater Banjul Area, by Type, 1992-93.

	Banjul	KSM	Western District
	----- (kg per capita) -----		
Beef	10	7	4
Mutton/goat	1	1	1
Chicken & other	3	2	1

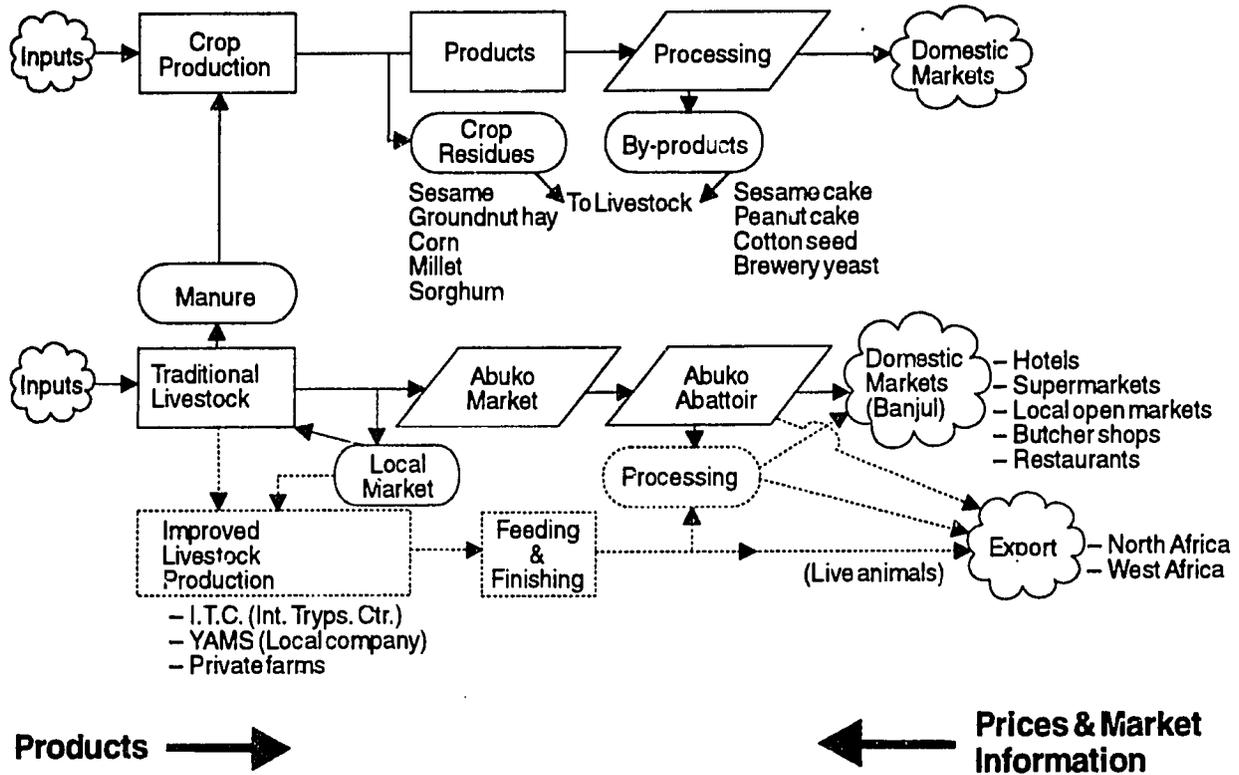
Source: Central Bureau of Statistics

beef, 350 mt of mutton and goat meat, and 664 mt of chicken and other poultry per year. Consumption in Banjul is the force underlying the present and any future marketing and distribution systems for both domestic and imported meat products. The major end-points for retailing of products can be classified into the following: butchers at local open-air markets, butcher shops, supermarkets, and the hotel and restaurant industry (including meat roasters). These market outlets have different clientele groups, but they are all important for the improved commercialization of the livestock industry by the private sector.

Butchers (local markets). Butchers in local markets sell the major quantity of beef, sheep meat, and goat meat in the greater Banjul area. The meat is for a "hot meat" trade. Only the higher-value cuts are sold at a premium price compared to the rest of the carcass. Meat is sold by weight and is generally a mixture of meat with bones and some offal. The amount of offal is highly variable per kilo. The middle meats will be sold as steak as well as part of the hindquarter. On the average, meat from this system retails for approximately 22 to 25 Dalasis per kilo of meat and bone.

There are no perceivable barriers to entry by private sector investors in this channel of the market. Operationally, butchers

**Figure I.1 – Conceptual Diagram of Livestock– Crop Product Flows
The Gambia**



pay an annual fee of D500 for a license and then pay D5.0 each day for rental of a market stall. These fees seem reasonable. Retail prices at these outlets are competitive, with many individual butchers having their own network of stall sellers. A limiting factor which may affect entry of butchers is the amount of capital to purchase livestock for slaughter and sale.

Butcher Shops (upgraded facilities and products). There are several types of individual butcher shops that have opened in the last year to cater to different segments of the population. The distinguishing factor among these shops is the amount of investment in refrigeration and shop design. All fresh meat comes from the abattoir at Abuko. These outlets are providing meat to a more quality-conscious consumer. While this meat is also processed at the local abattoir there is more selectivity on the part of the butchers as to quality, hygiene, and presentation. From all indications, this market segment is growing within the general public. This up-graded service sells meat retail for an average price of D35.8 per kilogram of selected cuts.

The opportunity for increasing the number of these small private butcher shops will be limited to the middle and high-income areas of the greater Banjul area, since higher-income consumers are less price conscious than the buyers in the local markets. Several excellent examples of meat shops of this nature were visited. Opportunities will exist for these shops where service and quality are given high priority.

Specialty meat marketing has arisen from this class of upgraded butcher shops. The focus of this newer system of meat marketing is supermarkets, hotels, and restaurants in Banjul and an affluent clientele who demand quality and hygienically processed specialty cuts. It is this specific market niche that is the primary focus of this assessment.

This market demands mostly selected cuts produced from the hindquarter section of the carcass. This immediately creates a marketing outlet problem for the forequarters, which have fewer of the selected cuts but still bear the same production costs. Also, it requires twice the number of live animals to satisfy a requirement for a determined number of kilos of specialty cuts, which are composed of fillets, T-bones, entrecotes, sirloins, and rumps.

At present, most of the supermarkets and some hotels import a good portion of their meat. It is estimated that approximately 300,000 kilos of selected cuts, destined primarily for this market, are imported yearly. This represents an equivalent of 2,400 head of live animals. The opportunity for local producers to capture a share of this market exists, and business establishments have expressed an interest in buying locally produced, fattened, quality meats. The major obstacle in this regard is whether the finished carcass (not yet processed into cuts) at the higher grade required

by this market can be produced for no more than the present selling price of 25 Dalasis per kilo for the entire carcass.

Supermarkets. Supermarkets are common in the greater Banjul area and several visits were made to ones which sell a wide assortment of canned goods and meat products. These establishments are a major retail point for imported meat, especially frozen and canned products. Supermarkets are also a major supplier of products to the hotel industry. The entry of additional supermarkets appears unlikely to offer immediate marketing outlets for the Gambian livestock (beef) industry, because the current products do not fit the quality requirements of this segment of the Gambian meat trade. Some selected opportunities do exist, however. One example is the Paul Maroun Supermarket, where a significant meat trade is conducted and meat processing is being considered as an additional product line.

Gambian sheep and goat meat do not currently have a market opportunity in the supermarket trade. Goat meat is sold mainly through other, more informal channels, and Gambian mutton as it currently is produced is not of acceptable quality for the supermarket trade.

Hotels. The Gambian hotel trade caters primarily to tourists (mainly Europeans) with certain preferences for meat, in terms of both quality and specific cuts. This segment is potentially important for the Gambian beef industry. (There are fewer opportunities for sheep and goat meat. (One exception is young goat, which can be roasted whole, like suckling pigs.)

Table I.2 provides estimates of the amounts of imported meat used to meet total requirements, and other, related information, for a number of Gambian hotels catering primarily to tourists. Interviews with chefs and food managers revealed that hotels have shifted to greater amounts of Gambian meat because of import and sales taxes, but imports still constitute a primary source of their higher-quality meat requirements. Major constraints on local producers meeting more of the hotel requirement are the following:

- The inability of local butchers to supply set quantities and qualities to hotels throughout the year.
- Food managers reported that local butchers are more interested in selling volume and place less emphasis on quality.
- During the dry season, hotels may have to advance funds to butchers to purchase animals and have them slaughtered.
- Local butchers require training in processing techniques and handling procedures to better serve the hotel trade.

Table I.2 Estimated Meat Imports for Selected Hotels, 1994

=====

Senegambia Hotel (capacity: 630)

<u>Type</u>	
chicken	4000 kg/quarter (3 months)
beef	250 kg/quarter (")
pork	250 kg/quarter (")
lamb	250 kg/quarter (")

<u>Individual item</u>	<u>CIF Price</u>	<u>Source</u>
beef tenderloin	D 134/kg CIF	South America
beef entrecote	D 112/kg CIF	"
beef rump	D 44/kg CIF	"
lamb chop b/i	D 37/kg CIF	
lamb leg b/i	D 45/kg CIF	
chicken breast	D 61/kg CIF	Germany
chicken - whole o.v.	D 20/kg CIF	"
pork fillet	D 60/kg CIF	"
pork spare ribs	D 19/kg CIF	"
ham (whole)	D 32/kg CIF	"
whole ham	D 143/kg CIF	"
local beef	D 65/kg	Gambia
beef fillet	D 95/kg	Gambia
whole beef carcass	D 24/kg	Gambia

Comments: Names and locations of importing agents: Germany - Sargar and Gebr. Schoemaker; Holland - Kopje

Atlantic Hotel (capacity: 400)

beef fillet - 600 kg per year, at D170/kg (air catering)
 beef strip loin - 1,200 kg per year at D80/kg
 beef rump - 600 kg per year, at D60/kg
 beef flank - 8,000 kg per year, at D10/kg
 poultry - 3 containers of 36,000 kg, at D22/kg
 bacon - 2 mt per year at D60/kg
 ham - 3 mt per year
 lamb legs - 2,000 kg per year, at D50/kg
 lamb chops - 2,000 kg per year, at D75/kg
 lamb racks - 120 kg per year, at D110/kg
 local beef - fillets at D31/kg
 local beef - hindquarters at D31/kg
 local suckling pig - D14/kg

Comments: Food manager orders most of the meat from U.K. exporters.

Table I.2 (cont.) Estimated Meat Imports for Selected Hotels, 1994

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Sunwing Hotel (capacity: 420)

Consumption of imported meat items:
 tenderloin and fillet - 600 kg per year
 strip loin - 800-1,200 kg per year
 topside - 2,500-3,000 kg per year

Comments: No prices were available on imported meats. Meat ordered from distributors in Las Palmas and Spain. Consumption in the hotel averages 500 kilos per month. Requires quality throughout the year and local butchers cannot meet this. Uses two local butchers. Has a 20-foot reefer for cold storage.

B & B Hotel

Prices paid:	
local fillet, with head	D60/kg
local fillet, without head (20/kg per day)	D70/kg
rump with bone (10-15 kg per day)	D35/kg
local meat for staff	D22/kg
local chicken, approx 1 kg. each (100 pieces every 2 weeks)	D30/kg
imported fillets	D130/kg
tenderloin (2/3 lb. each)	D115/kg
tenderloin (3/4 lb. each)	D170/kg
imported lamb chops	D65/kg
boneless strip loin	D72/kg

Comments; Chef and food/beverage manager, John Ekstrom, hangs meat for 10 to 12 days and has a cooler of 60 cubic meters.

Amis Beach Hotel (capacity: 230 people)

Prices:
 rump: 14 kg /day at D35/kg
 entrecote: 14 kg/day at D60/kg
 fillet: D95/day
 small pigs for roasting at D15/kg, live weight
 imported pork: D78/kg
 chicken: 1.3 kg/piece at D37 per chicken

Comments: Amis Beach has a lack of storage for holding meat; current storage capacity is for 100 kilos. They are unhappy with quality of local meat, but are buying more locally because of lower costs. Hotel minces meat from the rump.

Source: Personal interviews, February-March, 1994.

It is estimated that hotels (150,000 kg) and supermarkets together import approximately 300,000 kilos of selected beef cuts yearly. This represents an equivalent of 2,400 head of live animals. There are private butchers and meat shops that are trying to penetrate the hotel market, especially for poultry and the high-quality middle cuts of meat. As previously stated, however, the major obstacle in this regard is whether a finished carcass (not yet processed into cuts) that meets the higher quality standards of this retail market can be produced for no more than the present selling price of D 25/kg for the entire carcass.

An additional difficulty suppliers face with this market is the toughness of Gambian meat and the ability to maintain a regular supply flow, especially in the dry season. Domestic beef is purchased by some hotels for staff consumption on the premises. (One hotel imports very inexpensive boxed frozen meat (D10/kg) for its staff, as it is easier to distribute and there is less waste.)

Another major limiting factor for increased consumption of local meat is the shortage of cold storage capacity at the hotels. This presents an opportunity for a private firm to provide cold storage for meat products and other produce. Hotels would be able to order carcass meat that has been properly hung and aged in cold storage to improve the tenderness of the meat. According to personal interviews and observations, the number of tourists is increasing as more promotion is directed to support the industry in The Gambia, and so the overall outlook for increasing demand for meat from the hotel sector is good.

Restaurants. Restaurants serving the general population acquire meat through the traditional system of local butchers or butcher shops. The upscale restaurants are certainly an outlet for higher quality Gambian meat.

A popular way to merchandise mutton and goat meat is through meat grillers who purchase their meat in the afternoon from butchers and grill their meat for sale in mobile cookers and at kiosks. The grillers spend about D10 per day in charcoal for keeping their meat warm. Live animals are purchased for D300 - 500 per head and sold on a piece basis. Current prices charged are meat without bones (D20/piece), meat with bones (D10/piece) and intestines (D5/piece).

The opportunity for private sector initiatives for restaurants is good because the population of the greater Banjul area will continue to grow. However, more training in meat processing and merchandising is needed.

MARKET/PRICE SITUATION FOR BEEF, MUTTON, AND GOAT MEAT

The greater Banjul area will continue to be the major driving force in attracting private sector investors interested in meat marketing. Upcountry urban areas have not developed the level of sophistication in meat retailing and merchandising that is seen in the Banjul market. Income levels outside Banjul are low by comparison, and this reduces the demand for meat and associated retail services.

Price competition will be keen between red meat, poultry, and fish as consumers look for variety in their diet and price savings (see Table I.3 for comparative costs). The domestic poultry industry has seen new entries by private sector individuals who are producing both meat and eggs.

Table I.3. Price Relationships between Selected Meat Types, The Gambia, 1989-93*

	1989	1990	1991	1992	1993
	(all prices in Dalasis)				
Beef	10.00	11.04	10.73	11.70	13.84
Mutton	15.00	16.83	17.94	19.20	26.88
Pork	4.00	7.21	7.50	9.17	8.75
Fowl	26.02	26.24	26.61	27.63	28.77
Ladyfish	5.54	8.17	8.74	11.97	14.11

Source: Consumer Price Index for the Low Income Population in Banjul and Kombo St. Mary, selected years.

* All prices listed are for 500-gram portions except for poultry, which is for 1000 grams.

It will be noted that the rate of increase in poultry prices has been relatively flat, indicating that on a per kilo basis, cost efficiencies have resulted due to improved productivity. The prices of beef, mutton, and fish have risen at a faster rate due to lower productivity. Throughout West Africa, mutton and goat meat generally sells for a higher price than beef. This is because of the small size of the carcass and the availability and preference for these meats. (Table I.3 illustrates this preference.)

The overall rate of increase in meat, poultry, egg, and fish prices is presented in Table I.4. Over the last two years, the general price level for these commodities has risen approximately

12 percent. The present level of inflation will cause real expenditures for food per capita to decline, and for this reason, reduced demand for meat products may be evident in the future.

Table I.4. Composite Price Index for Meat, Poultry, Eggs, and Fish; The Gambia, 1989-93

Year	1989	1990	1991	1992	1993
Index	1597.5	1866.5	1949.6	2212.0	2465.2

Note: (base year 1974 = 100)

Supermarkets in and around Banjul are catering to the more affluent Gambians and expatriate community. Meat prices recorded in two local supermarkets are presented in Table I.5, and the price differences compared to those on the local open markets are quite large. This is due to the presentation of the meat and the removal and merchandising of the better cuts.

Table I.5. Selected Prices for Fresh Meat at Supermarkets, Greater Banjul Area, February, 1994.

Site and Item	Dalasis/kg
Site One - (Paul Maroun)	
minced beef	50
local entrecote	65
local fillet	85
Site Two - (The Kariba)	
fillet with head	60
fillet without head	70
rump with bone	35

Source: Personal interviews.

Import Statistics for Meat

The Gambian meat import data presented in Tables I.6 and I.7 were supplied by the Central Bureau of Statistics, and demonstrate substantial increases from 1991-92 to 1992-93 for imports of fresh, chilled, and frozen meat. For the period 1992-93, the total of imported meat was 1.3 million mt, of which 481,000 mt was fresh, chilled, or frozen meat. In this period, the total value of imports was D13,300,000. The value of the fresh, chilled, and frozen segment alone was D5.3 million (40 percent of the total value). This averages out to a price per kilo of D11.12/kg.

As Tables I.6 and I.7 make clear, the quantity of fresh, chilled, and frozen meat imports was more than double the amounts

imported in the previous period (1991-92). The lower price per kg for this segment of the imported meat demand in 1992-93 is partly explained this significant rise in quantity.

Table I.6 Quantity and Value of Meat Imports, The Gambia, 1992-93

Product Category	Quantity (kg)	Value (dalasis)	D/kg
Meat: fresh, chilled frozen	481,254	5,351,000	11.12
Bacon and ham	24,780	380,000	15.49
Salted and smoked pig meat	97,485	656,000	6.72
Other meat, dried, salted or smoked	74,548	523,000	7.02
Meat: extracts and meat juice	1,828	28,000	15.32
Sausages, whether or not in airtight containers	26,295	207,000	7.89
Canned meat in airtight containers	553,436	5,679,000	10.26
Other meat and meat prep., whether or not in airtight containers	65,580	459,000	6.99
Total	1,325,206	13,287,000	

Source: Central Bureau of Statistics

Table I.7 Quantity and Value of Meat Imports, The Gambia, 1991-92

Product Category	Quantity (kg)	Value (dalasis)	D/kg
Meat: fresh, chilled frozen	212,700	3,036,000	14.27
Bacon and ham	52,074	873,000	16.76
Salted and smoked pig meat	69,055	633,000	9.03
Other meat, dried, salted or smoked	47,368	355,000	7.49
Meat: extracts and meat juice	31,059	397,000	12.78
Sausages, whether or not in airtight containers	611,597	3,596,000	5.87
Canned meat in airtight containers	14,852,089	25,414,000	1.71
Other meat and meat prep., whether or not in airtight containers	138,852	951,000	6.84
Total	16,013,794	35,255,000	

Source: Central Bureau of Statistics

Relationships between Import Prices and Domestic Prices

Site visits were made to supermarkets, private butcher shops, and local markets to collect price information on meat and other competitive products (Tables I.8, I.9, I.10). The price margins among these items are large, reflecting the variability in income areas and imported versus domestic products.

Table I.8. Prices for Imported Meat Items, Selected Supermarkets, Greater Banjul Area, February, 1994.

Meat Item	Dalasis	U.K. Pound
Frozen chicken whole (1400 grams)	38.00	
Frozen chicken whole 1.1 kg (France)	33.00	
Frozen chicken whole 1.2 kg (France)	35.00	
Frozen chicken whole 1.3 kg (France)	37.00	
Pork (chopped) (300 gr.)	22.50	
Corned beef 15.5 oz.	19.00	
Corned beef 240 gr. (France)	26.50	
Corned beef 340 gr. (Argentina)	29.00	
Corned beef 340 gr. (Swiss)	28.50	
Corned beef 340 gr. Halal slaughter	32.50	
Oven-ready turkey (kg)	42.00	
Oven-ready duckling (kg)	49.00	
English beef (kg)	65.00	
Smoked sliced bacon	70.00	
Chicken (1.1 kg.)	33.00	
Chicken (1.3 kg.)	37.00	
Blondy ham	260.00	
Ham	145.00	
Garlic salami	253.00	
Pepper salami	255.00	
Cheese salami	255.00	
Parma ham	370.00	
Beef mortadella	140.00	
Smoked bacon	110.00	
Strip loin		1.60
Tenderloin		4.60
New Zealand Lamb		1.90

Note: Prices indicated are per kilogram unless otherwise indicated.

Table I.9. Meat Prices, Local Markets, The Gambia, February 1994.

Location	Meat Item	Price (D/kg)
Brikamaba	Meat with bones	17
Banjul area	Meat with bones	24
Banjul area	Steak w/o bones	30

Comparison of prices between the local open markets and two butcher shops indicated the differences in margins from meat processing and provision of quality in hygiene and improved cutting of meat (see Tables I.9 and I.10).

Table I.10 Meat Prices, Private Butcher Shops, Serekunda/St. Mary's Areas, February 1994

Meat Item	Price (D/kg)
<u>Shop No. 1</u>	
T-bone	70
foreribs	60-65
topside/silverside	55
round	55
rump	60
thick flank	60
ground beef (regular)	50
ground beef (lean)	55
Pork	40-42.50
sausage (50/50)	65
leg	15
liver	15
Mutton (leg)	40
ribs	40
Goat (leg)	40
ribs	40
<u>Shop No. 2</u>	
fillet w/ head	55
fillet w/out head	45
mince	40
round steak	35
liver/kidney	35
mutton (leg)	40
ribs	40
goat (leg)	40
ribs	40

Domestic and Imported Supplies of Livestock

The estimated current cattle inventory is approximately 320,000 head. According to recent studies, the herd offtake of cattle is around 7.9 percent, with approximately 14,000 head of cattle being sold. (Based on the number of hides counted, the estimated offtake may be closer to 40,000 head, which would be closer to 12 percent.) A large portion of the cattle sold for slaughter would be destined for the greater Banjul area. The offtake rate of small ruminants is much higher, at 23.6 percent, with approximately 7,500 sheep and 13,179 goats marketed each year (UNDP, 1992).

The offtake rate is unlikely to change noticeably in the near term unless weather conditions or a major outbreak of disease causes a major sell-off of animals.

The Gambia's close proximity to Senegal and other major livestock-producing countries presents some problems in estimating the supply of live animals for the greater Banjul market. Large-framed Senegalese (Zebu) cattle and sheep are present in the Abuko market. The border separating the two countries is very porous, with livestock movement between countries heavier at certain times of the year. The Casamance was mentioned as a place where Gambian cattle are moved during the dry season. The recent devaluation of the CFA franc has also altered the terms of trade for the Gambian livestock, with more animals moving into the country.

POTENTIAL EXPORT MARKETS FOR GAMBIAN LIVESTOCK, MEAT, AND BY-PRODUCTS

The export potential for Gambian livestock, meat, and by-products have not been fully exploited. Opportunities will exist in the future as constraints are removed and private sector companies are able to get on a firm footing. These constraints include needed improvements for the Abuko slaughterhouse and terminal market, the low productivity of the traditional herds, and increased offtake of livestock.

Live Animal Exports

The previous, state-owned marketing organization, the Gambian Livestock Marketing Board (LMB), exported prime breeding stock to Gabon. Unfortunately, this depleted an important genetic pool of N'Dama cattle in The Gambia. Opportunities will exist in the future for live animal exports, but for the present, the genetic pool will have to be replenished. Meat exports will take priority over live animals. In the future, large-scale exports of an asset such as the foundation herd should not be allowed again. Selected West African markets hold the greatest potential for export shipments of breeding livestock, however.

Hides and Skins

Market opportunities exist for the export of Gambian hides and skins. Currently, the US price for heavy native steer hides is \$80 per hundredweight.

However, in a recent contract for the sale of Gambian hides to Greece, unprocessed hides were sold for only D20 apiece. It is felt that there is a major loss in revenues from not properly handling and processing hides and skins, and private sector initiatives are needed for upgrading the tanning of hides. The parastatal involved in tanning, GAMTAN, was part of the LMB. It was split off from LMB and is now 40 percent privately owned and 60 percent owned by the Government. At a slaughter slab in Basse, very crude methods of preservation are being used. With an improved collection and processing system, opportunities exist for capturing the full value of this important livestock by-product.

Meat Exports

Export markets for Gambian livestock and meat are likely to be regional because there are fewer health and hygiene standards acting as barriers compared to the European Union, for example. Two primary regions are considered below: West Africa and North Africa. Penetration of these regional markets, however, will require major structural and facility changes in the marketing and processing of livestock and meat. (See Chapter II.)

West Africa. Key West African markets for Gambian meat are the region's coastal countries (see Table I.11). Until very recently in many of these countries, the overvaluation of the CFA franc made imported meat very attractive in comparison to domestically-produced livestock production. This situation has been further compounded by large-scale exports of cheap, subsidized beef by the European Union to West Africa at landed prices as little as 30-35 cents(U.S.) per pound. However, with the 50 percent devaluation of the CFA franc earlier this year, and the recent GATT agreement, the influence of both of these factors will lessen substantially in the future. This bodes well for countries with surplus livestock in West Africa.

Table I.11 Imports of Fresh Beef, Sheepmeat, and Canned Meats, Selected West African States, 1992.

Country	Fresh Beef		Sheepmeat		Canned Meat	
	mt	valueUS\$ ('000)	mt	valueUS\$ ('000)	mt	valueUS\$ ('000)
Benin	5,800	7,300	-		250	660
Cape Verde	40	250	4	--	880	2,230
Cote d'Ivoire	12,971	13,000	150	450	1,066	3,780
Gabon	12,800	19,400	230	700	1,250	4,280
Gambia	300	380	-	--	390	1,170
Ghana	22,000	26,200	100	400	650	1,750
Guinea	1,400	1,600	--	--	630	1,400
Guinea Bissau	--	--	--	--	520	1,380
Liberia	2,300	2,300	10	60	535	1,210
Mauritania	210	630	-	--	1	6,000
Nigeria	10	35	-	--	400	1,300
Senegal	900	1,000	30	200	221	820
Sierre Leone	50	50	-	--	369	970
Togo	460	700	-	--	280	960
Total	46,441	53,445	294	1,110	6,192	23,630

Source: FAO Trade Statistics, 1992.

As Table I.11 demonstrates, the countries in the region with major imports of fresh beef are Benin, Cote d'Ivoire, Gabon, Ghana, and Liberia. However, all of these countries except Gabon and Liberia are contiguous to the major livestock-raising countries in the interior of West Africa, such as Mali and Burkina Faso. These surplus livestock countries of The Sahel will pose stiff competition for these markets in the coastal states of West Africa. (Gabon represents a particularly attractive opportunity for The Gambia because of its relatively high GDP per capita of over US\$ 4,300.)

Given these circumstances. The Gambia will have to look to specialized market niches rather than to the generic trade of live animals for slaughter from The Sahel. Frozen or air-flown chilled meat from The Gambia represents a longer-term marketing strategy that will not be possible until facilities at the Abuko abattoir are upgraded.

Sheepmeat imports are not a major meat item in the target countries. However, canned meat is an important import commodity in all the countries.

North Africa. Selected countries in North Africa are possible markets for Gambian meat (see Table I.12). It will require further investigations once the impediments in the processing and distribution stages are resolved. Countries of potential interest

are Morocco, Tunisia, Libya, and Algeria. Available modes of transport may be a limiting factor, as well as transportation cost. (It was reported that Botswana is exporting meat to Morocco, which would indicate that The Gambia would have a location advantage.) Ocean freight would be the least expensive method of shipment.

Table I.12 Imports of Fresh Beef, Sheepmeat, and Canned Meats, Selected North African States, 1992.

Country	Fresh Beef		Sheepmeat		Canned Meat	
	mt	valueUS\$ ('000)	mt	valueUS\$ ('000)	mt	valueUS\$ ('000)
Algeria	19,000	24,000	--	--	--	---
Libya	2,400	5,400	30	120	30	180
Morocco	4,821	6,716	2,217	2,996	115	428
Tunisia	12,968	21,707	475	1,038	4	51
Total	39,189	57,823	2,722	4,154	149	659

Source: FAO Trade Statistics, 1992.

European Union. The European Union represents a major potential market for Gambian beef and lamb products. However, the EU has effectively instituted a set of non-tariff trade barriers which will virtually make it impossible for The Gambia to penetrate this market.

As an example of how tough it is to achieve compliance with EU standards, only three beef slaughtering plants in the United States have been able to obtain EU approval for slaughter for shipment to EU countries. The EU standards are based on having a large meat slaughter facilities which does not encourage mass production. Procedural requirements such as separation of clean and dirty areas, floor-to-wall requirements, and other structural requirements preclude many existing plants from compliance. The abattoir at Abuko would certainly not begin to meet these standards.

Besides approving such structural aspects of a plant, the EU must also approve a country before a plant can be approved. A line of authority in meat inspection must be evident from the national level down to the plant, and testing of meat products for residues and compounds must be conducted on a scheduled basis, with testing based on a percentage of animals slaughtered. In The Gambia, although this line of authority exists, there is no protocol in place which would enable regulatory authorities to conduct inspections of and testing in regulated plants. Gambian livestock authorities also do not currently have a fully-equipped laboratory in which such tests could be carried out.

Finally, the EU is in a deficit with respect to high-quality beef. It is a net exporter of low-grade beef, with a large amount of manufacture grade beef, primarily from the dairy herd. Hence the recent, large shipments of such beef to West African countries at very low landed prices. The positive aspects about the EC meat situation is that intervention stocks are very low, with high current exports to the former Soviet Union and to Eastern Europe. With the impending implementation of GATT, however, the terms of trade for EU beef will shift in favor of West African countries supplying to deficit coastal African countries. GATT will reduce the level of EU subsidies for production and export by the year 2000.¹

STRATEGIC MARKET INTERVENTIONS

Interventions at the retail level for the merchandising of meat and livestock products should focus on market development for Gambian products. With the prospects for increased population growth in the greater Banjul area and the growing demand for animal protein, it will be necessary to ensure high-quality and affordable meat for different segments of the population.

The lack of a system of grades and standards in the present marketing situation will retard the commercialization of the industry. Producers do not know the types of animals that are preferred for different market segments. Price signals reflecting premiums and discounts are not readily available. For this reason, it is believed that product contracts between butchers and producers will have to be the mechanism for getting the "right" kinds of livestock for the export market or for up-scale butcher shops, supermarkets, restaurants, and hotels.

Private Butchers

The delivery mechanism for the vast majority of the population is through butchers to local open markets. This system has been established over a long period and is cost-efficient in delivering meat products to the end-user. This segment is occupied by private butchers who work on a fine margin with a network of sellers. Competition is keen among sellers.

There is an expanding niche for specialized private butchers to serve a clientele with special needs and who will pay for higher quality and services. This specialized retailing segment could benefit from investment loans that in turn would enhance the distribution and retailing of meat. Such entrepreneurs need assistance and training in retailing, merchandising, and marketing

¹. Personal communication with Mark Gustafson of the U.S. Meat Export Federation, Denver, Colorado; February 17, 1994.

skills related to meat products. This group of butchers could be encouraged to expand into greater degrees of wholesaling of meat for domestic and export markets.

A particularly desirable activity would be improvements in the cutting and handling of meat. This would improve the overall quality of the product, especially for the hotel trade. This could be achieved through a series of technical short courses, beginning with the Abuko slaughter facility and progressing through the handling and transport of carcasses, and then cutting of the meat into retail portions.

Export of Hides and Skins

With approximately 40,000 hides and over 70,000 skins, the opportunity for value-added processing of an important by-product is evident. The value at the current production level is D2.0 million. The closure of GANTAN affords the opportunity for small-scale businesses to enter the market. A market research and feasibility study of regional and world markets would be useful to prospective companies or individuals interested in entering this market. (See Chapter II).

Export Marketing Strategies

Private sector assistance is required for developing the capability of Gambians to undertake export promotion and marketing of livestock, meat, and their by-products. Development of markets for livestock for breeding purposes has been tried in the past and should be reinstated through commercial livestock operations.

Efforts are needed to gather and disseminate information on key West African markets. This would inform private individuals and companies where opportunities exist for export. The Gambian consulate in target countries could be instrumental in facilitating opening up markets for Gambian livestock and meat products.

Market Information

Through the Department of Livestock Services, the Ministry of Agriculture could provide resources to improve the market signals and the exchange function for livestock. Better, more timely market information would stimulate the private sector (producer, processor, and marketing agents) to enter and improve the marketing system. Included in this activity, ideally, would be the implementation of a system of simple grades and standards for livestock and meat.

II. LIVESTOCK SLAUGHTER AND MANUFACTURE OF MEAT PRODUCTS

QUALITY/CHARACTERISTICS OF GAMBIAN RED MEAT PRODUCTS

To fully understand the market prospects for Gambian red meat, it is important to know its quality and characteristics. Production conditions for the indigenous breed of cattle, the N'Dama, place the animal under annual stress due to the long dry season and the requirement to move animals to and from water and grazing. Consequently, cattle have lower birth and weaning weights, lower reproduction rates, and higher retention levels in the herd. The carcass yields are low compared to temperate climate ruminants and the meat is less tender because of the management of the animal and the age at slaughter. Any effort to improve the tenderness of the carcass will require increasing the growth rate of the animal to reach heavier weights at a much younger age. This can only be done through improved management and care for the animal and provision of additional feed inputs.

To gain information on carcass yields, eight head of cattle were weighed before slaughter, slaughtered, and the carcasses then weighed. The resulting data are provided in Table II.1. The yields on these carcasses are on a hot weight basis. All of the sample animals except one were cross-bred or Zebu cattle.

Table II.1 Carcass Characteristics for a Group of Cattle Slaughtered at Abuko, February, 1994.

Animal Number	Breed	Live Wt.	Carcass Weight	Foreqtr.	Hindqtr.	Yield
		(kg)			%	
# 1	Zebu bull	460	241.0	118.50	122.50	52.4
#2	Zebu bull	490	260.5	129.50	131.0	53.3
#3	Zebu bull	495	251.00	113.50	137.50	50.7
#4	Zebu steer	550	273.50	120.00	153.50	49.7
#5	N'dama steer	500	250.5	112.00	138.50	50.0
#6	Zebu bull	550	283.50	145.50	138.00	51.5
#7	Zebu bull	515	239.00	117.00	122.00	48.3
#8	Zebu bull	445	222.50	114.00	108.5	50.0
AVERAGE		500	253.00	121.00	131.00	50.7

Source: Field data from the Abuko abattoir, February, 1994.

The animals slaughtered were muscular and in good condition, explaining in part the consistent yields averaging 50 percent. The yield of the N'Dama cattle are reported to be less than this, especially as the dry season progresses, yields of 45 percent reported as average.

SLAUGHTER AND PROCESSING INDUSTRIES

Slaughter and processing in the livestock marketing system is where value is added through the disassembly of the live animal into a variety of products. This is also where values obtained in the production of the animal can also be lost. In The Gambia, livestock are slaughtered for consumption either at the Abuko abattoir or at local slaughtering slabs. These facilities are basic, with few facilities serving a hot meat trade.

According to data in a UNDP-financed feasibility study for Gambian hides and skins, there are 469 butchers using the available slaughter facilities. These are listed in Table II.2. Separate interviews with the Gambian Butchers Association placed the current number of butchers in the greater Banjul area at 100. Compared to meat operations in other countries, valuable by-products are lost in these processing facilities. It is these by-products that provide the profit margins for a meat plant for which slaughtering and selling of the carcasses place it only near the break-even point.

Table II.2 Number of Butchers Operating and Numbers of Animals Slaughtered in The Gambia, 1992.

Location	Butchers	No. of		Value (Dalasis)	
		hides	Skins	Hides	Skins
National	404	37,795	70,723	967,425	375,058
Kombo St. Mary's Div.	65	10,950	9,125	273,750	5,470

Source: Drammeh, "The Utilization of Hides and Skins for Income Generating Purposes in The Gambia," UNDP, October, 1992.

Urban Slaughter Facilities - Abuko, Basse, and Sololo

Abuko. The slaughter building at Abuko was built by a grant from the United Kingdom some time in the 1970s. The plant is of typical construction, with overhead rails and holding rooms for the hot carcass meat. The plant and equipment have been fully depreciated and major refurbishing is needed.

The storage capacity of the hot carcass room is for 70 cattle and a combination of sheep and goats. Slaughter figures for the month of January are presented in Table II.3. Average daily slaughter is currently 40 cattle, seven sheep and 27 goats.

Table II.3 Slaughter Numbers for Abuko Facility, January 1994.

Animals	Classification	Head Slaughtered
Cattle		
	Butchers	1,133
	Private	42
	YAMS	68
	Total	1,243
	Average Daily Kill	39
Sheep		
	Butchers	204
	Private	8
	Total	212
	Average Daily Kill	7
Goats		
	Butchers	871
	Private	4
	Total	875
	Average Daily Kill	27

Source: YAMS, Banjul, The Gambia.

The plant operates on a schedule of night slaughter with dispersement of carcasses in the early morning. Sheep and goats are slaughtered in the late afternoon for supply to small meat grillers who sell cooked meat on the street.

Estimated operating costs for the slaughter facility is D300 per night shift for 13 laborers. Other costs were not determined. Based on an average of 39 head of cattle and 34 head of small ruminants per night, the daily revenue is estimated at D3,385. Net cash revenue after payment of labor is approximately D3,000 per night. This does not include energy, water, management, and interest on capital.

The plant has two cold rooms for chilling or freezing of meat. The rooms are for the hanging of quarters. The size of the two rooms are 480 cubic meters for the chill room and 360 cubic meters

for the cold room. The chill room has a temperature of 0 degrees C. and the cold room, to -30 degrees C. The refrigeration units are currently not operational and will require a major investment to replace the freezing equipment. This will have to be done if regional export markets are to be penetrated. The estimated slaughter rate for cattle is 10 minutes per head. This rate will need to improve if more cattle are to be processed through the plant.

The current conditions in the plant are not satisfactory and require an investment by the new owners, YAMS, to bring the plant into compliance with local sanitation and environmental health standards. There is no hot water available for cleaning during and after the slaughter process. Effluent from the plant, which should be captured and processed, is allowed to be discharged and flow off the site. Valuable by-products such as blood and inedible products are not processed. Racks for air drying of hides are near the plant, yet these hides could be processed further than they currently are, with greater value added.

With the privatization of the plant in late 1993, it is believed that the new owners, YAMS, will make improvements in the facility. The cost for minimal improvements is likely be in the range of US\$150,000-250,000. These will be needed in waste management, equipment, water, lighting and flooring in the facility, and overhaul of the refrigeration system. Processing of blood and other by-products needs to be encouraged. A splitting saw for dividing the carcass is needed to reduce meat damage and the presence of chips in the meat, and to speed up the kill rate. Better processing of the offal should also be encouraged.

The present techniques used to kill and dress carcasses are not appropriate for ensuring quality and tenderness. For example, the current killing process allows for too much stress which does not enhance the quality of the meat. Evidence of axe cuts on the carcass to allow for better handling can be replaced with hand hooks. Simple training techniques for the slaughterhouse staff will improve the safety, increase throughput and enhance the overall quality of the finished product.

Basse and Sololo Slaughter Slabs. Site visits were made to up-country slaughter slabs to assess the condition of these facilities. The Basse slaughter slab is old and the roof has begun to fall down. A new slaughter facility is under construction with assistance from the European Development Fund (EDF) through the Village Incentive Support Activity. The average daily slaughter at the Basse slab is 10 head of cattle and some number of sheep and goats.

For the slaughter slab at Sololo the location of the slab adjacent to the river presents serious environmental and health risks for the community. The river is used for bathing and clothes

washing down stream from the discharge of animal wastes. A new site is necessary which should be away from human activities and the river.

At both slaughter slabs, animal parts were strewn around the site. These products, blood, offal, bone and animal waste, could be collected and processed for further utilization. The preparation of hides and skins is not in good order and there is lost value in the processing system.

Hides and Skins Processing

With the closure of the GAMTAN facility near Abuko, the processing of hides and skins has reverted to very basic processing standards. Hides that were inspected were poor in quality with knife scars from improper skinning. Unlike larger plants that have hide pullers, hides are currently removed with a knife. The grade of the piece declines during this important stage of hide removal with these techniques.

Hides and skins were seen strewn around the Abuko and around upcountry slabs. Hides are air dried by stretching on a rack or laid on the ground. Pieces will have to be rewetted before further processing. Hides are purchased from butchers for D25 per piece and sheep skins are D12.

While LMB was in operation, pieces were exported in the "wet blue" stage for further processing overseas. A frequent market was Greece. The processing cost for the wet blue product is D46 per piece (see Table II.4).

Table II.4 Costs and Returns for Hide Processing to Wet Blue Stage, The Gambia, 1994

Cost Items	Value (per piece)
Up-country price of hide	D15
Chemical process	D24
Labor, utilities, etc.	D7.0
	=====
Cost to wet blue stage	D46
Revenue for export of piece	D175
	=====
Gross Profits	D129

Source: Personal communications with Mamodou K.B. Drammeh, Banjul

Based on information in Tables II.2 and II.4, the potential gross profits would be in the range of D4.0-5.0 million. What is not

currently available is an efficient collection method for hides and skins.

HEALTH STANDARDS AND HYGIENE AT SLAUGHTER FACILITIES - ROLE OF DLS

The Department of Livestock Services (DLS) plays an important role in ensuring food safety in the meat industry. Establishing and implementing meat grades and standards as well as ensuring health and hygiene standards are dual roles for the DLS veterinary service. As standards are improved, consumers will have greater confidence in the quality of Gambian meat products, and Gambian meat will be able to better compete with imported products.

Food safety and inspection services are a cost that needs to be partly shared by the private sector and consumers, and user fees and inspection charges are important in supporting food safety. The slaughter and meat inspection fees need to be used to offset some of the cost incurred by the Division of Livestock Services. The current fee is D10 per head, and consideration should be given to raising this somewhat in the interests of improving food safety and inspection services.

VALUE-ADDED PROCESSING ACTIVITIES

In the Gambian livestock production system, the majority of animals being slaughtered are older ones which have been trekked long distances. These conditions result in the meat being dense, with little subcutaneous and surface fat. Generally, the prime cuts will not be as tender as on younger animals that have been through a fattening scheme. The size of the prime middle meats are not up to hotel standards.

The composition of the carcass is such that the forequarter cuts are not suitable for the upscale hotel or restaurant trade. Typically, this is the portion of the carcass that is best for further processing (hamburger, cooked and smoked meats, and canning). In any improved livestock system in which value is added to the animal, this portion of the carcass normally is sold for less than the hindquarter cuts.

Meat processing is an excellent method for disposing of the forequarter cuts. However, the Gambian meat processing industry is in its infancy, and little effort is made to convert beef into a variety of sausages, frankfurters, patties, or cubed meats. By contrast, the U.S. beef industry has been successful in taking lower-value cuts and merchandising them; e.g., as fajitas and briskets and so forth. Gambian imports of such processed products were 16,000 mt in 1991-/92 and 579 mt in 1992-/93 (Central Statistics Department, Ministry of Finance).

Private Gambian interests interested in starting a meat processing facility estimated that about US\$300,000 would be needed to construct a new facility and purchase the required processing equipment.

RECOMMENDED STRATEGIC INTERVENTIONS - SLAUGHTER AND PROCESSING INDUSTRIES

Upgrading the Abuko Facility

It is recommended that a protocol be established for the Abuko slaughter facility that sets standard operating procedures for killing of animals and cleaning of carcasses and offal. Waste management procedures also need to be addressed. The Division of Livestock Services, in conjunction with the private owner of the facility (YAMS), needs to agree to a timetable to bring the plant into compliance with minimum health and hygiene standards for The Gambia, as well as for other West African markets. In conjunction with the design of such a protocol and a timetable for implementation, low interest loans with attractive investment credits and duty-free imports of equipment should be granted to the company as it complies with procedures and realizes prescribed improvements in the plant.

Meat Processing for Value-added Products

The importance of value-added meat processing cannot be stressed enough. The types of carcasses produced are suitable for the manufacture of meats used in sausages, frankfurters, patties, and other specialty items. This would also apply to both mutton and goat meat.

It is recommended that a feasibility study be conducted for a small-scale meat processing business. The business could undertake both the cooking and smoking of meat products, including pork and bacon. Market testing of products could be done in conjunction with local meat technologists so that proper spices and seasoning are applied that meet local consumer tastes, as well as those of the hotel markets. The business would utilize only Gambian raw materials, except casings and spices. It is possible that as the business grows and the Abuko plant implements hygiene standards, then local casings could be used. The estimated capital costs would be US\$200,000-300,000. Equipment requirements include a cutter, an emulsifier, a grinder, a mincer, a stuffer, injectors, and a smokehouse. The facility would have to have a cold room for cutting and processing meat and a freezer for storage of finished meat products.

Cold Storage Facilities

A constraint in marketing meat to the hotel, restaurant, and more discriminating local consumer markets is the lack of a facility to hang carcasses for periods of time to allow tenderization of the carcass. Without this hanging, cold shortening of muscle sets in making the meat tougher than it already is. A private cold storage facility could serve an important function in preparing carcasses and providing for a particular market niche. At some future period when export markets are to be exploited, such a facility would be in a position to provide an important service. Estimated capital cost of such a facility is US\$100,000-200,000.

Hides and Skins Processing

The private sector needs to be encouraged to enter the business of processing of hides and skins for domestic and export markets. A feasibility study is recommended to identify the market opportunities. Small-scale processing facilities can be built for the collection and processing of hides and skins for domestic and export markets. The capital costs of an appropriately design and managed tannery would cost in the range of US\$100,000. A loan not exceeding 10 percent with a payback period of ten to 15 years is recommended. Another important component would be implementation of an efficient way to process, collect, and preserve hides and skins at upcountry slaughter slabs for later processing near Banjul. Smaller loans could be made to private individuals who want to set up such small-scale operations.

III. LIVESTOCK MARKETING IN THE GAMBIA

OVERVIEW

In The Gambian livestock distribution system, animals are transferred from livestock producers (owners or caretakers) to the commercial marketing system. (Live animals are bought and sold for inter-herd sales, but such transactions are not a focus of this study.) With the privatization of the Livestock Marketing Board, private livestock dealers and butchers are now solely responsible for the movement of livestock. Private owners do sell their livestock to end-users, but this is mostly for small ruminants (especially fattened sheep for Tabaski). For individual producers delivering animals into the terminal market at Abuko, the transaction costs are very high.

The interface between producers, livestock dealers, and butchers is a complex set of relationships not easily understood by the casual observer. Many transactions are done on credit arrangements, with money not appearing until the animal is slaughtered and sold to the final consumer. It is generally only at this time that payments flow backward to the producer. Trust is obviously imperative and can be easily abused. As one producer reported, he had over D40,000 owed by a dealer and the prospects were slim of recouping his money. Dealers are both Gambian and foreign nationals, which can make tracking claims a difficult exercise. Because they involve high transaction costs, legal remedies are usually not a viable option.

MARKETING COSTS

There are several livestock marketing studies with respect to West Africa which indicate that marketing costs are low relative to risks associated in the movement of animals (Holtzman and Kulibaba, 1992; Metzler and Cook, 1993). In The Gambia, marketing costs are estimated at around 3 percent, which is certainly reasonable (USAID, 1992). Barriers to marketing appear to be virtually non-existent; however, there is some concern about payment of unauthorized fees in transporting livestock through checkpoints from upcountry markets to Abuko.

A transit permit issued by the DLS is D2.0 per application.

Included in an assessment of marketing costs should be shrinkage in transport and the costs of waiting periods at the holding grounds before final sale. This can be costly.

The major means of moving cattle to Abuko is by trekking, except for producers on the North Bank who will likely have to ferry their animals across The Gambian River (UNDP/FAO, 1992). The cost of the ferry is D5.0 per head. Trucking charges from Karra

(near Farafenye) to Abuko is from D70-100 per head and trucking from Basse to Abuko is D100 per head.

The charges in the holding ground at Abuko are as follows:

Watchman..... D3.0 per head
Herder..... D3.0 per head per day

THE GAMBIAN LIVESTOCK DEALERS ASSOCIATION

The Gambian Livestock Dealers Association was founded in 1993 to fill the void created by the disbanding of the Livestock Marketing Board. The Association has 200 members. The dealers are interested in maintaining an improved terminal market at Abuko, facilitating the trade in livestock, and improving the payment system for livestock by butchers.

Dealers pay D500 per year to the area council for a license.

Individual livestock dealers are unlikely to make investments to improve the exchange mechanism is not likely. Dealers benefit when market and price information are restricted. Dealers would wish to increase their bargaining arrangements with the butchers, who tend to have greater market power because of the butcher's relationship to the consumer, who has the money. Like producers, dealers usually do not get paid until after the animal has been slaughtered and sold. Dealers do have an interest in improving the situation at the Abuko terminal market where animals wait until the butchers are ready to buy. A dealer can wait in the market for days or weeks waiting to sell a few head of livestock. Water, feed, and shade are amenities for which dealers are willing to pay.

It is worth noting that the sheep-fattening program sponsored by the GOTG has developed a marketing channel that directly links producers to dealers, butchers, and consumers. Producers have directly benefitted from the success of this program in the form of realized profits thanks to the subsidizing of transportation and to the various field days (markets) also sponsored by the program. Any effort to expand to a feeding program for cattle will require that the value added by the producer is not lost in an inefficient market system that favors the dealers or butchers. Cash needs to be a main component in moving livestock through the marketing channel. Offtake of animals could increase if there was more liquidity in the market exchange function. It is critical for markets for livestock to operate efficiently and send accurate signals on types and numbers of animals needed at any point in time.

SPATIAL AND SEASONAL PRICE RELATIONSHIPS

In The Gambia, the areas with the bulk of surplus livestock are in the eastern part of the country, while the major consumption areas for meat are on the coast in the greater Banjul area. Examination of marketing prices collected in 1992 by the DLS reveal wide margins between coastal and interior markets based on lumo prices. A caveat is in order, because the average liveweight of cattle in the Abuko market is 280 kg., compared to all upcountry markets, with an average liveweight of 200 kg. Older animals, primarily males and in better condition, are sold in the Abuko market. The upcountry markets have a predominance of females and younger animals. The implication is that cattle for Abuko come directly from producer herds while local markets are for local slaughter and inter-herd sales. With this market structure, livestock producers are even further removed from the terminal market for relevant price information by not having the lumo to guide their decisions.

According to DLS statistics, the major goat and sheep markets outside of Abuko are Sare Bojo for goats, and Farafenye, Wasu, and Sare Bojo for sheep. Sheep sales in the markets are heaviest during the months of May and June. This is the period of the religious feast of Tabaski requiring the slaughter of a ram. Sales volumes fall off dramatically in July and stay level until February when sales begin to increase again. Improving the small ruminant market requires the spreading out of sales to other months, to encourage producers to fatten sheep continuously, and not just for the religious celebrations.

Goat sales are heaviest during the dry season months of January to June and then decline and level off during the wet season.

STRATEGIC INTERVENTIONS IN THE LIVESTOCK MARKETING SYSTEM

Improvement of the Terminal Market at Abuko

A number of improvements are required at the terminal market at Abuko. The market itself is currently in too close a proximity to the slaughter facility. Besides health reasons, the current holding area does not allow for adequate water, shade, fencing, proper use of a weigh scale, and maintaining of cattle, sheep, and goats.

As previously stated, in the current system, animals transported to Abuko must receive a transit permit from the Division of Livestock Services, and the cost of the permit is D2.0 per ticket. It is recommended that the funds collected from permits be used to relocate, fence, and upgrade the terminal market. Animals entering the terminal market should be marked and

an entrance fee charged for them. The fee should be allocated to the upkeep and maintenance of the terminal market, and the operation of the facility would be the responsibility of the Livestock Dealers Association. No livestock sold outside the terminal market could be slaughtered at the abattoir, except those privately owned for custom slaughter.

Implementation of a Cattle Head Tax

A cattle head tax collected from livestock owners should be implemented in a more efficient manner, with a strict accountability system for the funds set in place. It is recommended that the funds collected in the districts be used in those districts to improve livestock production and marketing in those districts. Improvements could be undertaken in such areas as markets, animal health, disease prevention, and training in livestock husbandry and feed supplementation.

Price Information System for Livestock and Meat Products

Regarding changes in up-country market facilities, there is little that can be recommended. It is recommended that a market news service be instituted that provides information to livestock producers and traders on the situation at the terminal market at Abuko. The most cost-effective way to do this would be through a short radio program at prescribed times during the week. The prices for selected classes of animals (weight, condition, and age), numbers of animals in the market, and the most recent number of animals killed at the abattoir should be broadcasted. This information would be useful to producers to better price their livestock at up-country markets and improve shipment of livestock to the terminal market at Abuko.

Liquidity and Contracts in the Exchange of Livestock

A major impediment to private sector involvement in the livestock marketing system is the lack of cash transactions in the exchange of livestock. As the GOTG revises the Livestock Marketing Act, it is recommended that emphasis be placed on ensuring contracts in the sale of livestock. In the United States, the Packers and Stockyards Act was implemented to protect livestock owners in the sale of their animals. The Gambian Government is encouraged to consider similar legal statutes that will encourage and protect livestock owners and dealers to further the efficiency of exchange. The revised Livestock Marketing Act needs to address the elimination of unnecessary transaction fees that ultimately result in lower prices to livestock producers.

Alternative Marketing Programs for Livestock

The success of the Department of Livestock Services' sheep-fattening program has shown that livestock producers can benefit

from innovative programs that are tailored to specific market needs. With the help of the DLS, producers have been able to market their animals directly to butchers and other end-users through field days. The concept of field days is being expanded this year with decentralization to key district markets.

It is recommended that assistance be provided to conduct a similar program for cattle fattening programs that encourage the handling, feeding, and marketing of fattened animals. A similar method of using livestock field days to advertise and recognize producers of fattened cattle is strongly recommended.

IV. PRODUCTION SYSTEMS FOR QUALITY MEAT IN THE GAMBIA

OBJECTIVES OF AN IMPROVED PRODUCTION SYSTEM

To better understand the process of adding value to meats, it is necessary to establish certain common denominators that will facilitate clearly the types of animals needed for the domestic and export markets. Important characteristics of meat to be achieved are quality, tenderness, and flavor and juiciness.

Quality

When used in reference to meat, it is understood to mean hygienically processed livestock that have been raised, fed and managed within certain parameters of animal husbandry. In addition it implies meats that are tender to the taste and the chewing - cutting process, are flavorful and juicy to the taste, have an attractive appearance and require a minimum of cooking preparation to provide a delectable meat dish.

Tenderness

This quality as described above, has a direct correlation to the age of the animal. The older the animal gets beyond two years of age (the time at which the average bovine achieves adult maturity) the meat or muscle begins to acquire a natural ageing (getting older) process that progressively renders the meat tough and hard. One must also be cognizant of the fact that tenderness is also relevant to the customs and traditions of individuals. However, in today's present migratory society, these traditions are becoming mixed and varied and the meat/livestock industry must adapt to these new demands and trends.

Flavor and Juiciness

These qualities are meat achieved by adding moderate amounts of fat to the outside of the carcass of the animal. This is achieved through proper nutritional feeding combined with a more youthful age of the animal.

Achieving Preferred Meat Characteristics

The addition of fat is important to achieving these preferred meat characteristics. Fat added to the animal's carcass can be achieved in one of two ways or a combination of both. These are:

- a) Fattening the animal to a pre-determined fattened (finished) weight, based on the genetic characteristics of the animal and market demands, strictly on grass/forage alone; hence the term grass-fed beef.

This method will render a certain type of meat with a traditional soft yellow fat that gives the meat a unique taste. Culinary customs and traditions will again dictate or reject this preference. It must be remembered that in the evolution of the livestock/meat industry, this system of fattening was the first and only method. However, due to the physiological characteristics of cattle and because of their nutritional requirements, the grass fattening process requires time. This adds age to the animal, which will be reflected, adversely, in the meat texture. As a general rule, a fattened bull, steer, or heifer will be considered tender if it is finished within an age range of 2-2.5 years; medium-tender if finished within an age range of 2.5-5 years; and tough if finished at the age of 5 years or more.

- b) Fattening the animal in total confinement with minimal physical activity on a ration low in forage (20% or less) and high (80% or more) in energy (grains) and protein concentrates (seedcake or seedmeal that are by-products of the oil seed industry, such as groundnut, cotton, sesame, etc.).

This system evolved from the need to dispose of surpluses of grain that could not otherwise be sold. This intensive feeding/fattening system not only takes advantage of surplus grain, it also fattens and finishes an animal at a younger age (2-2.5 years), adding a layer of white, hard fat to the carcass. Based on the genetic characteristics of the animal, this will cause small particles of fat to penetrate into the muscle. The latter is known as marbling, which imparts flavor and juiciness to the meat.

However, feedlot economics and efficiency can vary depending on a variety of factors, one of which is the kind of ration is being used. The more concentrated and higher the energy value of the ration, the fewer the pounds of feed required to produce 100 kilos of gain in a shorter period of time (100 to 150 days). Yet, if feeding time and age of animal are not too critical, it can be good business to feed rations that are higher in roughage. This will require more kilos of feed and a longer period to produce 100 kilos of gain but at a lower cost.

- c) Grass/feedlot combination is a complementary process in which the one (grass) works in support of the other (feedlot), but the two are brought into play sequentially.

In the grass phase (the "stocker phase"), weaned calves (8-10 months old weighing 200 kilos) or yearling calves (12-18 months old weighing 300 kilos), both male and female, are intended for eventual finishing and slaughtering. They are fed and cared for in such a manner that growth rather than fattening is the objective. When the necessary growth and weight is attained (usually starting with a 200-kilo weaned calf and growing it to a 300-kilo yearling), the calf is classified as a feeder and is placed in a feedlot to gain the necessary weight that the market demands. Not all markets

want the same weight or grade of beef.

Implications. From the above, it becomes obvious that cattle fattening follows a sequential process, starting with the cow-calf operation (Phase I); followed by the growing-out period (the stocker program, or Phase II); passing on to the concentrated feeding scheme of feedlot fattening (Phase III); and terminating with the processing, marketing, and merchandising of the meat (Phase IV).

In The Gambia at present, Phases II and III do not exist and Phases I and IV are weak at both extremes. At the one extreme (Phase I), there are shortages of water, grass, and financing, and at the other extreme, (Phase IV), there is a lack of or an extremely weak marketing and financing system. Moreover, because of the inadequacies of the marketing system associated with Phase IV, productivity associated with Phase I will remain at a low level. Thus, in effect, the major issue is the complex problems associated with marketing.

Independent of Phase IV's own shortcomings, Phase I (cow-calf) has a direct effect on what Phase IV processes and supplies in meat products. The literature documents well the problems confronting Phase I in The Gambia (UNDP, 1992). The Gambia's extensive system of communal grazing rangelands without management or control has made an already marginal operation into an extremely inefficient system. Yet, it is from this pool of production that the country's meat requirements are met (though not exclusively). This same production pool would be the source of animals available for adding value to Gambian meat. However, the question remains as to how can this be accomplished under the existing management system.

PROJECTIONS FOR A FEEDLOT FATTENING SCHEME

Establishing a Feedlot Operation

Part of the rationale for establishing a feedlot operation in The Gambia is to satisfy more efficiently the growing demand for higher-quality meat. In addition, it is hoped that a more modern system of meat marketing could evolve through this mechanism, creating in turn a demand for quality animals that command a premium price. This in turn might stimulate the interest of local cattle raisers in improving their production methods.

Assumptions

An estimated 2,400 carcasses are imported into The Gambia annually. This translates to a weekly import of 46 carcasses. If one were to capture only a 33 percent share of this weekly import demand, this would translate into a requirement for 15 head of feedlot-finished animals processed weekly. Since it requires an average of 120 days to feedlot fatten an animal, it would require

16 weeks for the first 15 head to be ready to enter the market channel.

This means that 15 "new" head of cattle would have to be purchased weekly and placed on feed. Over a 16-week period and assuming 15 head of cattle per week, it would be necessary to have a complete set of corrals with a total of 240 head continuously on feed. With the cycle completed, 15 finished head would enter the marketing chain, while 15 new head would replace them in the feedlot, maintaining a constant number of 240 head at all times throughout the year. While this "pipeline" will be filled the first year, only 540 head will actually be entering the market channel during the first year of operation. The remaining 240 head will not be ready until the beginning of the following year. At this rate, it will take two full years to completely fatten and market the projected total of 780 head.

The start-up methods outlined below are simple, realistic, and attainable without placing excessive pressure on capital investment or demand on the desired but limited quality of local animals. At the same time, the market will be moderately penetrated. This gradual build-up will provide an opportunity to test the availability of feedstuffs, while at the same time creating a market for other by-products that presently have a restricted outlet. It will also provide on-the-job training at the feedlot level as the operation progresses.

Quality of Cattle

Establishing Specifications. Feedlot fattening experience is non-existent in The Gambia. The Gambia's predominant breed (N'Dama cattle) are managed in the traditional manner. Therefore, it will be necessary to start by establishing some modifiable, realistic specifications for cattle selection. This is important, because not all cattle respond positively in a feedlot environment; especially so if their previous management has been lacking. To ensure that the feedlot fattening scheme has a fair opportunity to succeed, the following basic criteria would be recommended:

- a) Select male cattle, bulls or steers.
- b) Strive to select bulls or steers that weigh 250 kg.
- c) Strive to obtain bulls or steers with the above weight at the youngest possible age. An ideal age range would be 2 to 3 years old. It is fully understood that this age range may be demanding and one may have to select from an age range of 3 to 4 years, but certainly not much older than 4 years.
- d) Select animals that are healthy, even though there will

a series of medications that will have to be administered while in the feedlot.

- e) Be prepared to pay a premium for these basic requirements.

The basic rationale behind the fattening scheme is to produce a high-quality meat product by adding value. It is only logical, then, to start with a high-quality animal. However, there is an added future benefit behind this "premium animal" concept, and that is the motivation stirred in producers by the transformation in the economics of the marketing system brought about by payment in cash at time of sale. Hopefully, this will set the stage for improved animal quality through better management. (In terms of providing motivation to produce quality, experience has shown that there is no better incentive than cash in hand provided directly to the provider for a good or service. Only under these circumstances will Gambian cattle raisers be motivated to think in terms of quality, management, and proper rangeland utilization.)

Availability of Feedstuffs for Feedlot Operations

There are reservations as to whether there would be sufficient feed resources in The Gambia and at a price low enough to sustain a productive feedlot fattening scheme. This section will attempt to prove or disprove this concern.

Feed resources in The Gambia. The most recent estimates of the quantities of feedstuffs available in The Gambia are listed in Table IV.1. (Groundnut hay is the most important crop residue by-product which has been fully commercialized.)

Table IV.1 Major Crops and Crop Residues Available in The Gambia for Cattle Feeding

Product	Quantity (mt)	Origin	Price (D/kg)
Millet	58,000	Lumos	1.4
Maize	20,000	Lumos	1.4
Sorghum	12,000	Lumos	1.4
Rice	16,000	Lumos	2.5
Groundnut hay	122,775	Farmers	.35
Brew grain	-----	Banjul Brewery	--
Cotton seeds	1,200	CFDT	.65
Groundnut cake	----	GPMB	-----

Source: National Agricultural Data Centre. Statistical Yearbook of Gambian Agriculture: 1991. Ministry of Agriculture, Banjul, Gambia, 1992.

Nutrition Requirements

The following assumptions were used in calculating nutritional requirements for feeding cattle in The Gambia, and are based on the most recent information available. These are that:

- a) bulls or steers weighing 250 kilos between the ages of 2 to 4 years are available;
- b) these bulls or steers will have a minimum Average Daily Gain (ADG) of 700 grams while on feed;
- c) the feed ration meets the minimum nutritional requirements for an animal weighing 250 kilos with an ADG of 700 grams; and
- d) a suggested feed ration that could meet these nutritional requirements will consist of the following local ingredients, but can be modified to further meet the animal's change in nutritional requirements or respond to fluctuations in feed prices. The ration will consist of a feed concentrate (high in protein and TDN) and a portion of groundnut hay.

Given these assumptions, Tables IV.2 and IV.3 demonstrate the calculated nutritional requirements for cattle in The Gambia and the suggested amounts of concentrated feed rations. Table IV.4 demonstrates the suggested amounts of hay and concentrated feed required to meet this report's assumptions regarding ideal Average Daily Gain (ADG).

Table IV.2 Estimated Nutritional Requirements for Feeding Cattle in The Gambia (per head)

ANIM.WT. (kg)	ADG (gm)	AMT FORAGE	TOTAL PROTEIN	TOTAL TDN	AMT CA(g)	AMT P(g)	VIT.A (I.U.)
250kgs	700	55%	.62kgs	4.0kgs	18gm	16gm	14 I.U.

Table IV.3 Suggested Concentrated Feed Ration (per head)

ITEMS	AMT kg	%CP	AMT.CP kg	%TDN	AMT.TDN kg	%CA	AMT.CA grams	%P	AMT.P grams
Corn	330	9	29.7	70	231.0	.03	99	.3	990
Rice bran	330	7	23.1	68	224.4	.08	264	1.48	4884
Sesame cake	330	44	145.2	71	234.3	2.02	6666	1.39	4587
Salt	10	0	0	0	0	0	0	0	0
TOT	1000	0	198.0	0	689.7	0	7029	0	10461
TOT (%)	0	0	19.8%	0	68.9%	0	.7%	0	1.05%

Table IV.4 Amount of Hay and Concentrate Needed per Head per Day to Meet the Nutritional Requirements of a 250-KG Steer/bull with Desired ADG of 700 GM.

ITEM	AMT(kg)	%CP	AMT.CP	%TDN	AMT.TDN	%CA	AMT.CA	%P	AMT.P
Groundnut hay	4	3	.12	50	2.0	1.12	45 G	.15	6 G
Concen- trate	3	19.8	.59	69	2.1	.7	21 G	1.0	30 G
TOTAL	7	0	.71	0	4.1	0	66 G	0	36 G

Cost of Suggested Feed Ration

Determining a true cost per ton of feed in The Gambia is difficult because there is no organized system for pricing feedstuffs. Prices tend to be at their lowest immediately after harvest and increase progressively as the dry season advances and supplies becomes scarce. These assumptions, therefore, assume purchase of as much feedstuff as needed directly from the farmer after the harvest and subsequent storage. This approach has the major disadvantage of requiring a sizeable capital outlay up front, plus the expense of transport and storage. The latter two expenditures can be considered fixed costs of doing business

because there will always be transport costs and the need for storage facilities. Thus, savings realized from purchasing feedstuffs at harvest and when prices are low justify the associated tie-up of capital. The more one saves on feed ingredients, the more efficient the fattening operation, which will ultimately be reflected in the cost per kilo of carcass produced.

Tables IV.5 and IV.6 represent an attempt to price the suggested feed ration based on local prices obtained for March 1994.

Table IV.5 Cost per Metric Ton of Concentrate Ration, The Gambia

ITEM	AMT(kg)	DALASIS/kg	TOTAL COST/mt
Rice bran	330	D0.50	D165.00
Sesame cake	330	0.50	165.00
Corn	330	1.80	594.00
Salt	10	0.50	50.00
TOTAL	1000	0.974	974.00

Table IV.6 Amount and Cost of Suggested Feed Ration per Metric Ton, The Gambia

ITEM	AMT(kg)	DALASIS/kg	TOTAL COST/mt
Groundnut hay	570	D0.50	D285.00
Concen- trate	430	0.974	418.82
TOTAL	1000	.703	703.82

Table IV.7 demonstrates the price per kilogram of a finished carcass under the assumed feeding system, given certain fixed assumptions and graduated assumptions regarding the percentage of carcass yield and warm carcass weight.

Table IV.7 Estimated Cost of Carcass Based on Fixed/Graduated Assumptions

%CARCAS YIELD	FINISH WEIGHT	WARM CAR. WEIGHT	CAR. PRICE/KG LIVE WT.	TOTAL/ HEAD	PROCESS COST	TOT. COST	PRICE/ KG.CAR
40	350KG	140KG	D14/KG	D4900	85	4985	35.61
41	"	144 "	"	"	"	"	34.61
42	"	147 "	"	"	"	"	33.91
43	"	150 "	"	"	"	"	33.23
44	"	154 "	"	"	"	"	32.37
45	"	158 "	"	"	"	"	31.55
46	"	161 "	"	"	"	"	30.96
47	"	165 "	"	"	"	"	30.21
48	"	168 "	"	"	"	"	29.67
49	"	172 "	"	"	"	"	28.98
50	"	175 "	"	"	"	"	28.48
51	"	179 "	"	"	"	"	27.85

Table IV.8 demonstrates this report's assumptions and the associated calculations to determine the breakeven price per kilo for cattle under this section's assumed fattening scheme.

Table IV.8 Selling Price Projection to Determine the Breakeven Price per Kilo of Fattened Cattle

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INPUT VALUES

1. SEX OF CATTLE (MALE OR FEMALE)	MALE
2. PURCHASE WEIGHT	250 KG
3. SELLING WEIGHT	350 KG
4. ESTIMATED FEED INTAKE/HD/DAY (2.86% OF AVE.WT. ON FEED 300 KG. #12 BELOW)	8.56 KG
5. VET/MEDICATION EXPENSES/HEAD	D192.00
6. FEED RATION COST/METRIC TON (A 20% MARK-UP WAS TO THE PRICE OF ORIGINAL FEED RATION)	D1169.00
7. ESTIMATED DEATH LOSS PERCENT	2%
8. INTEREST RATE PERCENT	10%
9. PERCENT OWNER EQUITY	100%
10. PURCHASE PRICE/KILO	D10
11. ESTIMATED SELLING MONTH (ADD FEEDING DAYS TO STARTING MONTH ON FEED, e.g. MAR. PLUS 143DYS)	JULY

CALCULATED VALUES

12. AVERAGE WEIGHT OF FEED (PURCHASE WT. PLUS SELLING WT. DIVIDED BY 2, e.g. 250kg + 350kg /2)=	300 KG
13. AVERAGE DAILY GAIN (ADG) EXPECTED	.700 KG
14. FEED CONVERSION AMOUNT OF FEED INTAKE TO PRODUCE ONE KILO OF BEEF (ESTIMATED FEED INTAKE TIMES DAYS ON FEED DIVIDED BY SELLING WT.)	3.50 KG
15. TOTAL GAIN DESIRED	100 KG
16. CALCULATED DAYS ON FEED (WT. DESIRED DIVIDED BY ADG, e.g. 100kg/.700kg)=	143 DYS
17. PURCHASE PRICE/HEAD	D2500
18. INTEREST ON CATTLE/HEAD (PRICE/HD TIMES INTEREST RATE % DIVIDED BY 365 DAYS/YR TIMES DAYS ON FEED)	D98

Table IV.8. (cont.) Selling Price Projection to Determine the Breakeven Price per Kilo of Fattened Cattle

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19.COST OF FEED/HEAD (ESTIMATED FEED INTAKE/DY TIMES DAYS ON FEED DIVIDED BY 1000 KG TIMES FEED RATION COST)	D1430.95
20.INTEREST ON FEED (COST OF FEED/HEAD DIVIDED BY TWO TIMES INTEREST RATE % DIVIDED BY 365 DYS/YR TIMES DAYS ON FEED)	D28.03
21.VET/MEDICATION EXPENSES/HEAD	D192.00
22.COST OF DEATH LOSS/HEAD (PURCHASE PRICE/HD PLUS INTEREST ON CATTLE/HD PLUS INTEREST ON FEED DIVIDED BY % LIVE ANIMALS [100% - 2% DEATH LOSS = % LIVE ANIMALS] SUBTRACT FROM DIVIDEND)	D53.59
23.TOTAL COST OF CATTLE & COST OF GAIN (ADD #s 17, 18, 19, 20, 21, & 22 ABOVE)	D4302.57
24.COST OF GAIN WITHOUT INTEREST (ADD #s 19, 21 & 22 AND DIVIDE BY TOTAL GAIN #15 ABOVE)	D16.76
25.COST OF GAIN WITH INTEREST (ADD #s 18, 19, 20, 21 & 22 AND DIVIDE BY TOTAL GAIN #15 ABOVE)	D18.02
26.BREAK EVEN (TOTAL COST OF CATTLE & COST OF GAIN #23 DIVIDED BY SELLING WT. #3 ABOVE)	D12.29

The production figures in Tables IV.7. and IV.8. were based on the most realistic cost of inputs available. These include:

- a) A 20 percent mark-up of D195 was added to the feed cost per metric ton of D974 to assure continuity and success of the fattening operation. The total cost of feed is therefore D1169 per metric ton. This is equivalent to US\$110 per short ton, which is a reasonable price comparison. (Cost of feedstuffs is the most expensive part, but also the hub of the operation.)
- b) A premium price was paid per kilo of live animal. This price has two objectives:
 - 1) to start with a high-quality product. A feeding scheme is an expensive operation and cannot succeed with poor-quality animals.
 - 2) Paying a premium price for a quality product is the strongest incentive to Gambian cattle producers to change

and improve their management practices. It is an incentive to which a livestock producer can readily relate, understand, and accept without difficulty, providing motivation to manage, produce, and conserve more efficiently. A premium price recognizes quality and is the universal language.

- c) There is a variable cost of necessary medication that has to be administered to the animal upon arrival at the feed yard. These medications consist of broad spectrum antibiotics (LA-200 or Penicillin-G), an 8-way vaccine (Co-Vexin-8), Cattle Master Vaccine, Anthelmintic (IVOMEX), Vitamin A and Vitamin B Complex, and an implant for growth stimulation (Ralgro). An approximate cost for this medication is D192/head.
- d) There is a moderate cost (allowance) of 2 percent for potential death losses of animals while on feed. This translates into an operating cost of D53.59.
- e) An interest rate of 10 percent is charged to the overall capital investment for either personal or borrowed capital. This is charged to the purchase price/head (D2500) and to the cost of feed per head (D1430.95). These add-on charges amount to D98 and D28.03 per head, respectively.

The total cost of feedlotting an animal for the purpose of adding value to the meat in this exercise is therefore D4302.57. It was further assumed that this animal would be sold for processing to either the feedlot management (integrated business) or to a private butcher. Based on the total cost per head of D4302.57, the breakeven price per kilo, live weight, is D12.29. To the breakeven price was added a mark-up of 13.9 percent (D1.71), bringing the selling price per kilo, live weight, to D14, for a total per head cost of D4900. Finally, the abattoir processing fee of D85 per head is added, bringing the total cost per head to D4985.

It is difficult to estimate the carcass yield percentage for an N'Dama bull/steer that has been fattened under feedlot conditions, because such data is not known. However, the slaughter at the local abattoir of eight grass-fed cross-bred (Zebu N'Dama) steers and bulls ranging in age from 7 to 8 years with an average weight of 500 kilos produced a clean warm carcass weight of 254 kilos, or a yield of 50.7 percent. If this were to be the case with a younger N'Dama bull/steer fattened to a weight of 350 kilos and producing a carcass yield of 50 percent, the cost per kilo of warm carcass would be D28.48 (see Table IV.7). This carcass yield is considered low for a feedlot fattened animal, which should be able to yield at least 55 percent. This data for N'Dama cattle is presently not known. (It should be noted that as the percentage yields increase the cost per kilo of carcass decreases.)

It would be premature to make definitive judgments as to the feasibility of a feedlot program based on these estimates alone and without actual feedlot feeding trials. However, if the present ceiling price of D25/kg of hot carcass offered for quality grass fed beef prevails, the feedlot fattening scheme would be a marginal business. The suggested carcass selling price for a feedlot fatten steer/bull based on an estimated carcass cost of D28.48, should be no less than D35.00 per kg for the whole uncut carcass.

Business Promotion

The underlying rationale for a feedlot fattening scheme is to add value and quality to the local meat industry. This added value has a cost, as has been illustrated, that has to be passed on to a demanding consumer market. However, the existing market -- that one which demands quality -- has not been tested or presented with a sample of the proposed locally produced and fattened beef. It would therefore be premature to judge consumer acceptance or rejection at this time.

Recommendations

Before an opinion can be formed regarding the feasibility of feedlot fattening, and before any infrastructure expenditures are made, it is strongly recommended that a feedlot feeding trial be conducted with 10 to 20 head of cattle from the existing national cattle pool. Certain steps should be considered in conducting such a trial or a small feedlot feeding program. These are:

- a) Search, select, and purchase the best quality N'Dama or N'Dama crosses (mixed) steers or bulls that can be located. It is important that such a precedent be established from the start, thus promoting quality that will be compensated with a premium price.
- b) Select 10 to 20 heavy weight (250 to 300 kilos) steers or bulls of the youngest possible age (2 to 4 years, but not over 5 years).
- c) Major infrastructure at this point is not necessary. A simple corral made of barbed wire allowing 2.5 square meters/head will suffice. However, a watering facility that will provide a constant supply of clean/fresh water is absolutely necessary, plus ample feeding space (2 linear feet per head).
- d) Record the price per head and weight of each individual animal at the start of the feeding trial and maintain accurate records of the amount of feed provided and the total number of days on feed. Weigh each individual animal every 28 days and calculate the average daily gain (ADG) for each animal. From this data establish a growth

weight gain curve or chart to determine the peak or level-off point when the animal reduces its ADG. This will be the time when the animal will have reached its maximum efficient weight gains and is ready for market. To keep the animal longer on feed would be costly and inefficient.

- e) Provide a good quality feed (ration suggested earlier is acceptable) with ample hay available at all times, fed in a hay rack. Provide the concentrate feed in a feeding trough three times a day for better feed utilization and less wastage. Care should be taken not to overfeed, but the feed troughs should never be empty, especially the water trough.
- f) Keep accurate records of ALL costs (feed, water, labor, tools, infrastructure, etc.) and convert all costs to a per head and kilo gain basis. Determine the breakeven price by using the detailed selling price projection outline guide above.
- h) Record the weight before slaughter and weigh the warm carcass (without head and inner organs) after washing. Determine the carcass yield by dividing the clean carcass weight by the live weight.
- i) Determine the breakeven cost and assign a commercial price per kilo (live animal plus all processing costs) by dividing the breakeven by the net warm carcass weight to provide the cost per kilo of carcass meat. This will be the basis for the necessary wholesale price mark-up of the carcass before it is processed into specialty cuts for retail sales.
- j) After allowing the carcass to hang and chill for 48 hours, process the carcass into selected cuts. Subject the cuts to a cooking-tasting-tenderness tests before penetrating the target market at the desired mark-up price.

GRASS-FED BEEF - AN ALTERNATIVE FORAGE SYSTEM

If, after conducting a feedlot trial and testing the consumer market, it is determined that the demand for feedlot-fattened quality beef can not bear the cost of producing it, then consideration should be given to "grass-fed" beef. While this method is an option, it too has its advantages and disadvantages. The following scenario confronts this endeavor.

The steers or bulls will still have to be selected from the national herd. The disadvantage of such animals is that their productivity is stagnant due to malnourishment, which in turn is

due to improper utilization of rangeland resources and improper husbandry management practices. All of these factors delay growth of an animal, so that it is ready for market only at a very old age. This situation will continue in its present state of stagnation until adequate marketing channels are opened and/or created (the feedlot scheme being an option for both quality, with quick turnaround time, and the start of a marketing channel).

Among a range of possible interventions to improve the status of The Gambian cattle situation, only one stands out as the least costly, most effective, and capable of providing sufficient motivation to producers to change present husbandry practices. This is the creation of a positive and direct "cash" market for cattle, sheep, goats, milk, hides, and skins.

The single most important objective of this study is to identify marketing channels that will sustain improved quality in meat products, as well as improvements in livestock management practices. If the main option, feedlot fattening, is too ambitious for now, grass-fed beef, which is no less demanding, could become a positive option because it too could open a cash market for surplus grain and by-products. At present, marketing of these commodities is lacking, and in some cases, this has caused their production to decline. To some extent (although to a lesser degree than feedlot fattening), grass-fed beef production will have to use these grains and feed stuff by-products in a feed supplement schedule in order to maximize forage utilization.

This method of beef production can be accomplished in two ways: 1) in an intensive setting of grass production; and 2) in a semi-extensive setting. Both methods require enclosing land areas for proper pasture or rangeland utilization. Unfortunately, as with the feedlot fattening exercise, the infrastructure for this intervention is not in place. This too, then, would require start-up investment capital, a commodity that in The Gambia is in short supply and expensive.

In addition to the initial capital investment, both of these methods require more time for the animal to reach the weight at which it is ready for slaughter. This factor is one with which lending institutions are generally not sympathetic, and represents an additional cost that must be passed on to the consumer.

GRASS-FED BEEF - INTENSIVE SETTING

Objective and Definitions

The objective of grass feeding in an intensive setting is to add value to beef by feeding a diet consisting mostly of grass and less of concentrate. Management, however, continues to be intensive to obtain maximum efficiency.

Grass fattening adds quality and value to meat but it is different from that of feedlot fattened beef. The meat will not be as fat or marbled as feedlot beef, nor will be any more tender, because the system requires more time and therefore continues to "add age" to the animal. However, a grass-fed system could be a transitional stage to a more advanced feedlot fattening program in the future.

Intensive, grass fed-based activity will create a cash market for cattle because of the need to supply itself with steers or bulls from the national cattle herd. Such an operation has to start small because of the initial capital inputs, and can grow with an increased price that the market can bear. For clarity, it must be emphasized that a venture of this nature is not a cattle-raising operation, but rather a fattening scheme.

Beef productivity to satisfy a constant demand for a quality product can not be viewed in terms of a purely seasonal supply; that is, assuming good production only during the latter months of the rainy season and the first two or three months after the rainy season, and declining drastically during the six to seven months of the dry season. Grass fattening is an option provided that forage, water, protein/energy supplementation, and sound cattle management are in place.

Descriptions

Grass fattening through an intensive program is achieved through an intensive grass production system. Such an operation will have to be located somewhere up country along the Gambia River on land that has already been cleared. The exact location is not determined but could be as far east as Basse. The size of the land area could vary, but should be no smaller than 20 hectares. The exercise outlined below contemplates a land area of 30 hectares. This area would have to have access to river water for potential irrigation; this is the only way to assure of a constant supply of green forage. Due to the cost involved, some combination of a cash crop could be contemplated.

Structure of Costs

The following sets of tables demonstrate the hypothetical costs for establishing an intensive, grass-fed system for cattle. figures and calculations used in this exercise are all assumed for lack of actual costs. Thus, this report cannot vouch for the total accuracy of the costs represented here. However, the purpose is to set the stage for or introduce the idea for future consideration. Practically, such an operation will entail the following:

- a) Selection of a semi-cleared or fallow land area of approximately 30 hectares along the Gambia River up-country in the Basse area. The rationale for site

selection upcountry is to introduce improvements and innovations to an area that needs development.

- b) The area will have to be fenced with at least barbed wire around the perimeter. The perimeter of 30 hectares could measure 500 meters wide and 600 meters long. The distance one time around this area would be 2.2 kilometer. Usually a fence will have five strands of wire; thus, 2.2 km. X 5 = 11 km. of total perimeter fence.
- c) The cost of fencing and other items in The Gambia has been calculated to be as follows in Table IV.9.

Table IV.9 Fixed and Variable Costs for Intensive Grass-Fattening Scheme on Irrigated Pastures, The Gambia

=====		
1)	each 100 meters of fence will require the following:	
a)	2 rolls of barbed wire measuring 250 meters each @D250 per roll X 2 =	D500
b)	2 strong corner posts @ D5 ea X 2 =	10
c)	35 line posts @D1 ea X 35 =	35
d)	labor for digging 40 holes @D2 X 40 =	80
e)	one kilo of staples @D10 =	10
f)	total for 100 meters =	D635
2)	one kilometer would have 10 sections of 100 meters each; thus 10 X D635 =	D6350/km.
3)	as described the total perimeter requires 11 km. of fence, therefore D6350/Km X 11 Km.=	D63,500
4)	the land will be prepared for planting with an improved grass variety that is adapted to the country. Cost of land preparation and planting is estimated to be approximately, D500/hectare X 30 ha.=	D15,000
5)	irrigation equipment	
a)	diesel motor with 6-inch pump	D50,000

Table IV.9 (cont). Fixed and Variable Costs for Intensive Grass Fattening Scheme on Irrigated Pastures, The Gambia

=====		
b) shed for motor and pump		D25,000
c) approximately 100 six-inch X 20-foot sections of aluminum irrigation pipe and fittings for water distribution		D90,000
d) solar panel for internal electric fencing to create five 5-ha. paddocks with a loafing area		5,000
e) one main water trough in loafing area		7,000
f) miscellaneous tools		2,000
g) vehicles		
	1) 4 X 4 pick-up truck	200,000.00
	2) 24 foot goose-neck cattle trailer	50,000.00
	SUBTOTAL	507,500.00
<u>VARIABLE COSTS</u>		
h) fertilizer (urea) @100kg/ha. three times/yr X 30 ha.X D4/kg =		36,000.00
i) labor		
	one herdsman D500 X 4 X 12 =	24,000.00
	one worker D400 X 4 X 12 =	19,200.00
	one watchman D500 X 4 X 12 =	24,000.00
j) petrol for		
	1. water pump motor/yr =	12,000.00
	2. pick-up/yr =	15,000.00
	3. oil pick-up & motor/yr =	3,000.00
	4. oil filters for #3 =	2,000.00
	SUBTOTAL	= D135,200.00

Table IV.10 Summary of Costs for Intensive Grass Fattening Scheme
on Irrigated Pastures, The Gambia

=====

FIXED COSTS

ITEM	VALUE (D)	LIFE (years)	SALVAGE (D)	DEPRECIATION
Fence	63,500	10YRS	0	D6,350.00
IRR.EQUP				
Motor&pump	50,000	5 "	10,000	8,000.00
Irr.pipe	90,000	8 "	10,000	10,000.00
Solar pan.	5,000	5 "	0	1,000.00
Water tro.	7,000	7 "	0	1,000.00
Pick-up	200,000	5 "	30,000	34,000.00
Trailer	50,000	5 "	10,000	8,000.00
SUBTOTAL	465,500			68,350.00

VARIABLE COSTS

Land prep. & planting	15,000	5 "	0	3,000.00
Misc.tools	2,000	1 "	0	1,000.00
PETROL				
Motor&pump	12,000	0	0	12,000.00
Pick-up	15,000	0	0	15,000.00
Oil&filter	5,000	0	0	5,000.00
Fertilizer	36,000	0	0	36,000.00
Labor/yr	67,200	0	0	67,200.00
Contingencies (10%)	13,920	0	0	13,920.00
SUBTOTAL	166,120			149,120.00

TOTAL EXPENDITURES

Fixed costs	465,500			68,350.00
Variable costs	166,120			149,120.00

Table IV.10 (cont.) Summary of Costs for Intensive Grass Fattening Scheme on Irrigated Pastures, The Gambia

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=====
Cattle
purchase
50HD X 2500 125,000                125,000.00

    SUBTOTAL  756,620                342,470.00

Equity (30%
of subtot.) 226,986                0000000.00

Loan (70%
@ 15%/yr.)  529,634                79,445.00

TOTAL
EXPEN
DITURES      756,620                421,915.00
=====
INCOME

SALE OF CATTLE
TWO 50hd BATCHES
PER YR.  50hd X 2 X 350kg X D10/kg. =  350,000.00

PROFIT OR LOSS                                <71,915.00>
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Conclusion

From these calculations based on assumed costs, even assuming a large margin of error, an intensive grass-fattening scheme with irrigated pastures is a negative venture. While all figures were assumed, the production figures are the ones with the greatest uncertainty. At present, there are no trial or research production figures for this type of operation to use as guide. The economy of scale assumed may not be the correct one; the infrastructure may be better suited for a more profitable cash crop (irrigated fruits and vegetables) or a combination of a cash crop with grass-fed cattle; or the operation may be able to produce and sustain a larger number of head of cattle per year than the assumed number of 100 head/year used in this exercise.

GRASS-FED BEEF - SEMI-EXTENSIVE (RANGE)

As mentioned above, there is also the semi-extensive method of grass fattening cattle. This system is rangeland management, similar to the present system used in The Gambia, the major difference being that it will be enclosed (fenced) and managed properly. For comparison purposes, a test of feasibility will be

made on the basis of "best-effort" assumptions and associated calculations (see Table IV.11). The following parameters will be used for this.

a) A rangeland area upcountry with some access to the Gambian River as a source of livestock water will be selected for the purpose of grazing steers or bulls. These could either be completely fattened on grass, or if the animals are young enough (yearlings, 12 to 24 months old), they will be used as stockers (Phase II of the overall cattle operation). The stocker calves could be grown out to 230 kg. and finished out in a feedlot operation.

b) A rangeland area of 500 ha. will be selected and fenced. The perimeter would measure 2 km X 2.5 km for a total of 9 km. A five-strand barbed wire fence would require 45 km of fencing expenses. Using figures from the previous exercise, one kilometer of fence costs D6350; thus, 45 km would require D285,750 for perimeter enclosure.

c) A central corral and water facilities will be located in the center of the rangeland. From this area, four separate electrical fences would divide the rangeland into four pastures for pasture rotation grazing. The cost of the electrical fencing is estimated as follows:

1) solar panel	D3,000.00
2) slick wire for electrical fence. Two strands X 9 km.= 18 km. or 90 rolls of wire X D200 =	18,000.00
3) staves to support electrical wire 3,000 X D3 =	9,000.00
4) corral & water tank and trough	20,000.00
5) water supply from river motor,pump and pipe	100,000.00
6) feed supplementation for 200 head of stocker X 2 kg/hd X 180 days/yr X D0.9/kg =	64,800.00
7) misc. tools	2,000.00

8) vehicles	
a) pick-up	200,000.00
b) trailer	50,000.00
9) petrol for	
a) motor & pump	10,000.00
b) pick-up	30,000.00
c) oil & filters	5,000.00
10) labor	
a) two herdsmen X D500 X 4 wks X 12 mo.	48,000.00

Table IV.11 Summary of Expenses for Semi-Extensive Cattle System,
The Gambia

=====

FIXED COSTS

ITEM	COST (D)	LIFE (yrs)	SALVAGE	DEPRECIATION (D)
Fence	D285,750	10	0	D28,575
Solar	3,000	5	0	600
Elec.wire	18,000	10	0	1,800
Staves	9,000	10	0	900
Corral & water fac.	20,000	10	0	2,000
Motor & pump, pipe	100,000	5	20,000	16,000
VEHICLES				
Pick-up	200,000	5	30,000	34,000
Trailer	50,000	5	10,000	8,000
SUBTOTAL	685,750	0	0	91,875
<u>VARIABLE COSTS</u>				
Feed suppl	64,800	0	0	64,800
Misc.tools	2,000	0	0	2,000
Petrol				

Table IV.11 (cont.) Summary of Expenses for Semi-Extensive Cattle System, The Gambia

Motor&pump	8,000	0	0	8,000
Pick-up	40,000	0	0	40,000
Oil&filter	5,000	0	0	5,000
LABOR				
2 herdsmen X4X12	48,000	0	0	48,000
CONTINGENCIES (10%)				
	16,780	0	0	16,780
SUBTOTAL	184,580	0	0	184,580

FIXED EXP.	685,750	0	0	91,875
VARIABLE EXP	184,580	0	0	184,580
CATTLE PURCHASE				
200hd X D1050	210,000	0	0	210,000
SUBTOT.	1,080,330			486,455
EQUITY (30%)	324,099			0000000
LOAN (70% @ 15%/yr)	756,231			113,434
TOTAL	1,080,330			599,889
INCOME				
SALE OF 200HD X 230KG X D10				
				460,000
PROFIT OR LOSS				
				<139,889>

Conclusions and Comments

The margin of loss in both these exercises (intensive and extensive) for fattening steers or bulls through the grass-fed system results in negative income. In spite of a possibly large margin of error, from the assumed calculations, one can attribute these results to the disparity between cost of interventions and prices received for the final product. Such interventions are essential for better management and conservation.

It goes without saying, however, that the cost of any given intervention must eventually be able to be re-couped at the marketplace. Unfortunately, this is not the case with the relationship between the prices of livestock and meat and livestock by-products in The Gambia. Table IV.12 illustrates this point by comparing the cost of a imported intervention items that a cattle raiser might use, and the price he would receive for his cattle in comparison to what that item or the cattle would bring elsewhere in world.

Table IV.12 Cost Comparison for Inputs - U.S. and The Gambia

ITEM	<u>Gambian Cost</u>		<u>Comparable Item in U.S.</u>
	Dalasis	US\$	US\$
BARBED WIRE	D250	26	29.00
SOLAR PANEL	D3000	313	275.00
FATTEN STEERS 400kg	D3400/hd	417/hd	651/hd
BEEF/kg CARCASS ABOVE STEER	D17/kg	0.80/lb	1.30/lb

Note: Exchange rate is D 9.6 = USD 1.00

Producers have recognized this problem but it is beyond their capability to solve it and have taken a non-motivating, passive attitude. Therefore, the private sector is called upon as having the capability to address these issues. Technical interventions are implemented with a positive response in productivity, but the constraints remain with the final price paid for the improved product -- a price that is not comparable to the breakeven cost of production.

This realization re-focuses on the initial concept of adding value to meat via a feedlot fattening scheme. This system, while expensive in itself, provides the opportunity to gain an advantage by shortening the time of the fattening process, while adding value to the meat. In addition, it provides a faster return or roll-over of the capital invested.

It would be in the best interests of the Gambian livestock industry to initiate a pilot feedlot fattening program to further test its possibilities, with the caveat of being conservative on infrastructure expenditure, which ties up capital.

SHEEP FATTENING SCHEMES

The bulk of this study has been focussed on cattle, but the sheep and goat segments were also observed. Many of the same problems confronting the cattle subsector; e.g., management, health, feed, water, financing, and marketing affect the sheep and goat segments as well. In spite of these problems, sheep and goats contribute substantially to the Gambian economy and to the human diet of the country in general.

In terms of their management requirements, sheep and goats are more in tune with the needs and management capabilities of the Gambian rural/village population. However, more technical assistance is needed at the village level to increase the productivity of small ruminants. Under the present system, these animals are now managed extensively, but they would be more productive and beneficial to the environment if managed intensively and in confinement.

Traditionally, if any livestock fattening is conducted at the village level, it is with sheep. However, this fattening tradition is in accordance with a religious festivity (Tabaski) rather than for commercial purposes. At present, this fattening scheme, which is carried out mostly by women, is looked upon as a seasonal once-a-year activity rather than as a continuous commercial endeavor.

While there are ample opportunities for this industry to expand, serious consideration must be given to the overall production cycle of sheep and goats. Data are scarce in regard to productivity per sheep/goat; birth weights, and weaning weights and age; average daily weight gains (ADG) while on feed; the type, quantity, and quality of feed stuffs available; the optimum time and weight desired to finish (fatten); and the availability of water. These factors have to be analyzed in-depth before promoting a more intensive, commercially-oriented fattening scheme with sheep and goats. In addition, the availability of feedstuffs is crucial to a commercial fattening scheme if it is to be considered with sheep and goats.

On the positive side, however, such a system would create a market, and with it, improved or more abundant production of feed-stuffs, grains, and crop residues, which at present are not considered important by the producers because of an inadequate market outlet.

The present overall production stagnation is overburdened by the lack of flexible, adequate, cash-based markets. It is logical, therefore, to discover and create those markets that will have a positive effect on present under-utilized resources throughout the rural areas.

Sheep fattening for the Tabaski religious festival is an activity that has gained momentum among livestock owners in The Gambia. The activity has been taken up mainly by women who care for and feed the rams. Rams are fattened to a weight ranging from 40 to 60 kg.

To promote the feeding of sheep, the DLS has undertaken training with villagers on proper management of animals. In addition, the DLS has sponsored an annual field day at Abuko at which awards are given for the best show animals and then rams are sold to butchers. Regional shows are planned for this year. In the past, the DLS has subsidized the transport of sheep to the show. This year, a smaller amount of funds for transport are available.

Financial data were collected from the regional livestock officer in the Lower River Division who monitored the feeding of 15 Djallonke rams and collected cost data. These are presented in Table IV.13.

Table IV.13 Cost and Returns for Feeding Djallonke Rams in The Lower River Division, The Gambia

Number of Animals	15	head
Intake per Day	1,050	gr/day
Initial Weight	20.8	kg
Final Weight	35.2	kg
Weight Gain/Day	120	gr.
Days on Feed	120	days

COSTS

Feed:		
Groundnut Hay	D	756
Millet Bran	D	75
Rice Bran	D	45
Mineral	D	25
		=====
Sub-total	D	1,036

Table IV.13 (cont.) Cost and Returns for Feeding Djallonke Rams in
The Lower River Division, The Gambia

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=====
Labor Cost:
Stockman                D    320
Night watchman          D    160
                        =====
Sub-total                D    480

Investment Cost:
Cost of the rams        D 10,000
Veterinary costs        D    300
construction facilities D    230
                        =====
Sub-Total                D 10,530

Total Cost (Feed, Labor, Inv) D 12,046
Total Cost per ram      D    803

REVENUES
Sale of the rams        D 23,212 herd
Sale price per ram      D  1,547 /hd
Total Gross Profits     D 11,166 herd
Gross Profits per Head  D    744 /hd
Percent Return to capital
and management                    93 percent
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Source: Matarr Njie, 1993. (preliminary analysis)

The trial data for feeding sheep for a specific religious holiday is certainly encouraging. The returns to the livestock owner's labor would have to be analyzed to determine if experiment station results accurately reflect on-farm production coefficients. There are no marketing costs included in the analysis which would lower the return to the farmer.

Confinement feeding of small ruminants is an important example of how to make greater utilization of local feedstuffs and improvement management.

FORAGES

Forages in The Gambian Context

On an upcountry trip to Basse, the impression of the forage biomass composition indicates that the Gambian rangeland is resilient and responds well to proper management. Burning more than

the possibility of overgrazing is the problem. However, it is interesting to note that if the rangeland burns so readily, it is because there is enough biomass to carry a fire. The abundance of bamboo is a positive indication that at least the rangelands observed are not in a degraded state due to overgrazing. Rangelands are more threatened by the "fire mania" that is so prevalent in the customs and traditions of the village population. The cattle population walk through them in a hungry state, grazing only on tender vegetation if any is available at this time of year.

The abundance of biomass also indicates that the traditional livestock management or lack of it allows the forage to outgrow the grazing capability of the livestock. All this and more could be due to a series of problems and traditions that compel the owners or herders of livestock to contribute to the starvation of their cattle by keeping them tied up during the most important grazing periods of the cattle's grazing day. As a result, the cattle are undernourished, especially lactating cows and nursing calves. The non-lactating cows, steers, oxen and bulls weather the lack of nourishment better because their maintenance requirements are not as demanding as that of cows with calf at side.

However, this constant lack of nutrients does not permit the animals to graze mature and weathered grass because their metabolism is lacking in the energy required for them to make better use of this forage. Their condition worsens as the dry season progresses. By the rainy season, the animals are so weak and their condition becomes more precarious by the new lush green grass in addition to the internal parasite load that they harbor. For most of the first two months of the rainy season, the animal is required to become preconditioned to the new diet before fully assimilating a high percentage of it for its maintenance, production, and weight gain. Then, by the time the animals begin to improve their nutritional state, the dry season is upon them again.

Forages in General

From an overall nutritional standpoint, forages may range from very good nutrient sources (such as new green growth during the rainy season) to very poor feed (such as straw, stover, hulls and browse during the dry season). Many of the crop residues fall within this category, as well as the abundance of bamboo that survives the burning. While all forages can be utilized advantageously, discretion should be used in advocating their use without providing the following necessary assistance:

- a) They are properly prepared and supplemented with a protein/energy ration.
- b) Judgement is used in selecting the type of forage and animals (bulls, cows, heifers, calves, sheep, and goats) to which a particular roughage is fed. None of the above

animals has the same nutritional requirements at any given time. This simple basic principle is the most misunderstood and abused, with the result is that the animal is left lacking nutritioally.

c) Emphasis is given to the fact that as grass becomes mature, the digestibility and nutritive value decreases. If left standing to bleach and weather on the stalk with a few leaves, it will be comparable to poor grade straw in composition and nutritive value. This is precisely the case with the dry/standing grass that is observed throughout the rangelands. This is grass that has become too weathered with little or no nutritive value. It provides an abundance of bamboo that the animals can not utilize and in most instances will be set on fire.

Energy Deficiencies

Hunger due to a lack of nutritional energy is the norm in Gambian livestock. Energy is needed by the animal, not only for body maintenance, but also to make better utilization of undesirable forages throughout the year, and not only just during the rainy season. It is not surprising, then, to observe cattle literally walking on grass while being hungry at the same time. It seems that during the rainy season, the rangelands respond with such vigor that the cattle, because of their poor condition, cannot properly utilize nor keep pace with the rapid growth of the grass. As a result, the grass grows and matures without proper utilization at its optimum stage of growth and becomes unpalatable with reduced nutritive value, thus perpetuating the cycle of hunger, abundance of bamboo, and perpetual range fires.

Traditional herding of animals further compounds the problem by depriving the animal of a complete diet by interrupting their natural grazing habits. In addition, the animal spends the night tied up without water or feed supplementation. As has been observed and reported in the literature, all these inefficient practices have non-productive, negative effects on the animal's overall well-being. If the animal survives, it can -- but not always -- compensate for this loss with time. Bulls, steers, and non-lactating cows will tend to compensate more easily, but the lactating cow never seems to catch up.

RECOMMENDATIONS

The overall problem of poorly-managed rangelands and poor utilization of this resource by livestock herds remains unsolved, not for lack of technology or technical interventions but rather for lack of financial resources and an adequate price for the finished animal and/or products produced. From the above exercises, it should be evident that for major interventions to have an impact on production, they will require major financial

support and time to allow the particular intervention(s) to become established. In most cases, the first year or two of implementation will sustain losses. Lack of understanding of the time required, of the need for continued financial support via cash flows, and for an established marketing channel and trained personnel have been the demise of many well-intentioned projects that were transferred at the end to the community for continuity.

The only possible solution that surfaces repeatedly is finding and/or creating new and continued marketing channels that will feed cash back into the system.

CONCLUSIONS

The Gambian livestock subsector has the potential to improve its productivity, not necessarily by increased numbers of cattle, but through increased production per unit of animal. However, this will never occur given the subsector's present state of affairs. Present conditions cast a negative shadow towards on the viability of the feeding interventions analyzed. However, the fact remains that demand for animal protein will continue to increase in The Gambia, both from the domestic and tourist markets. The country, having the potential to increase its livestock productivity, should not have to meet these increased meat demands through imports.

The present lack of infrastructure to adequately address the problem contributes to the overall stagnation. This leaves the challenge of having to intervene with certain risks in order to initiate the momentum. The interventions referred to would be the feeding and fattening activities. In and of themselves, they are not negative but rather respond to the differentials in the costs of the interventions, whatever they may be (feed, forage, range management improvements, animal health, etc.) and the final price paid for the finished/produced product (quality meat).

The gap between these price differentials has got to narrow. It is believed that this can be accomplished by initiating a pilot program whereby 10 to 20 local bull/steers will be subjected to a feeding fattening scheme and processed into selected cuts which can be used to penetrate the existing meat import markets with improved quality and increased prices.

It is neither the intent nor the recommendation for this program to start on a large scale, but rather, in a sure and positive mode. The rationale being that since so much of the necessary infrastructure is not in place (adequate amounts of feed, quantities and quality of cattle, adequate abattoir and processing facilities, refrigeration, and market penetration with a local quality meat product), the trial/pilot activities must be small, practical and involve a minimum of expensive infrastructure (storage facilities, mixing/grinding equipment, etc.)

V. STRATEGIC INTERVENTIONS AND ASSESSMENT OF OPPORTUNITIES

CRITICAL AREAS FOR IMPROVEMENT

There are four overriding issues that need to be addressed if improvements in the livestock sector are to be achieved by the year 2000. The four critical areas are:

- o productivity

Improved productivity involves technological enhancements resulting in changes in the input/output relationships. The resultant benefit is for either increased outputs of livestock products with the current levels of inputs or maintain the current levels of outputs from fewer amount of inputs.

- o commercialization

Improved commercialization of the traditional livestock herd is related to the responsiveness of livestock owners to market signals and economic costs in maximizing commercial returns from livestock-keeping. Incentives and disincentives are realized directly by producers from how animals are managed and how scarce resources (labor, land, and capital) are utilized.

- o meat quality and safety

Meat quality and safety result in economic and health benefits to The Gambia through assurance of meat wholesomeness at all stages of production, processing, and retailing for domestic and export markets.

- o marketing (domestic and export)

Improved marketing comprises those issues related to distribution, pricing, and promotion of the product that results in both operational and pricing efficiencies, and ultimately, in overall economic efficiency of the marketing system.

GOALS, ACHIEVABLE OBJECTIVES AND THEIR PRIORITIES

In Figure 2 following, a series of major goals with stated achievable objectives are presented to address these critical areas for improvement in the livestock-meat sub-sector. (Figure 2 summarizes the tasks, the priority level of each task, and the time frame in which the task are to be conducted). Specific roles are established for private sector initiatives in all areas of production, distribution, processing, and marketing. The role of the GOTG is to serve in a support capacity for private commercial development through training, research, monitoring, and inspection.

Based on the analyzed results of Phase I in this report, progressive steps should be initiated. This phase will not only analyze the progress and response made by the animals to the feed, but also the costs of producing quality meat, the profit margin required to sustain this production, the willingness of the market demand to pay the given price increase in relation to the quality and prices of imported meat, and the sustainability of quantities and quality of feedstuffs. It is obvious from the complexity of the situation that these endeavors cannot be massed-produced and/or replicated. One must always be cognizant of the fact that yesterday's prices of cattle cannot compete with the present cost of modern technology. Yet progress and improvements must continue if future human food demands are to be met.

Figure 2. Time Chart for Implementation of Tasks for Improvement of The Gambian Livestock - Meat Subsector

	Year 1 1994	Year 2 1995	Year 3 1996	Year 4 1997	Year 5 1998	Year 6 1999	Year 7 2000	PRIORITY LEVEL
Install Equipment for Proper inspection (Task 1.1.1.)	XXXXXXXXXX							HIGH
Technical Training (Task 1.1.2)		XXXXXXXXXX						HIGH
Establish System of Grades and Standards (Task 1.1.3)			XXXXXXX	XXXXXXXXXX				MEDIUM
Clean Abattoir Site (Task 1.2.1.)	XXXXXXXXXX							HIGH
Capture and Process Abattoir By-Products (Task 1.2.2.)		XXXXXXXXXX						HIGH
Renovate Cold Storage at Abattoir (Task 1.2.3)		XXXXXXX	XXXXXXXXXX					HIGH See Results of Task 2.1.1.
Joint Commission with YAMS on Abattoir (Task 1.2.4)	XXXXXXXXXX							HIGH
Market Research on Gambia and West Africa (Task 2.1.1.)	XXXXXXX	XXXXXXXXXX						HIGH
Joint Commission with Senegal on Livestock (Task 2.2.1.)		XXXXXXX	XXXXXXXXXX					LOW
Policy on Meat Imports (Task 2.2.2.)	XXXXXXX	XXXXXXXXXX						MODERATE
Private Initiative for Hides and Skins (Task 2.3.1.)		XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	HIGH
Feasibility Study for Meat Processing Facility (Task 2.3.2.)		XXXXXXXXXX						MODERATE
Feasibility for Cold Storage (Task 2.3.3.)				XXXXXXXXXX				MODERATE
Training Short Courses (Task 2.4.1.)		XX XX	XX XX	XX XX				MODERATE

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Figure 2 (Cont.) Time Chart for Implementation of Tasks for Improvement of The Gambian Livestock - Meat Subsector

	Year 1 1994	Year 2 1995	Year 3 1996	Year 4 1997	Year 5 1998	Year 6 1999	Year 7 2000	
Pilot Feeding Trial (Task 3.1.1.)	XXXXXXXXXX							HIGH
Confinement Feeding by Private Sector (Task 3.1.2.)		XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	Depends on Results from Task 3.1.1.
Training Programs by DLS on Feeding (Task 3.1.3.)		XX XX	XX XX	XX XX				MODERATE
Improved Range Mgt. Programs (Task 3.1.4.)		XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	MODERATE
Foreign Investment Initiatives (Task 3.2.1.)		XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	MODERATE
Improve Abuko Terminal Market (Task 4.1.1)	XXXXXXXXXX							HIGH
Repair of Farm to Market Roads (Task 4.1.2.)	XXXXXXX	MODERATE (Long Term)						
Auction Market at Abuko (Task 4.1.3.)						XXXXXXX	XXXXXXX	LOW
Revise Livestock Marketing Act (Task 4.1.4.)	XXXXXXXXXX							HIGH
Improve Liquidity in Livestock Sales (Task 4.1.4.)			XXXXXXXXXX					HIGH
Market Information on Livestock (Task 4.2.1.)			XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	HIGH
Farmer to Farmer Training (Task 5.1.1.)		XXXXXXX	XXXXXXXXXX					MODERATE
Regional Agricultural Shows (Task 5.1.2)		XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	MODERATE
Revitalize Dankunku Range Project (Task 5.2.1.)	XXXXXXX	XXXXXXXXXX						HIGH

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Goal 1. Improvement in Gambia's Meat Standards, Safety, and Hygiene to thereby become Recognized as a Leader in Quality in the West African Region

Objective 1.1. Improve the handling and processing of meat (e.g. slaughter, bleeding, and dressing of carcasses at the Abuko abattoir.

- Task 1.1.1: provide the necessary equipment, tools, knives, clothing, etc. for proper inspection. (year 1) Cost: USD 3,000.
- Task 1.1.2: send a technician from DLS abroad for training in meat inspection systems and carcass and meat cutting. (year 2) Cost: USD 15,000. This task needs to be accompanied by the installation of rendering and cooking equipment for the disposal of condemned carcasses and meat.
- Task 1.1.3: Establish a grading system for livestock and meat products based on age of the animal and body condition. (Years 3 - 4).

Objective 1.2. Improve the conditions of the Abuko abattoir (owned by YAMS) to a standard consistent with exports to other African countries.

- Task 1.2.1: Clean the area around abattoir and designate a site near the abattoir for the disposal of condemned carcasses or organs until a rendering facility is in place. (Year 1).
- Task 1.2.2: Abattoir will begin to capture major by-products during the slaughtering process to include blood and other valuable products through the establishment of appropriate rendering and cooking equipment. (Year 2) Cost: USD 50,000. (The completion of this task will affect the implementation of task 1.1.2.)
- Task 1.2.3: Renovation of the refrigeration system at the abattoir based on market research (see Task 2.1.1.) into alternative markets for Gambian meat to allow for product development and mix of meat products to different market segments - domestic and export. (Years 2 - 3) Cost: USD 40,000.
- Task 1.2.4: Form a joint commission between the Ministry of Agriculture, DLS and YAMS for the formulation of an investment credit program to

facilitate in the rebuilding of the plant for domestic and export conditions. (Year 1).

Goal 2. Expansion of the Market, with New Product Development for Gambian Meat and By-Products

Objective 2.1. Conduct Research on Markets for Gambian Meat and By-Products

Task 2.1.1: Commission a study on the market conditions existing in The Gambia and regional African markets for livestock, meat and by-products. Study will include market analysis for fresh, frozen, bone-in, boneless and processed meats and hides and skins. Conduct analysis of transportation modes (truck, sea and air freight) and costs to these markets. (Years 1 - 2) Cost: USD 50,000.

Objective 2.2. Formulation of The Gambian Government's policy on the flow of livestock and meat within The Gambia, among neighboring African countries, and to the European Union.

Task 2.2.1: Ministry of Agriculture establish a joint commission with Senegal for the free flow of livestock for processing and reexport. (Years 2 - 3)

Task 2.2.2: Critically examine the role of imported subsidized meat into The Gambia and its effect on producer and consumer prices. (Years 1 - 2).

Objective 2.3. Encourage the entry of new private sector firms in the market development of livestock, meat, and their by-products

Task 2.3.1: Ministry of Agriculture and the Department of Livestock Services will encourage private sector development for the processing of hides and skins and encourage the creation of businesses to use these products in The Gambia, for example shoe, leather or apparel manufacturers. (Years 2 - 7).

Task 2.3.2: Undertake feasibility study on the private sector to establish a meat processing - manufacturing business with the purpose to utilize inferior animals and less desirable cuts from the carcass into value-added meat products, e.g. frankfurters, sausage (wet,

dried, and smoked), cooked meats and other deli type meats using alternative packaging

materials. (Year 2) Cost: Feasibility study: \$ 30,000. Cost of processing facility is estimated at USD 200,000 - 250,000.

Task 2.3.3: Undertake an economic appraisal of the benefits of a private sector cold storage facility for meat products. A central cold storage would facilitate the distribution of meat for domestic and export markets. This study would occur only after reviewing the development of the Abuko slaughter plant. (Year 4). Cost of appraisal: D 100,000. (This task would be undertaken if YAMS does not renovate their cold storage in Task 1.2.3.)

Objective 2.4. Develop a cadre of Gambians interested in private sector activities in the livestock/meat business.

Task 2.4.1: Conduct a series of training short courses for Gambian entrepreneurs in business planning, management, marketing, meat processing and exporting. (Years 2 - 4). Cost: D20,000 per short course for a total of six courses.

Goal 3. Improvement in the Quality of Gambian Livestock and Meat for penetration of Domestic and Export markets.

Objective 3.1 Introduce value-added livestock production system for targeted markets in The Gambia and for export.

Task 3.1.1. Private sector individual conduct feeding trials on ten head of cattle to test appropriate rations (Year 1 for immediate action). Cost: D 45,000. (This task requires only the minimum amount of infrastructure using only local materials and feed stuffs.)

Task 3.1.2: Based on results from Task 3.1.1. undertake confinement feeding by the private sector. (year 2 - 7). Cost (see chapter IV). (This task requires only the minimum amount of infrastructure using only local materials.)

Task 3.1.3: Training programs by DLS on feeding and supplementation of livestock to heavier and marketable weights at earlier ages through year round on-farm feeding programs for cattle, sheep and goats. (Years 2 - 4)

Task 3.1.4: Establish improved private range management areas for improved livestock systems where deferred grazing and intensive forage production for the grow-out of livestock using local resources. (Years 2 - 7). Cost (see Chapter IV).

Objective 3.2. Increase the role of foreign investors in providing risk capital and business expertise in the agricultural and livestock sectors.

Task 3.2.1: The Gambian Government and the National Investment Bank will aggressively seek foreign investment in the development of the agro-livestock/meat sectors and will encourage investors through a package of investment credits and import and export enhancements. (Years 2 - 7).

Goal 4. Modernization of Livestock Marketing Facilities and Infrastructure for the Commercialization of The Gambian Livestock Sector

Objective 4.1. Improvement of market infrastructure to allow efficient movement of farm commodities to markets.

Task 4.1.1: Improvement of the Abuko terminal market to provide feed, water, fence and weigh scale at a new site away from the slaughter plant. (Year 1)

Task 4.1.2. Improve the road infrastructure for efficient movement of livestock and agricultural products. Repair the potholes on main trunk roads so that traffic can travel unimpeded to Banjul. (Years 1 - 7, done annually)

Task 4.1.3: Implementation of an auction market at the Abuko terminal market to improve the efficiency of the pricing system. (Years 5 - 6).

Task 4.1.4: Improve the liquidity in the livestock marketing system through cash purchases of livestock and the provision of agricultural inputs. (Year 3). Revise the Livestock Marketing Act to recognize and protect livestock owners in the sale and transport of their livestock. (Year 1). Revision of the LMA is essential to improving the liquidity in the marketing system.

Objective 4.2. Timely and accurate market information disseminated to private sector on market conditions.

Task 4.2.1. Weekly market news reports (English and major African dialect) on the Abuko market on prices received, volume sold, head killed and inventory waiting to be sold. (Years 2 - 7). Cost: D 15,000 per year for five years.

Goal 5. Livestock Owners and Managers Perceive the Advantages of Improved Productivity in their Livestock

Objective 5.1. Promote Farmer Awareness on the Importance of Improved Livestock Production

Task 5.1.1: Farmer to Farmer Programs to bring U.S. livestock owners to The Gambian to share knowledge about improved livestock practices and meat processing. (Years 2 - 3). Cost: USD 100,000/year.

Task 5.1.2: Establish regional agricultural shows with an emphasis on improved livestock: cattle, sheep and goats (meat and dairy). (Starting in Year 2 and continuing annually). Cost: D250,000/yr.

Objective 5.2. Institute national range management practices on how to manage year round forage for livestock production.

Task 5.2.1: Revitalize and restructure the Dankunku Range Management Project with greater linkage with the private sector for making butter, ice cream, cheese and the purchase of live animals. (Years 1 - 2). No additional range management projects like Dankunku would be undertaken until this project has been corrected and operating successfully.

ASSESSMENT OF STRATEGIC INTERVENTIONS

The strategic interventions proposed above for the improvement of the livestock/meat subsector are assessed in regard to their likelihood for success and critical impact on the overall sector.

Penetration of Domestic and Export Markets for Beef, Mutton and Goat Meat, and Hides and Skins

Supply/demand factors. The Gambian livestock industry is small compared to other surplus livestock countries in West Africa. Livestock from Senegal are currently being sold in the Abuko market. Supply availability for a year-round supply of quality

livestock is not possible without imports. Currently, the Senegal Government is not officially allowing livestock to leave the country. This policy needs to be investigated and reversed.

Demand for meat in the greater Banjul market is strong. It is felt that consumers are very price-sensitive and will easily shift to other competing protein products; e.g., poultry and fish. This puts downward pressure on meat prices. Also, there are cheap imports, particularly frozen meat shipped into the country, which dampens consumer prices for fresh meat.

For the export market, it is difficult to know how competitive Gambian meat will be in the West African markets. Now that the CFA franc has been devalued, imported products from outside CFA countries will be more expensive. This explains why livestock are presently flowing into The Gambia.

Supplies of inexpensive meat imports into West Africa will continue, but at a slower rate because of demand from Eastern Europe and the Newly Independent States for EU meat. This will help to keep Gambian livestock producers competitive in the region.

The world market for hides and skins is strong making exports of quality Gambian hides attractive. The hide market needs to be improved to receive higher prices for quality finished products.

The major source of milk is from imports of canned and powdered milk. The demand for fresh milk from Gambian cattle is good and milk sells for D 2.50 per liter. Milk is a valuable output for Gambian livestock owners and is a primary reason for keeping cattle. More private sector linkage to milk producers is advisable, especially processors of ice cream and yogurt.

Prices. In the domestic market, import prices of high-quality products are at least 75 to 100 percent higher than local beef. Opportunities exist for Gambian producers to be competitive, especially given the import levies and sales taxes. Gambian beef does not match the high quality of imported beef. On the other hand, much imported beef is from South America where cattle are grass fed, as in The Gambia. The overall quality of imported meat may be deceiving.

The FOB price at Abuko for hot carcass meat is approximately D22 per kg (US\$2.29/kg = US\$1.04/lb). (This compares with recent prices of US\$1.30/lb. for Australian cow beef.) The cost of added value to Gambian livestock will need to be assessed against what the market will pay. (See Chapter IV).

Competition. With the privatization of LMB, the livestock industry is in a state of flux. There is uncertainty as to what direction YAMS will take regarding the abattoir. In the

trading and retailing of meat, sufficient numbers of buyers and sellers are present to allow competitive prices. More market information is necessary to transmit prices throughout the marketing channels.

Hurdles to market entry. The major hurdle to market entry will be obtaining available supplies of quality meat to expand into new product lines, especially during the dry season. The shortage of working capital and affordable credit will hamper the expansion of the industry and the success of the proposed strategic interventions. Export entry will be delayed by the current infrastructure of the abattoir and the inability of neighboring countries to have available foreign exchange.

Product mixes. The product line is currently very narrow, with only a hot meat trade. No fabrication of carcasses is being conducted and meat processing is not present. No grades and standards exist to direct products into different markets with the highest and best use for the products.

Product quality. The general taste and tenderness of Gambian meat is not up to the standards of more discriminating consumer and other retail markets in the country because of the production limitations in getting acceptable carcasses at an early age. Efforts to change the product will take time, but it is important to begin now. (See Chapter IV).

Sanitary and other statutory requirements. A hygiene protocol is not in place to set standards for meat handling. The proposed strategic interventions will alleviate this bottleneck.

Consumer preference. Opportunities exist for designing marketing programs for The Gambian consumer. In the middle-to-low income strata of the population, price pressure will limit some gains from the strategic interventions proposed. Meat promotion is necessary to educate the public about the qualities of Gambian meat.

Impact on the Traditional Production Sector and Potential for Improvement, Especially as Regards the Ability to Tap into Domestic and Export Markets

The traditional production sector is constrained by management practices tied to communal grazing and a recognition that cropping is more important than livestock-rearing. Uncontrolled burning is a major detriment to potential improvement in productivity. The tremendous amount of biomass cannot be consumed in its present state to any great degree without supplementation of protein/energy feed. But the cost of the supplementation is too expensive for the traditional livestock owner.

Small-scale feedlots that have very low capital costs of infrastructure would be advisable for cattle feeding. If a market can be found for the fed steers and bulls, then the strategic interventions for improved feeding will have a positive impact on traditional production systems. As for small ruminants, it is preferable to go to year-round production rather than for a target festival as a sole market outlet. More market outlets through regional fairs and field days will create awareness of the value of fattening the animals.

The GOTG could start conducting feed trials for measuring inputs to obtain the necessary data to assist the private sector in starting a fattening scheme. The strategic interventions proposed by the GOTG on market development would be important to attracting new private companies to enter the meat business.

Assessment of Roles of the Private Sector and Government in Attracting Investment and Facilitating Livestock Industry Development

The strategic interventions proposed rely heavily on attracting risk capital into the livestock/meat sub-sector. There has been some entry of private sector individuals into the butchery business. As the Gambian economy experiences the benefits of its economic policies to privatize government parastatals, real incomes of consumers will rise and consumption of meat products will certainly increase.

The ability of GOTG to attract new investment is uncertain. Infrastructure in the interior of the country is lacking so that expansion in agro-industrial projects will be limited. Moreover, livestock is not seen as a highly valued commodity like fruits and vegetables, which have a high turnover rate in a shorter period of time.

Government policies for the livestock sector need to encourage private investment. At the same time GOTG will have to recognize the potential damage to the environment of unrestricted livestock grazing on the rangeland, especially the riverine ecosystem. The economic costs on the ecosystem of the river and estuaries has to be factored into the land use planning and investment decisions for livestock development.

Assessment of Marketing Arrangements to Meet the Goals of High Quality Animals and Meat for Domestic and Export Markets

The strategic interventions on grading and meat standards, coupled with an improved market information system, will facilitate livestock producers in producing animals for the domestic and export markets. However, this is a long-term development goal and will only be achieved if production activities; e.g., fattening and cross-breeding, are economically viable.

Livestock producers will need to see improvements in the payment method for their livestock before they will be responsive to the needs of the market. The marketing arrangements proposed will afford a mechanism to retain quality added to the animal.

Assessment of Capital Costs to Implement the Necessary Changes for an Export-Oriented Livestock Industry

At current Gambian interest rates (15-20%), it is difficult for the private sector to undertake some of the strategic interventions recommended. However, activities by the GOTG can begin to set the stage for private sector development. As the cost of capital declines to world market levels of 10 percent or less, a foundation for investment initiatives will be in place.

Commercial feedlot development is not profitable at the current level of the cost of capital. Other village-level interventions, such as sheep fattening, will continue to remain competitive because of the use of local feeds and low input costs. Even though the cost analyses of feeding cattle show feeding cattle is unprofitable, the real technical coefficients are unknown at this time. A trial feeding program is recommended to gain a clearer picture. Even if confinement feeding is only marginally profitable or at best breakeven, a private individual, vertically integrated with a butcher shop or other meat outlets, may wish to proceed to provide a year-round supply of high quality meat.

Several private individuals were identified who have an interest in expanding their current operations in the livestock industry. Joint venture capital will be difficult for projects that require the transformation of the traditional livestock production system, which is long-term in nature.

Assessment of Strategic Interventions on Domestic Prices for Beef, Mutton, and Goat Meat

If the recommended strategic interventions are successful over the long term, the following impacts on prices for beef will likely occur. Increased export trade will have the effect of shifting supplies of meat to export markets, consequently raising Gambian retail prices for meat and resulting in smaller quantities of beef consumed. Prices for livestock will increase to producers. The export of beef will generate foreign exchange for The Gambia. All things being equal, a competitive export market will result in the export price being equal to the Gambian domestic price plus transport costs.

The long-term rise in consumer prices for beef will also positively effect the prices for mutton and goat meat. As competitive meat substitutes, supplies of poultry and fish will continue to affect prices for red meat by having a dampening effect.

CONCLUSION

This study adds to the findings of the Livestock Sector Review (UNDP, 1992) conducted in 1991, by specifically targeting strategic interventions that are needed to improve the subsector's productivity, commercialization, meat safety and hygiene, and marketing. The time chart in Figure 2 provides a guide to summarizing these activities, when they need to be started and completed, and the priorities of the various tasks. Where appropriate and meaningful, an approximate cost of the activity is provided.

The interventions are linked in that, taken as a whole, they approach the livestock/meat subsector as a system. Efforts to improve marketing will also impact the production of livestock. For this reason the design of the strategies are comprehensive to the overall development of the subsector.

The important next step is for the Department of Livestock Services to act as a catalyst to bring together the respective parties from government, private, non-government (e.g. ActionAid, Catholic Relief Services), and external donor agencies (USAID, UNDP, EDF) to put the plan into action. In most cases, money is not the limiting factor, but rather, the time and management expertise to bring the respective parties together and to work toward the goals and achievable objectives outlined in this report. The opportunities are present in The Gambia for great strides in improvements in the livestock/meat subsector by the year 2000.

APPENDIX A: BIBLIOGRAPHY

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APPENDIX B: PERSONAL INTERVIEWS AND VISITS SCHEDULE

Saturday, February 19th

Meeting with Dr. Omar Touray, Director of Livestock Services, Dr. Baudo Loum, Deputy Livestock Officer; Dr. Ceesay, Regional Veterinarian Officer, Western Region; Steve Wade, FAPE Project Advisor; Dr. O. Amare, ANR Project, USAID.

Visit to St. Mary's Cape Point Supermarket to collect retail meat prices.

Monday, February 21st

Driss Bensouda, owner of butcher shop and private entrepreneur involved in the trade of fresh beef products in Banjul area. Visited a proposed beef fattening ranch near the airport.

Lamin Juwara, financial advisor at the National Investment Bank, involved in the sale of Livestock Marketing Board's assets.

Meeting with Lamin Bojang, Senior Meat Hygiene Officer, and Dr. Ceesay concerning meat inspection in the Banjul market and the planning of the week's activities.

Tuesday, February 22nd

Meeting at USAID with Nancy McKay, Program Officer, Gary Conhen, Agriculture Officer; Steve Wade, FAPE Project Advisor; and Christine Elias, ANR project officer.

Mr. Pierre Shyngle, private butcher, involved in the wholesale and retail of meat products. Included in the meeting was Alieu Joof, Range Management Officer.

Visit to Kariba Supermarket to record meat prices of imported meat products. Mr. Hussein, Managing Director, ph. 371146.

Visit to Paul Maroun Supermarket and met with the owner, Mr. Maroun, and discussed the differences between imported and domestic beef.

Visit to local meat market in Serekunda to speak with local butchers.

Visit with the feed dealer, Sheikh Ceesay, about the trade in groundnut hay.

Visit with Abass Barrow, Director of Operation for YAMS, a private company, that purchased the abattoir at Abuku. Phone: 390722.

Meet with Alieu Ndow, Director of Central Statistics, in the Ministry of Finance, on household food consumption and livestock and meat import data. M. S. Tunkara is responsible for livestock statistics. ph. 228903. Others visited included: Mahen Njie, Household Survey Section, ph. 229683, and M. S. Raman, Senior Statistician, ph. 228327.

Wednesday, February 23rd

Mr. Bob Johnson, Groundnut factory, to discuss the role of private sector in the production of groundnut processing and sale of cake. Met with Richard Kittlewell, General Manager.

Visit with Driss Bensouda about feeding program for cattle and request for import data.

Visit to Amis Beach Hotel. Visit to Palm Cove Hotel. Visit to Sunwing and the Chef Luis del Prado and the purchasing manager Mr. Kinte (ph. 495428/435.)

Visit to B & B Hotel and met with Chef Johan Ekstrom, the Food and Beverage Manager. (ph. 465288)

Meeting with Mr. Ibraheim Yanneh, Livestock Survey Division, on livestock prices.

Meeting with Eric Thiry, Livestock Specialist, Department of Livestock Services.

Meeting with Dr. Dana Wiltz, temporary veterinarian from the United States involved in animal health care and station at DLS.

Meeting with Mr. Pa Jallow, General Manager of the YAMS farm discussing the breeding herd and opportunities for feeding cattle.

Visit to the livestock market at the abattoir to weigh eight head of cattle purchased by Driss Bensouda for slaughter the next morning for data collection.

Thursday, February 24th

Inspection of the abattoir and collection of data on carcass weights on eight head of cattle purchase the following afternoon.

Meeting at DLS with the Livestock Dealers Association to discuss opportunities and constraints in the marketing of livestock products.

Visit to the Kariba Hotel to meet Chef Jimmy O'Donald about the opportunities of domestic beef.

Visit with Mr. Abdoulie Touray, chief executive officer of National Investment Bank and Steve Wade, FAPE project advisor.

Visit with Larry Ceesay and Lone Thorup of UNDP to discuss the Dankunku Livestock Project.

Friday, February 25th

Mr. Ponga, Department of Livestock Services, who was the field officer for the Dankunku Livestock Project.

Chief Omar Ceesay, President of the Sheep and Goat Fattening Association, from Youn Upsalon, McCarty Island District.

Mr. Momodou Jaiteh, Assistant Food and Beverage Manager, Senegambia Hotel, to discuss meat imports by the hotel. Phone: 463855.

Saturday, February 26th

Visit to the lumo, livestock market at Barikimaba, to inspect livestock and speak with livestock owners and dealers.

Met Mr. Yorro Beri Kunda, the officer at the Divisional Livestock Services Center at Y. B.K.

Travel to Sololo in the McCarty Island District. Met Mr. Momodou Mbake, station director of The International Trypanosomiasis Center (ITC), at Sololo, McCarty Island Division.

Sunday, February 27th

Visit to the Catholic Relief Service Center for sesame seed processing at Bakadagi.

Mr. Ebrima Bassa Sonko, Divisional Veterinarian Officer, for the Upper River Division stationed at Basse. He accompanied us to the slaughter slab at Basse and inspected the new building under construction. A visit was made to the meat market.

Met with Mr. Levaray, manager in-charge of the cotton gin at Basse. Phone 668362 and fax 668461.

Monday, February 28th

Visit to the rice project at San Kulay Kunda to understand the availability of rice milling. Met with the Assistant Agriculture Officer, Abdoulia Mbake.

Met with Chief Alhaji Lamin Bandeh near the rice fields who is a large livestock owner.

Woman involved in sheep fattening program in the village of Boiran (Denton).

The research center for Action Aid of The Gambia located at Sapo. Met Mr. Lamin Dibba.

Mr. Alhaji Babou Ceesay in Mamut Fana who is the president of the Maize Growers Association.

Tuesday, March 1st

Visit to livestock herds near the Dankunku Livestock Station to inspect the condition of the livestock and to view the range management system in place. A meeting was held with representatives of the range management committee.

Visit with Matarr Njie, divisional livestock officer, Lower River Division, about livestock activities and especially sheep and fattening schemes.

Wednesday, March 2nd

Visit with Mr. Tunkara and Mr. Raman, Central Bureau of Statistics, concerning import data on meat products.

Debrief FAPE project director, Steve Wade, at the National Investment Bank, on business opportunities at up-country locations.

Thursday, March 3rd

Site visit to GAMTAN in Abuko to inspect equipment and facilities.

Interview Mr. Momodou K.B. Drammeh who conducted a feasibility analysis of hides and skins tanning in The Gambia for the United Nations Development Program.

Met with Pierre L. M. Sarr, Marketing Manager, Banjul Breweries Ltd., about the opportunity to purchase breweries waste as a cattle feed.

Met with officials at the International Trypanosomiasis Center (ITC) to discuss opportunities for improvements in The Gambian national livestock herd. In attendance were Dr. Touray, Director, Derek Clifford, Bill Snow, and Hans Wagner.

Met with Dana Wiltz, livestock veterinarian, about animal health conditions in The Gambia and the opportunity for small ruminant production strategies.

Friday, March 4th

Met with Permanent Secretary for the Ministry of Agriculture, Mr. Yaya Jallow.

Met with Mr. Taylor, Director of Planning, in the Ministry of Agriculture.

Met with the FAO representative for The Gambia, Mr. Edward Bayagbona.

Met with Mr. Gaye, meat technologist for the Department of Livestock Services, at the central meat market in Banjul.

Monday, March 7th

Industry seminar at Abuko with over 60 participants from the private sector, financial community, government and donor agencies.

Visit with members of the Gambian Butchers Association about meat merchandising practices.

Toured the DLS facilities at Yundum Farm near the airport to view the area and inspect livestock.

Wednesday, March 9th

Exit briefing with USAID and FAPE program officer.

Exit briefing with Department of Livestock Services and the National Investment Bank.

APPENDIX C: INDUSTRY BRIEFING OUTLINE

by DR. OMAR TOURAY
Director of Livestock Services
Government of The Gambia

Department of Livestock Services
Abuko
The Gambia.

Ref: VS/CIR/27/(233)

4th March, 1994.

SEMINAR/BRAINSTORMING SESSION

You are kindly invited to attend the above-mentioned Seminar or Brainstorming Session.

TOPIC : FEEDLOTING AND MEAT DEVELOPMENT INITIATIVES IN THE GAMBIA -
THE WAY FORWARD.

VENUE : DEPARTMENT OF LIVESTOCK SERVICES, ABUKO (CONFERENCE ROOM).

DATE : 7 - 3 - 94 (MONDAY)

TIME : 11am - 12.30pm

MODERATOR : DR. OMAR TOURAY

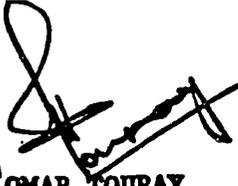
PRESENTERS : DR. RAUL HINOJOSA (LIVESTOCK RAISING CONSULTANT)
DR. GREGORY SULLIVAN (MEAT PROCESSING / MARKETING CONSULTANT)

ISSUES:

- Potentialities and Constraints of the Traditional Sector
- Potentialities and Constraints pertaining to the establishment of a modern sector.
- Policy issues
- The role of the public and private sectors
- Complimentarity between the traditional and modern sectors
- Complimentarity between the public and private sector
- Environmental issues.

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- Product development, marketing and consumer issues
- Infrastructure
- ETC.

A handwritten signature in black ink, appearing to read 'Omar Touray', written over a horizontal line.

DR. OMAR TOURAY
DIRECTOR.