THE ECONOMICS OF IMPROVING ANIMAL HEALTH AND LIVESTOCK MARKETING IN SOMALIA

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GLOSSARY OF TERMS USED IN THE REPORT

Der - The second and shorter rainy season, beginning in September and ending in November.

dhow - An Arabian sailing vessel that is used for carrying consumer goods, foodstuffs and livestock between the Arabian Peninsula and East Africa.

Gu - The principal rainy season, beginning in April and ending in June.

hadj - The annual Moslem pilgrimage to Mecca, Saudi Arabia. The dates of the hadj move forward ten days every year in accordance with an unadjusted lunar calendar (will take place September 20-25 in 1982).

Hagai - The dry season occuring between Gu and Der (July-August).

HASA - Hides and Skins Agency (now the Somali Leather Agency). This parastatal has a monopoly on exports of hides and skins.

Haud - A semi-arid region that straddles the Somali-Ethiopian border. Northern Somali pastoralists move their herds into the Haud during the rainy seasons.

Jilaal - The long dry season following Der (December-March) during which water and forage become unavailable.

LDA - Livestock Development Agency, formed in the late 1960s and abolished in 1981. A parastatal livestock marketing agency that bought cattle for export from 1974 to 1979 and was charged with developing and maintaining the marketing infrastructure (holding grounds, stock routes, quarantine facilities, marshalling yards).

MLFR - Ministry of Livestock, Forestry and Range.

NRA - National Range Agency. An autonomous agency formed in 1976 to implement the Northern Rangelands Development Project. Administers programs in rangeland and water resources development, wildlife and forestry.

Ramadan - The ninth month of the Moslem year, which is the occasion for daytime fasting and night-time feasting. Ramadan took place from June 20-July 19 in 1982 and also moves forward ten days each year in accordance with the unadjusted lunar calendar.

The Economics of Improving Animal Health and Livestock Marketing in Somalia: Summary

While live animal exports have provided an increasing proportion of Somalia's foreign exchange since the early 1970s, the volume of goat and sheep exports was highest in 1972, camel exports have trended downward since 1977, and cattle exports have increased steadily since 1979. Real (official) foreign exchange earnings from livestock exports were greatest in 1978 and have stagnated in the past three years. Since the mid-1960s, Somalia has become increasingly dependent upon one market, Saudi Arabia, to which it shipped 88% of its small ruminant exports and 94% of its cattle exports in 1980.

Since the livestock sector is the backbone of the Somali economy, and livestock exports have provided 59-91% of Somalia's official foreign exchange earnings since 1975, investments to improve the animal health and livestock marketing infrastructure are merited. As the Saudi market becomes increasingly sophisticated and as the Saudis express greater concern about the health of live animal imports, it will become essential that Somalia improve the health and condition of its live animal exports. This will require better animal health services for the livestock of producers and traders, upgrading of holding grounds in export staging areas and along major stock routes, and investments in quarantine stations and improved marshalling areas near the three principal ports.

By improving animal health in Somalia, livestock mortality would be reduced and growth rates, the liveweight of animals and milk production would be increased with substantially increased export potential. Yet reducing livestock mortality could expand the livestock population of Somalia and further tax the deteriorating rangeland. Yet there is considerable evidence

that pastoral producers' needs and hence incentives to sell have increased. Livestock prices have kept pace with the inflation in the prices of the consumer goods that pastoralists buy since the mid-1960s, so that earnings from livestock sales pay for roughly the same quantity of goods today as in 1966. Nevertheless, livestock producers are investing increasingly in market shops, education for their children, urban real estate, cement-lined reservoirs, and in some instances vehicles. After having suffered heavy losses during the droughts of 1973-75 and 1979-80, many pastoralists realize that holding their wealth as livestock on the range involves substantial risks. In the final analysis, the commercial orientation of Somali pastoralists has increased in recent years and livestock production will probably continue to become more commercially oriented in the future. Nevertheless, the Somali government should provide producers with additional incentives to sell their animals through charging herders the full cost of improved veterinary care, use of NRA controlled areas of the rangeland (drought reserves) and use of water from boreholes and reservoirs to be constructed.

An analysis of the costs and benefits of improving animal health in Somalia indicates that the returns to a well-conceived animal health and livestock marketing investment program would be substantial. This analysis attempted to quantify only those benefits resulting from reduced livestock mortality and higher potential offtake. Upgrading animal health would also improve the diagnostic capability of the Veterinary Service and the knowledge and experience of the veterinary field service. Domestic consumption of meat and dairy products would probably also increase. Finally, the risk of epidemic outbreaks of disease, which could lead to closure of important markets, would be greatly reduced.

In order to facilitate offtake of the additional livestock that reach slaughter and export weights, any intervention to improve animal

health would have to be accompanied by further investment in upgrading of the livestock marketing infrastructure. By failing to remove critical bottlenecks in export staging areas and at the principal ports, the additional livestock available for offtake would not be exported or would be exported with great weight loss and unacceptably high mortality. The substandard quality of some Somali export stock, as well as the inability of Somali exporters to ensure delivery of specified quantities of livestock to Saudi Arabia at specified times in recent years, has contributed to the decline in Somalia's market share since 1976, as aggressive and well-organized suppliers such as Australia have increased their share of markets in the Gulf States.

In order to respond to changes in consumer preferences and competitive initiatives by other foreign suppliers, Somalia will need to develop far better market reporting and intelligence. Having all but lost out in the scramble to supply livestock products to Kuwait, Bahrain and Qatar during the 1970s, Somalia will have to improve its analytical capability in the areas of agricultural marketing, trade and export promotion if it hopes to avoid losing other profitable opportunities in the future.

In taking a longer run view of development of the livestock sector, it will be necessary to experiment with alternative means of marketing livestock products other than on the hoof. The Somali government is presently exploring some of these possibilities and is encouraging foreign investment in the livestock sector. Joint government-private sector delegations have recently (April 1982) gone to Saudi Arabia and Bonn to promote foreign investment in livestock and agricultural development, industrial development and tourism. The Somalia government has attempted to offer sufficient incentives and guarantees to foreign

investors, and it is hoped that the dialogue with the Arab states, West Germany and other potential investors will continue. The success of early joint ventures and private initiatives, such as a jointly sponsored Romanian and Somali livestock development project and an agro-industrial project jointly undertaken by Somali and Italian investors, will probably have an important effect on the willingness of foreign investors to undertake additional projects.

I. Trends in Livestock Exports and Foreign Exchange Earnings

A. Trends in Live Animal Exports

The trade in live animals between Somalia and the Arabian Peninsula has been going on for centuries. Major expansion in this trade took place in the middle of the nineteenth century, with the establishment of a British garrison and coaling station at Aden (1839) and from 1950 through the early 1970s, following the discovery of petroleum in Saudi Arabia. Since 1972 the volume of live animal exports has fluctuated considerably, in response to drought, government intervention in the livestock trade, and problems in the organization and coordination of the trade. The trends in live animal exports from 1959 through 1981 are shown in Tables 1A and 1B and Figures 1 and 2.

1. Sheep and goat exports

Sheep and goat exports, which together generate at least two-thirds of official foreign exchange earnings, have fluctuated considerably since the mid-1960s. Since 1968 there has been no clearly discernible upward trend. The peak export volume of 1.6 million sheep and goats was achieved in 1972 and approached only once in the following nine years, in 1975, when 1.55 million small ruminants were exported. The large volume of small ruminant exports in 1975 probably reflects increased culling of surplus stock, whose maintenance on the range in the final year of the drought would lower the nutritional level and hence endanger the survival of the rest of the small ruminant herd. The effect of the 1973-75 drought in lowering reproductive rates and hence the availability of sheep and goats for export in 1976 and 1977 is illustrated clearly by the export figures. Since 1978 small ruminant exports have varied little, falling in the 1.36-1.48 million range each year.

Table 1A RECORDED EXPORTS OF LIVE ANIMALS FROM SOMALIA, 1950 AND 1958-1980 ('000 head)

Year	Sheep	Goats	Total Small Ruminants	Cattle	Camels
1950	n.a.	n.a.	121	2.7	0.2
1958	286	149	434	12	2.5
1959	350	107	457	10	5.5
1960	427	149	576	12	6
1961	447	181	628	25	8
1962	526	222	748	32	10
1963	670	190	860	49	17
1964	823	192	1,015	57	18
1965	416	375	791	38	24
1966	610	487	1,097	36	24
1967	567	367	931	36	37
1968	768	514	1,282	42	17
1969	712	695	1,407	34	23
1970	546	605	1,151	45	26
1971	608	576	1,184	56	24
1972	789	828	1,617	77	21
1973	684	639	1,323	70	28
1974	655	556	1,211	27	24
1975	796	754	1,550	39	33
1976	374	374	748	76	37
1977	461	442	903	54	35
1978	728	723	1,451	74	21
1979	579	616	1,195	79	17
1980	829	951	1,780	85	21

Sources: Ministry of Planning, Central Statistical Department, Foreign Trade Returns (1962-80), Annual Trade Reports of the Northern Region (1958-1961), Statistica del Commercio con l'Estero (1958-61), Southern Region.

Note: There are large discrepancies between the export figures reported by the Ministry of Planning and the Livestock Development Agency for 1979 and 1980. These discrepancies may have arisen from the different means used by the two sources in determining export (customs records as opposed to veterinary service certificates at the port of embarkation). Errors may also stem from manual tabulation of customs and veterinary statistics. However, the LDA figures are believed to be more accurate than the foreign trade returns for 1979 and 1980.

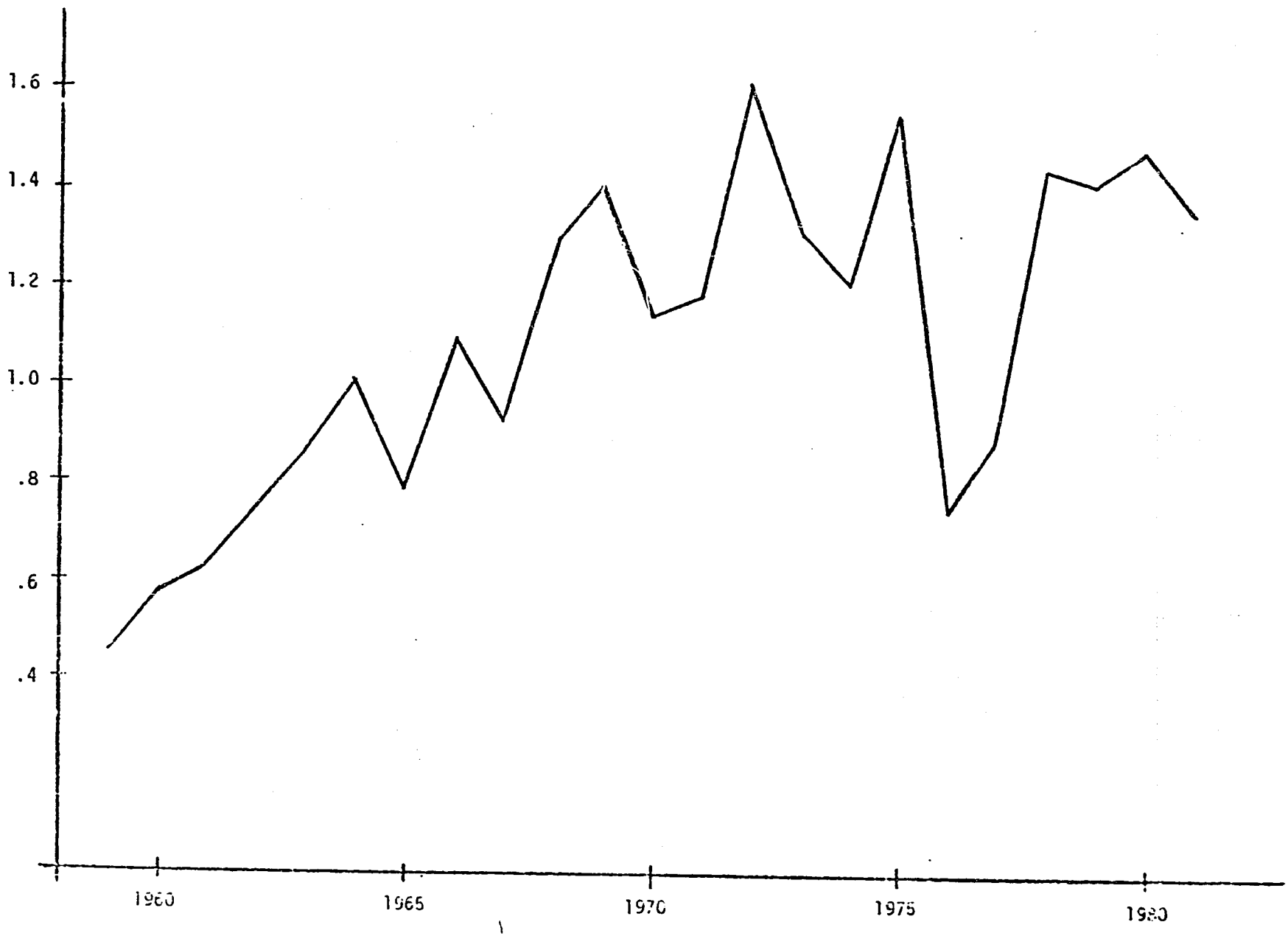
TABLE 1B

NUMBERS OF LIVE ANIMALS EXPORTED FROM SOMALIA, 1971-1981
('000 head)

Year	Sheep	Goats	Total Small Ruminants	Cattle	Camels
1971	622	564	1186	59	26
1972	816	819	1635	81	22
1973	709	675	1386	68	29
1974	663	575	1238	31	24
1975	793	743	1536	40	34
1976	385	381	766	58	33
1977	465	461	926	55	33
1978	739	715	1454	77	22
1979	717	705	1422	68	13
1980	747	734	1481	93	17
1981	685	680	1365	117	14
Annual Average	667	641	1308	68	24

Source: Livestock Development Agency.

Figure 1 Small Ruminant Exports, 1959-1981



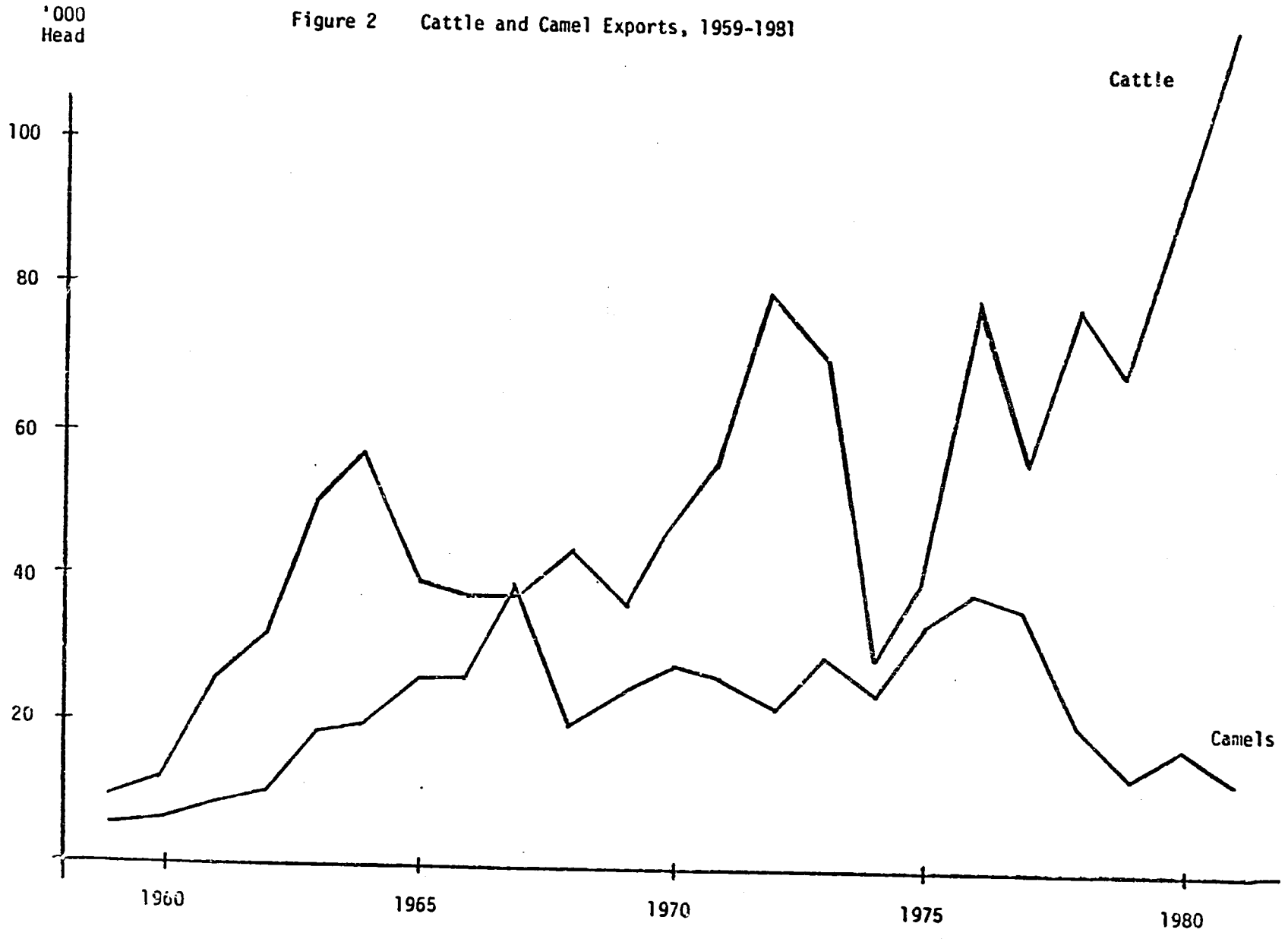
2. Cattle exports

Cattle exports, which are second to small ruminant exports in generating foreign exchange, have also fluctuated greatly since the mid-1960s. The 1972 peak of 77,000 head was followed by two years (1974-75) of low exports during the drought. According to Livestock Development Agency (LDA) export figures (shown in Table 1B), which are believed to be more accurate than the Ministry of National Planning's figures (shown in Table 1A), cattle exports increased in 1976-77 but remained low relative to 1972-73 and 1978-81. Losses during the drought had probably reduced the numbers of 0-3 year old cattle that would be of exportable quality by 1976-77. By 1978 the lagged effect of the drought had become minimal and cattle exports reached new heights in 1981. The trend in cattle exports has therefore been clearly upward since 1974, the height of the drought.

The upswing in cattle exports is not only the result of climatically induced supply factors. Cattle exports also increased in response to the 1979 opening of the deep water port at Mogadishu, which provided a closer outlet than Berbera for the large numbers of surplus cattle of exportable quality that are produced in the inter-riverine region of Southern Somalia. The improvement of shipping from Southern Somalia (Mogadishu and Kismayo) to Saudi Arabia made evacuation of the cattle surplus possible. Moreover, the increased demand for beef on the Arabian Peninsula, which is due to the large influx of foriegn workers and technicians, has facilitated the rent expansion in cattle exports.

Finally, it is important to note that unknown numbers of cattle exported from Kenya and Ethiopia pass through Somalia in transit and are shipped from Kismayo and Berbera. Cattle movement across the Kenyan-Somali

Figure 2 Cattle and Camel Exports, 1959-1981



border occurs primarily in response to price incentives in the two countries.[1] In recent years, particularly since the LDA lost its franchise buying rights in Southern Somalia, Kenyan producers and assemblers have had incentives to sell cattle in Somalia for export from Kismayo. Data on livestock exports by port (see Table 9, Section II.D) show that cattle exports from Kismayo increased by over 10,000 head from 1979 to 1980 and by another 7500 head from 1980 to 1981. It is possible that as much as half of this increase in exports originated in Kenya.

Cattle exports from Berbera have exceeded 50,000 head per annum from 1979 to 1981, having doubled from 1978 to 1979. It is quite possible that one-third to one-half of these cattle are Ethiopian (or are herded into Ethiopia for much of the year). The prinicpal markets for assemblying cattle for export in Northern Somalia are located on the border at Alaybalay and Tug Wajale. Somali exporters buy cattle (and small ruminants) from ethnic Somalia collectors and producers residing in Ethiopia for most or all of the year. Whether the cattle sold at such markets should be considered Somali or Ethiopia is unclear. According to some reports, a significant (but undetermined) proportion of cattle brought to the border markets originates in the Ethiopian highlands.

3. Camel exports

Camel exports, which contribute least of all livestock exports to official foreign exchange earnings, were highest in 1967 and 1975. As in the case of small ruminant and cattle exports, camel exports have fluctuated considerably since the mid 1960s, largely due to supply factors. The 1973-75 drought probably resulted in large and irreplaceable losses in the Somali camel population. Since the generation interval is longer for camels (34-37 months) than for other ruminants and camels do not attain

[1] The outflow of mature cattle to Kenya was estimated at 40,000 head per year from 1969 to 1971. Inflows of immature cattle from Kenya began to offset outflows of mature cattle beginning in 1972. By 1974 outflows and inflows were estimated to offset each other completely. In recent years prices for cattle exported from Somalia have increased relative to prices for cattle in Kenya, which has induced inflows of mature Kenyan cattle.

export weights until they are at least five years old, the shock of successive years of drought has a more prolonged effect on the camel population than on the small ruminant or cattle populations. Large numbers of camels were sold for export and slaughter during and immediately after the drought, because years of good rainfall before the drought had led to a buildup of surplus males. This surplus reached market weights when feed and water resources were limited, which provided producers with an added incentive to sell. Exports and to a lesser extent slaughter continued at a high level after the drought (1976-77), as the remaining surplus of camels that was born before the drought reached maturity. Since camels are highly drought resistant, producers were not forced to sell all of their surplus males during the drought. Rather, this surplus was held on the range and then exported after the drought, after which more rapid weight gains took place.

By 1978 the surplus of camels born before the drought had been exported or slaughtered, and exports dropped precipitously, since no surplus had been generated during the prolonged drought. Camel exports reached their lowest levels since the early 1960s from 1979 to 1981, yet municipal slaughter rose from the very low levels of 1978-79 to reasonably high levels in 1980-81, due to rapid urbanization in Somalia in recent years. From 1982 to 1985 offtake from the Somali camel herd will probably increase, as males born after the 1973-75 drought will reach slaughter and export weights. Yet it is doubtful whether camel exports will attain 1976-77 levels, as an increasing proportion of available offtake will be slaughtered locally. Increasing urbanization and substitution of lower cost camel meat for higher cost mutton, goat meat and beef will result in greater internal slaughter, although not necessarily in higher per capita consumption of camel meat.

B. Live Animal Exports as the Principal Source of Foreign Exchange

As shown in Table 2, exports of live animals have generated no less than two-thirds of Somalia's foreign exchange earnings since 1975, with the exception of 1976, the year following the 1973-75 drought. Live animal exports accounted for 91% of the country's hard currency inflow in 1981, as shown in Table 3. Exports of all animal products, including live animals, meat and hides and skins (but excluding fish), have generated over 80% of Somalia's foreign exchange earning in five of the last seven years. The dependence of the Somali economy on exports of live animals and other animal products is, therefore, great and has increased in recent years.

While bananas, the other major export commodity, accounted for 28% of the country's foreign exchange earnings in 1970, banana export earnings provided only 4% of Somalia's hard currency in 1981. This decline in the relative importance of bananas as a source of foreign exchange is due to lower banana production, increased consumption and stagnant export prices while earnings from live animal exports increased over six times from 1970 through 1980. New plantings of banana trees and the establishment of an Italian-managed extension program in 1981 will result in greater foreign exchange earnings from banana exports in the years to come.

C. Stagnation in Official Foreign Exchange Earnings from Livestock Exports

Official estimates of foreign exchange earnings represent required remittances of earnings from exports valued at Jeddah C & F prices. The C & F prices are based on minimum export prices that are set by the government and used in calculating customs duties. The C & F prices are used to determine the value of the letter of credit, which is opened jointly by

Table 2 VALUE OF EXPORTS BY COMMODITY GROUP, 1970 - 1980 (So.Sh. Million)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980[1]
Bananas	62.8	63.9	78.2	67.6	79.8	64.3	178.7	54.6	54.1	54.0	68.8
Live Animals	119.3	123.4	160.5	196.7	222.4	382.0	281.2	279.5	588.7	555.2	639.5
Meat and meat products	6.7	21.4	22.6	22.6	35.8	44.1	43.0	13.3	0.3	25.9	10.4
Hides and skins	14.8	18.1	17.1	13.1	14.1	26.3	51.0	9.5	12.0	53.0	41.8
Fish and fish products	1.5	2.6	5.2	13.5	15.2	11.6	15.6	9.4	2.6	3.7	2.8
Other	19.2	17.1	14.8	26.9	23.3	29.2	26.0	30.2	13.3	12.1	71.7
Total	224.3	246.4	298.4	340.4	390.6	557.5	595.5	396.5	671.0	703.9	834.9
					(in percentage)						
Bananas	28.0	25.9	26.2	19.8	20.4	11.5	30.0	13.9	8.1	7.7	8.2
Live Animals	53.2	50.1	53.8	57.8	56.9	68.5	47.2	70.5	87.7	78.9	76.6
Meat and meat products	3.0	8.7	7.6	6.6	9.2	7.9	7.2	3.4	0.1	3.7	1.2
Hides and skins	6.6	7.3	5.7	3.9	3.6	4.7	8.6	2.4	1.8	7.5	5.0
All Livestock products	62.8	66.1	67.1	68.3	69.7	81.1	63.0	76.3	89.6	90.1	82.8
Fish and fish products	0.7	1.1	1.7	4.0	3.9	2.1	2.6	2.4	0.4	0.5	0.3
Other	8.6	7.0	5.0	7.9	6.0	5.3	4.4	7.4	1.9	1.7	8.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note:

(a) Export values as assessed by customs do not always reflect current market prices; rather they serve as benchmark values for purposes of levying export tax and statistical and service duty.

(b) Export values as assessed by customs differ from export receipts as reported by the Central Bank due to differences in coverage, timing and valuation.

Source: Ministry of Planning, Central Statistical Department. Foreign Trade Returns.

Table adapted from the Statistical Appendix of the "Memorandum on the Economy of Somalia", January 1981, World Bank.

1 The category "Other" is exceptionally large for 1980, because Somalia exported refined crude oil produced by an Iraqi installation. If the exports of the refined crude are not included in the calculation of total foreign exchange earnings, then the share of live animals and all animal products in export earnings rises.

Table 3 SOMALIA: EXPORTS BASED ON FOREIGN EXCHANGE RECORD, 1975-79

(So. Sh. Million)

	1975	1976	1977	1978	1979	1980	1981
Bananas	80.9	88.2	53.1	59.0	73.2	51.2	39.6
Live Animals	364.4	301.9	299.5	570.4	474.1	639.5	1001.9
Meat and meat products	59.3	37.1	32.1	0.7	7.3	6.5	2.6
Hides and skins	20.7	44.4	23.6	29.7	56.4	41.8	18.5
Fish and fish products	17.4	23.3	21.2	4.3	2.7	1.6	9.6
Grains	14.4	11.3	11.7	14.8	21.0	21.9	28.8
Other	6.3	4.1	7.8	10.2	32.7	15.4	2.9
Petroleum products	0.0	0.0	0.0	0.0	0.0	61.0	0.0
Total	563.4	510.3	449.0	689.1	667.4	839.3	1103.9

(in percent)

Bananas	14.4	17.3	11.8	8.6	11.0	6.1	3.6
Live animals	64.7	59.2	66.7	82.8	71.0	76.2	90.8
Meat and meat products	10.5	7.3	7.1	0.1	1.1	0.8	0.2
Hides and skins	3.7	8.7	5.3	4.3	8.5	5.0	1.6
Fish and fish products	3.1	4.6	4.7	0.6	0.4	0.2	0.9
Grains	2.6	2.2	2.7	2.1	3.1	2.6	2.6
Other	1.1	0.8	1.7	1.5	4.9	1.8	0.3
Petroleum products	0.0	0.0	0.0	0.0	0.0	7.3	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Central Bank of Somalia. Annual Reports.

Somali exporters and importers in the Arabian Peninsula. It is the L/C dollar value that exporters must repatriate and convert into Somali shillings at the pegged official exchange rate ($1.00=12.4654). Any foreign exchange earnings above the government calculated C & F prices need not be remitted by the exporter.

Until the end of September 1981, exporters were able to use this additional foreign exchange to import goods or to convert the dollars (or riyals) to shillings at the higher (franca valuta) rate on the parallel foreign exchange market. An increasing proportion of consumer goods, vehicles and spare parts, and light industrial goods were imported under the franca valuta system from the mid-1970s through the early 1980s. Since October 1981 such practices are no longer legal. Exporters are now holding foreign exchange earnings above required remittances outside of Somalia in foreign bank accounts or converting dollars to shillings at a rate well above the pegged official exchange rate.

As a result of foreign exchange controls, minimum export prices, and exporters' methods of maximizing the returns to livestock earnings, there is no reliable information on actual foreign exchange earnings from livestock exports in any given year. Consequently, the official estimates of export earnings are nothing more than estimates of required remittances of foreign exchange at the official exchange rate through the central banking system. Although export earnings above required remittances certainly vary from year to year, and are therefore not comparable in a strict sense, the official figures provide a crude means of evaluating general trends in export earnings over time.

Table 4A uses the Mogadishu consumer price index to deflate official foreign exchange earnings from livestock exports over the period 1966-1981.

TABLE 4A NOMINAL AND REAL VALUE OF LIVESTOCK EXPORTS, 1966 - 1980 (Million So. Sh.)

YEAR	Total Nomin. Value	Mogadishu Consumers Price Index (1966=100)	Deflat. Total Value	SHEEP		GOATS		TOTAL SMALL RUMINANTS		CATTLE		CAMELS	
				Nomin. Value	Deflat. Value	Nomin. Value	Deflat. Value	Nomin. Value	Deflat. Value	Nomin. Value	Deflat. Value	Nomin. Value	Deflat. Value
1966	95.7	100.0	95.7	43.8	43.8	25.4	25.4	69.2	69.2	11.4	11.4	15.1	15.1
1967	98.4	99.5	98.9	43.9	44.1	20.2	20.3	64.8	65.1	12.9	13.0	21.4	21.5
1968	124.4	103.1	120.7	62.7	60.8	35.9	34.8	98.6	95.6	14.3	13.9	11.5	12.2
1969	132.0	109.7	120.3	56.3	51.3	48.2	43.9	104.5	95.3	11.8	10.8	15.7	14.3
1970	119.4	110.6	108.0	43.0	38.9	41.9	37.9	84.8	76.7	15.5	14.0	19.0	17.2
1971	123.3	109.9	112.2	46.8	42.6	41.4	37.7	88.2	80.3	18.5	16.8	16.6	15.1
1972	160.5	106.6	150.6	63.0	59.1	60.5	56.8	123.5	115.9	22.3	20.9	14.7	13.8
1973	195.7	113.6	173.2	72.7	64.0	65.6	57.7	138.3	121.7	35.1	30.9	23.3	20.5
1974	222.7	134.3	165.8	92.7	69.0	78.1	58.2	170.7	127.1	21.6	16.1	30.3	22.6
1975	382.0	160.3	238.3	154.3	96.3	146.8	91.6	301.1	187.8	33.5	20.9	47.4	29.6
1976	281.2	182.8	153.8	80.9	44.3	79.0	43.2	159.9	87.5	71.9	39.3	49.4	27.0
1977	279.5	202.2	138.2	95.5	47.2	94.1	46.5	189.6	93.8	41.7	20.6	48.2	23.8
1978	588.7	223.5	264.7	192.3	86.5	255.0	114.7	447.2	201.1	100.9	45.4	40.5	18.2
1979	555.2	275.4	201.6	188.6	68.5	190.8	69.3	379.4	137.8	135.9	49.3	40.0	14.5
1980	639.5	439.5	145.7	217.4	49.5	218.7	49.8	436.1	99.4	156.7	35.7	46.7	10.6
1981[1]	1001.9 (614.9)	634.4	174.0 (96.9)	n.a.		n.a.		n.a.		n.a.		n.a.	

Source: Ministry of Planning, Central Statistical Department, Foreign Trade Returns (1966-1980) and Central Bank of Somalia, Annual Reports (1981).

1 Central Bank estimates of foreign exchange earnings from live animal exports are used for 1981, since Ministry of Planning estimates are unavailable. The Bank estimate cannot be disaggregated by species. Due to devaluation of the Somali Shilling, effective July 1, 1981, foreign exchange earnings for the second half of 1981, expressed in Somali Shillings, are double those that would be represented by calculating foreign exchange earnings at the earlier rate. The figures in parantheses adjust for the change in the exchange rate, since the unadjusted figures overstate foreign exchange earnings in 1981 relative to earlier years, when the official exchange rate was higher.

TABLE 4B

ADJUSTED REAL FOREIGN EXCHANGE EARNINGS FROM LIVESTOCK EXPORTS, 1974-1981

Year	Inflation Index	Deflated Total Value	Sheep	Goats	Total Small Ruminants	Cattle	Camels
1974	124.92	178.3	74.2	62.5	136.6	17.3	24.3
1975	137.41	278.0	112.3	106.8	219.1	24.4	34.5
1976	151.15	185.6	53.5	52.3	105.8	47.6	32.7
1977	166.26	168.1	57.4	56.6	114.0	25.1	29.0
1978	191.20	307.9	100.6	133.4	233.9	52.8	21.2
1979	219.88	252.6	85.8	86.8	172.5	61.8	18.2
1980	252.87	252.9	86.0	86.5	172.5	62.0	18.5
1981	290.80	211.5					

Note: The inflation index uses the Mogadishu CPI from 1966 through 1973 as a base. Thereafter inflation is assumed to equal 10% per annum from 1973 to 1977 and 15% per annum from 1977 through 1981. This adjustment is made, because the Mogadishu CPI overstates inflation in the prices of capital and light industrial goods imported from foreign countries. The rise in consumer prices, especially since 1978, has outstripped increases in the prices of industrial goods.

Figure 3 Official Foreign Exchange Earnings from Livestock Exports, 1966-1981

Note: The official foreign exchange earnings are deflated by the Mogadishu consumer price index from 1966 through 1973 (see Table 4A) and by the price index that corresponds more closely to international inflation rates from 1974 to 1981.

While the Mogadishu CPI indicates that the average annual inflation rate was only 1.8% from 1966 through 1973 and 14.4% from 1973 through 1978, it rose to 23.9% from 1978 to 1979, to 59.3% from 1979 to 1980, and to 44.3% from 1980 to 1981. The rate of inflation in Mogadishu paralled international price trends until 1978, but the Mogadishu CPI shows price increases far above international inflation rates since 1978. In order to adjust for this difference, we assume that the inflation rate for imported capital and light industrial goods was 10% per annum from 1973 to 1977 and 15% from 1977 through 1981. This adjustment is made in Table 4B, and it is reflected in the deflated foreign exchange earnings plotted in Figure 3.

While recorded small ruminant exports were highest in 1972, the real value of official foreign exchange earnings was highest in 1975 and 1978. The real value of foreign exchange earnings trended upward from 1966 through 1975 but has stagnated since 1975. Therefore, Somalia's capacity to import foreign produced industrial goods has not improved since 1975. Using the Mogadishu consumer price index as the deflator shows that Somalia's capacity to import consumer goods, including foodstuffs, fuel, tobacco and cloth, has actually declined since 1975.

From Figure 3 it is clear that most of the foreign exchange earnings from livestock exports are generated by exports of small ruminants. During the period 1960-1980 no less than 65% of the official foreign exchange earnings from live animal exports came from exports of sheep and goats, with the exception of 1976, the year following the worst drought in recent history. In fifteen of those twenty-one years small ruminant exports accounted for at least 70% of official foreign exchange earnings. During the last four years approximately 70% of official foreign exchange earnings from livestock exports were generated by exports of sheep and goats. Ever

since the 1973-75 drought cattle exports have accounted for 15-25% of official foreign exchange earnings from live animal exports, as these earnings have increased steadily in real terms. In contrast, official foreign exchange earnings from camel exports have declined in real terms since 1975. Camels have generated only 7% of official foreign exchange earnings since 1978.

D. Increasing Dependence on the Saudi Arabian Market

Somalia's dependence on live animal exports as a source of foreign exchange is cause for concern. Moreover, it is disturbing that Somalia has become so highly dependent on one market, Saudi Arabia. Tables 5 and 6 show the proportion of live animal exports shipped to Saudi Arabia and the proportion of official foreign exchange earnings generated by live animal exports to Saudi Arabia. Since 1974 at least 90% of the hard currency earned from exports of live animals resulted from sales in Saudi Arabia. Virtually all shipments to Saudi Arabia are landed at Jeddah, the largest livestock receiving port in the world.

While an increasing proportion of Somali livestock exports are shipped to Saudi Arabia, the number of animals exported to the Yemen Arab Republic (North Yemen) and the United Arab Emirates has increased steadily from virtually nothing before 1975.[1] By 1978, however, Somalia

[1] See Tables 4 and 5 in Annex 7.

TABLE 5 LIVE ANIMAL EXPORTS TO ALL COUNTRIES AND TO SAUDI ARABIA, 1966-1980 ('000 head)

Year	SHEEP			GOATS			CATTLE			CAMELS		
	Total	Saudi Arabia	%	Total	Saudi Arabia	%	Total	Saudi Arabia	%	Total	Saudi Arabia	%
1966	606	449	74	486	273	56	36	22	61	15	15	100
1967	565	449	79	366	147	40	32	29	91	21	21	100
1968	768	680	89	508	322	63	40	40	99	12	12	100
1969	712	632	89	695	547	79	34	34	99	16	16	100
1970	546	462	85	605	441	73	45	42	93	26	25	96
1971	608	513	84	576	451	78	56	44	79	24	23	96
1972	789	691	88	828	664	80	77	66	86	21	21	100
1973	684	604	85	639	547	81	70	49	72	28	29	100
1974	655	520	82	556	496	80	27	22	88	24	24	100
1975	756	623	79	754	615	83	39	39	98	33	34	100
1976	374	329	85	374	330	87	76	55	95	37	34	100
1977	461	421	91	442	401	91	54	53	98	35	35	100
1978	728	676	93	723	669	93	73.4	73	99	21	21	100
1979	579	510	88	616	527	86	79	73	92	17	17	100
1980	829	750	90	951	815	86	85	80	94	20.5	21	99

Sources: Ministry of Planning, Central Statistical Department, Foreign Trade Returns, Livestock Development Agency

TABLE 6

FOREIGN EXCHANGE EARNINGS FROM LIVESTOCK EXPORTS TO SAUDI ARABIA, 1966-1980

('000 So. Sh.)

Year	SHEEP			GOATS			CATTLE			CAMEL			TOTAL		
	Total	Saudi Arabia	%	Total	Saudi Arabia	%	Total	Saudi Arabia	%	Total	Saudi Arabia	%	Total	Saudi Arabia	%
1966	43.4	31.7	73	25.3	14.6	58	11.4	7.0	61	15.1	15.1	100	95.2	68.4	72
1967	43.8	34.7	79	20.2	8.2	41	10.8	9.8	91	21.4	21.4	100	96.2	74.1	77
1968	62.7	55.5	89	35.9	22.6	63	14.0	13.8	99	11.5	11.5	100	124.1	103.4	83
1969	56.2	51.7	92	48.2	39.6	82	11.7	11.7	99	15.7	15.7	100	131.8	118.7	90
1970	43.0	37.8	88	41.9	33.1	79	15.5	14.3	92	19.0	19.0	100	119.3	104.2	87
1971	46.8	40.8	87	41.4	34.9	84	18.5	13.2	71	16.6	16.4	99	123.4	105.3	85
1972	63.0	56.6	90	60.5	51.1	84	22.3	17.6	79	14.7	14.7	100	160.5	140.0	87
1973	72.7	60.3	83	65.6	55.0	84	35.1	32.5	93	23.3	23.0	99	196.7	170.7	87
1974	92.5	82.3	89	78.1	72.9	93	21.6	21.2	98	30.2	30.2	100	222.4	106.6	93
1975	154.3	137.2	89	146.8	133.5	91	33.5	28.5	85	47.4	44.2	93	382.0	343.4	90
1976	80.9	70.7	87	79.0	70.3	89	71.9	65.3	91	49.4	49.3	100	281.2	256.1	91
1977	95.5	86.8	91	94.1	85.1	90	41.7	39.9	96	48.2	48.2	100	279.5	260.1	93
1978	192.3	181.9	95	255.0	243.0	95	100.9	100.1	99	40.5	40.5	100	588.7	565.6	96
1979	188.6	168.1	89	190.8	163.2	86	135.9	124.3	92	40.0	40.0	100	555.2	495.6	89
1980	217.4	193.7	89	218.7	187.5	86	156.7	149.8	96	46.7	46.0	99	639.5	576.9	90

Source: Ministry of Planning, Central Statistical Department, Foreign Trade Returns.

exported little or no livestock to the People's Democratic Republic of Yemen (Aden), which imported an average of 209,000 Somali sheep and goats per year from 1971 to 1973. This market was closed for political reasons, after Somalia expelled the Russians during the war with Ethiopia. Moreover, Somalia was no longer exporting livestock to Kuwait, Bahrain and Egypt, which imported 8000 head of Somali cattle in 1971, by 1977. The Qatar market had also all but ceased to exist by 1976.

Somalia's dependence on the Saudi Arabian market has increased at a time when Saudi imports have expanded greatly. Saudi Arabia has been an important market for Somali livestock since the 1950s, when petroleum exports boomed in the Arabian Peninsula. Since the oil crisis of 1973-74, the oil revenues of Saudi Arabia and the other Gulf States have increased severalfold, which has led to higher incomes, a large influx of foreign laborers and technicians, and greatly increased demand for livestock products. The East African countries of Somalia, Sudan, Ethiopia and Kenya, which have traditionally supplied the Gulf States, were unable to satisfy completely the rapid expansion in the demand for livestock. Australia entered the Near East Market for live animals, exporting increasing quantities of Merino sheep for the Gulf States during the 1970s. While Iran was the principal market for Australian sheep until 1979, Saudi Arabia has become increasingly important since political termoil in Iran in 1978-79 greatly decreased exports to that market.

II. Evolution of the Somali Pastoral Economy

A. A Subsistence Oriented Pastoral Economy

One view of Somali pastoralists is that they are typical nomadic stock raisers who hold as many animals on the range as possible, selling non-breeding stock when they need cash or diseased or weak animals that might otherwise be lost. The British Veterinary Team, which was stationed in Northern Somalia from 1969 to 1972, reported that the nomads

> "do not run their flocks as commercial units, i.e., there is no planned off-take of fat stock, so they sell animals only when they need cash. They keep as many animals as possible because they represent wealth and social status. Each man is also thinking of the risk of a bad year, when large number of stock may die of starvation, drought or disease. He deliberately keeps older animals in the knowledge that they have already shown their ability to survive and have developed a resistance to most of the infectious diseases. As a result he often refuses to sell excess stock, even though they are suitable for marketing."[1]

The British Veterinarian who wrote this passage is quoted at length, because he travelled throughout Northern Somalia for three years and observed pastoralists' herd management strategies first hand. In addition, he monitored three sheep and goat flocks over the course of one year (March 1971-February 1972), taking an initial inventory by age-sex category and recording all flows in the form of births, mortality, purchases, sales and slaughter. These data are analyzed in Annex 1. They show that offtake

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[1]The British Veterinary Team in Somalia, 1969-1972, Final Team Report, Section 2, "Some Notes on Somali Animal Husbandry and the Problems of Nomadism," Overseas Development Administration, London 1973.

rates were very low (5.3% for the combined sheep flock and 11.7% for the combined goat flock), which supports the veterinary team's conclusion that the pastoralists were not producing for the market. It is important to note, however, that the data were collected over ten years ago and that the prices of livestock, clothing, certain agricultural commodities and other consumer goods have increased rapidly since the mid-1970s. In order to draw firm conclusions about the present economic responsiveness of pastoral producers, stock and flow data obtained over the course of at least one year are required. There are a number of indications, however, that the Somali pastoral economy has become increasingly commercialized.

Although livestock exports have increased severalfold over the last thirty years, the rangeland has deteriorated progressively. Various missions and writers have noted the overstocking and overgrazing of the Somali rangeland since the 1960s. Using internationally accepted measures and calculations, it has been estimated that the rangelands of Somalia are overstocked by 200-300%.[1]

Some might be compelled to argue that overstocking shows how well entrenched traditional pastoral practices remain, despite the greater commercial opportunities for pastoralists during the past thirty years. Herders are depicted as highly risk averse managers, holding as many animals on the range as possible regardless of the collective impact of their individual decisions. By following this strategy, pastoralists attempt to minimize the losses occuring during drought or disease outbreak. The individual wisdom yet collectively negative impact of this strategy are usually acknowledged, but little thought is given to the relationship

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[1]This estimate of the degree of overstocking seems implausibly high and may be inflated. Perhaps the nutritional value of browse was underestimated in calculating the rangeland's carrying capacity.

of such individually risk-averse strategies to the increasing commmercialization of the pastoral economy and its consequences.

B. The Pastoral Terms of Trade, 1966-81

Jeremy Swift has argued that declining "pastoral terms of trade" have forced Somali pastoralists to sell increasing numbers of livestock.[1] He claims that higher rates of offtake and changes in the species composition of pastoral herds reflect the increasing market orientation of pastoral production. Using incomplete and sketchy data, Swift argues that pastoral products, such as livestock, ghee, gum arabic and myrrh, could be traded in the 1970s for lesser quantities of non-pastoral products, principally sorghum and cloth, than during the nineteenth century and early twentieth century. This argument appears to have its parallel at the macroeconomic level in recent years, as inflation in the prices of fuel, light industrial goods and consumer goods such as food and clothing has accelerated, leading to stagnation in official foreign exchange earnings from livestock exports (see Table 4). Swift goes on to argue that the increase in livestock sales has greatly enriched an urban elite of livestock merchants and exporters, who have become increasingly isolated from traditional Somali pastoral society.

While the traditional society was politically and economically egalitarian, demanding cooperation in the use of collectively shared range and water resources, and it assisted those whose herds were hard hit by drought or disease, the present Somali society is anything but egalitarian. Evidence of the breakdown in traditional egalitarianism and the collective management

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[1] Jeremy Swift, "Pastoral Production and Trade Production," in Pastoral Production and Society, edited by the Equipe Ecologie et Anthropologie des Societes Pastorales, Cambridge University Press, Editions de la Maison des Sciences de l'Homme, 1980, pp. 447-465.

of the range is the construction of cement-lined water tanks (barkads) by traders, the hiring of herders, forage production on superior rangeland, and enclosure of rangeland that was formerly shared communally. Control of watering points and the sale of water to pastoralists have enabled merchants to exercise de facto control over large areas of rangeland, which traditionally were communally owned. By creating incentives for private appropriation of rangeland and water resources, polarizing the interests of the wealth urban-based merchant class and pastoralists, and unravelling traditional socio-political institutions for rational management and exploitation of range and water resources, the lucrative export trade has increased the pastoralists' vulnerability to drought and disease. What was once, for the most part, rational collective use of the rangeland has degenerated into a desperate and uncoordinated misuse of a deteriorating resource.

Swift's thesis has a conspiratorial flavor, reflecting the concern of a noted social anthropologist for the pastoral producer. It is clear that the export trade was highly lucrative prior to the 1981 currency devaluation and imposition of a 25% export tax levied on official livestock prices. Livestock exporters claim that the importation of goods generated most of their profits under the franca valuta system. Since the devaluation and increase in export taxes, exporters' returns may have declined.

Regardless of whether returns have declined, livestock producers obtain high prices for their animals, particularly during the three months preceding the hadj. Pastoralists are not naive and ill-informed sellers. Price information spreads quickly among producers, who are well aware of the seasonal nature of demand for export stock and that the exporters need to procure large numbers of trade stock during peak periods, they are able to

sell livestock at attractive prices, which have increased at least as fast as the prices of many of the goods they buy.

Table 7 shows that the prices of most categories of meat retailed at Mogadishu rose as rapidly or more rapidly than the consumer price index (Table 8) from 1966 through 1978.[1] Since 1978 the trends in meat prices are not clear. Beef and camel meat of the first quality rose as rapidly as the CPI since 1978, and mutton and goat meat nearly kept pace with the CPI. The retail prices of beef and camel meat of the second quality declined from 1978 through 1981, which is surprising and probably an anomaly in the data.

From the admittedly inadequate available data we cannot conclude that the "pastoral terms of trade" are declining. Although the prices of the goods that pastoralists buy have increased dramatically, the booming demand for live animal exports in the Gulf States, particularly Saudi Arabia, has enabled pastoralists to command premium prices for their animals. Pastoralists' income is in part derived from sales of dairy products, however. It is possible that the prices of dairy products in the towns and villages have not kept pace with the prices of the goods the nomads must buy, which would affect their purchasing power. Yet most of pastoralists' income probably comes from selling live animals. As a result, there has probably not been a deterioration in the pastoral terms of trade, at least not in the last fifteen to twenty years.

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[1]Meat sold at the retail level is used as a proxy for live animal prices. There are data on live animal prices collected at Wardigley market (Mogadishu), but they are not broken down in sufficient detail by age-sex category to be of much use.

TABLE 7 MOGADISHU RETAIL PRICE OF MEAT (ANNUAL AVERAGES 1966 - 1981)

So. Sh./Kilogram

Years	BEEF MEAT				CAMEL MEAT							
	1st Quality	Index	2nd Quality	Index	1st Quality	Index	2nd Quality	Index	Mutton	Index	Goats	Index
1966	3.40	100	n.a.		2.22	100	n.a.		3.62	100	3.62	100
1967	3.25	96	n.a.		2.29	103	n.a.		3.80	105	3.41	94
1968	3.89	114	2.44	100	2.43	109	2.06	100	3.99	110	3.85	106
1969	4.18	123	2.64	108	2.62	118	2.20	107	3.89	107	4.06	112
1970	4.03	119	2.84	116	2.69	121	2.16	105	3.99	110	4.04	110
1971	3.95	116	2.74	112	2.56	115	2.08	101	3.90	108	3.68	102
1972	3.85	113	2.56	105	2.35	106	2.04	99	3.71	102	3.67	101
1973	4.68	138	4.00	164	3.54	159	2.40	117	4.95	137	4.78	132
1974	7.01	206	4.62	189	4.20	189	3.24	157	5.73	158	5.43	150
1975	8.66	255	5.71	234	5.27	237	3.66	178	6.71	185	6.39	177
1976	11.92	351	9.49	389	8.16	368	6.80	330	10.92	302	9.83	272
1977	13.57	399	9.54	391	10.45	471	8.31	403	13.14	363	12.47	344
1978	14.67	431	11.55	473	13.07	589	11.22	545	14.43	399	14.27	394
1979	13.68	402	9.63	395	12.55	565	8.57	416	14.44	399	14.20	392
1980	16.92	498	8.72	357	13.84	623	7.75	376	15.46	427	15.46	427
1981	25.13	739	8.83	362	20.66	931	7.69	373	21.24	587	21.21	586

Source: Ministry of National Planning, Central Statistical Department

TABLE 8 — MONTHLY RETAIL CONSUMER PRICE INDEX, 1966 – 1981 (1)

	Weight	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	Weight	1977	1978	1979	1980	1981
1. FOOD	61	100.00	97.63	100.63	103.90	111.40	110.66	107.92	119.48	141.56	172.14	197.89	230.51	60.1	100.00	112.34	137.60	214.39	341.05
2. DRINK & TOBACCO	–	–	–	–	–	–	–	–	–	–	–	–	–	2.2	100.00	106.89	123.41	155.69	234.25
3. CLOTHING	4	100.00	106.00	120.36	129.20	130.10	134.96	136.51	143.70	164.53	189.05	242.83	254.06	5.6	100.00	105.57	131.50	170.28	253.21
4. RENT, FUEL & WATER	15	100.00	77.64	101.04	105.00	96.12	85.65	72.00	73.33	71.82	79.63	81.96	83.72	15.3	100.00	100.13	109.66	151.25	227.37
5. FURNITURE & UTENSILS	4	100.00	93.76	100.15	112.74	93.23	100.99	99.27	72.57	76.93	82.57	77.77	90.77	4.7	100.00	123.66	163.91	230.93	410.50
6. MISCELLANEOUS EXPENSES	16	100.00	104.03	103.85	107.00	115.29	119.99	121.10	124.03	144.56	173.41	195.61	202.23	12.1	100.00	104.51	153.50	195.23	272.52
7. ALL ITEMS	100	100.00	99.50	103.07	109.73	110.55	109.90	106.63	113.56	134.27	160.33	182.84	202.17	100.0	100.00	110.03	136.22	217.04	383.13

Source: Ministry of Planning, Central Statistical Department

(1) The base year was 1965 until 1977, at which point 1977 became the base year for calculating the price indices to date.

C. A Commercially Oriented Pastoral Economy

Traditional pastoral societies in both East and West Africa are typically not commercially oriented but rather subsistence producers of dairy products who rarely sell livestock. Dairy products, hides and skins and occasionally surplus males and infertile females, poor milk producers, and diseased or weakened stock are sold or exchanged for grain. Somali pastoralists are the exception to this rule, having responded to the greatly increased demand for live animals in the Arabian Peninsula since the 1950s with greater livestock sales, while meeting their subsistence needs at the same time. Although the live animal trade between Somalia and the Arabian Peninsula has been going on for centuries, exports of ghee and of hides and skins were of greater importance than live animal exports until the 1950s. During the demand-driven export boom of the past thirty years, live animal exports expanded rapidly.

Pastoralists' material needs have traditionally been quite limited. By selling livestock pastoral producers could use cash to buy grain, clothing, salt, tea and sugar. Yet there is growing evidence that producers' needs and investments in areas other than livestock have increased in recent years. Many nomads now own radios and send at least one child to school. Although primary education is provided free of charge by the Somali Government, pastoralists must pay for the lodging, feeding and clothing of their children, who typically stay with relatives in the towns. It has also become increasingly common for pastoral producers to invest in water reservoirs, shops, urban real estate and vehicles, as holding additional livestock on the range is increasingly perceived as risky. Owning large herds and flocks ensures that enough livestock will survive droughts and disease outbreak to regenerate additional wealth. Urban

investments do not depreciate in times of drought, however, and they generally yield attractive returns.[1]

In light of pastoral producers' greater needs and the availability of alternative investments, principally in urban areas, it is unlikely that nomads will hold additional livestock on the range simply to have larger herds. Although live animals are a relatively inflation-proof investment, they lose their value quickly (and in some cases completely and irrevocably) when droughts and disease outbreaks occur. Livestock do command premium prices, but pastoralists' needs have increased. Consequently, there are presently strong incentives to sell animals available for offtake. At some urban abattoirs it is not uncommon to witness the slaughter of breeding stock, many of which are noticeably pregnant.[2] Although this practice is illegal, it suggests that livestock owners are increasingly pressured to sell or that they have attractive alternative investments.

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[1] Pastoralists also commonly invest in cement-lined water reservoirs in order to supply water to their own stock and to sell water to other herders. This investment permits pastoralists to hold as many animals as possible on the range, as the dry season water supply is an important constraint to livestock production.

[2] In randomly selecting cows for pregnancy checks at the slaughter house in Mogadishu, it was recently found that 50-80% of the cows were between two and eight months pregnant.

III. Principal Characteristics of The Livestock Trade

A. Consumer Preferences in Saudi Arabia.[1]

After the indigenous Saudi livestock and sheep from Syria, Egypt and Turkey, Saudi consumers have a strong preference for East African animals. Somali sheep and goats, particularly those shipped from Berbera (Berberawi stock), are prized for their meat, which is leaner and of more desirable texture than the meat of Australian sheep. The strong preference for Berberawi small ruminants is reflected in the premium prices Somalia sheep and goats consumed on the Saudi market.

The Saudis have traditionally preferred fresh mutton, lamb and goat meat from Middle Eastern and East African animals to fresh, chilled and frozen mutton and lamb from Australia, New Zealand and South America. Lower income households from Africa and Asia are probably consuming most of the Australian lamb and mutton sold in Saudi Arabia. The strong demand for the relatively scarce small ruminants of East Africa, resulting in higher prices, compels many lower income consumers to substitute the less preferred Australian stock. Institutions such as the military forces, construction companies, schools and hospitals are also important buyers of lower cost Australian sheep and chilled and frozen mutton from Oceania and South America.

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[1] This section draws on the following reports:

The Arab Organization for Agricultural Development, and FAO, The Market for Livestock and Meat in the Arabian Peninsula and The Role of Supplies from Neighboring Africa, Surplus Regions, November 1979.

World Bank Livestock Marketing Project Identification Mission for Somalia, Annex 3, "Market Prospects for Somalia Livestock." Appendix 1, "Report of a Visit to Jeddah," November 1978.

The expansion in beef consumption is due in part to the consumption patterns of the large and increasing expatriate population. Increased beef consumption may also reflect a shift in Saudi tastes or simply the fact that the supply of lean mutton and goat meat has failed to keep pace with demand, resulting in substitution of more readily available fresh beef from Somalia and frozen beef from India and Australia. The marked increase in poultry consumption that took place during the 1970s resulted from lower poultry prices relative to other meats, aggressive and efficient marketing by the major suppliers, and high standards of packing and hygiene.

B. Seasonal Variation in Livestock Exports

Livestock exports from Somalia follow a distinctly seasonal pattern in response to the highly seasonal nature of demand in Saudi Arabia, particularly for small ruminants. Demand for sheep and goats is strong before and during the month of Ramadan, which is occasioned by ceremonial slaughter of small ruminants and feasting. Shipments of sheep and goats are especially intensive during the two months preceding the hadj. Thousands of pilgrims make the voyage to Mecca, where they each sacrifice a small ruminant for ritual purposes, or buy a bull as a group for slaughter.[1] The concentration of exports preceding Ramadan and the hadj, which move forward ten days every year in accordance with an unadjusted lunar calendar, is illustrated for the years 1976-81 in Table 9. The hadj took place at the end of September and beginning of October in 1981.

Many of the sheep and goats sacrificed at the time of the hadj in Saudi Arabia are actually never consumed, given the surfeit of lamb,

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[1] Some pilgrims sacrifice more than one sheep or goat to fulfill the wishes of relatives unable to make the hadj.

TABLE 9

SOMALIA: LIVE ANIMAL EXPORTS BY MONTH 1976-1981
(Heads of Livestock)

Month	1981				1980				1979			
	Sheep	Goats	Cattle	Camels	Sheep	Goats	Cattle	Camels	Sheep	Goats	Cattle	Camels
January	35,462	34,502	6,854	1,691	35,996	34,799	4,324	1,383	37,680	34,191	7,040	1,325
February	49,653	49,750	596	702	69,810	69,310	6,346	2,324	53,016	53,923	2,991	1,599
March	40,290	40,885	2,303	200	56,322	55,371	4,108	1,834	60,444	59,611	4,598	2,168
April	38,439	38,334	1,054	586	37,251	37,327	4,318	1,667	38,592	37,682	1,672	551
May	42,953	41,864	3,870	1,198	11,711	11,568	596	318	36,625	37,655	543	289
June	47,104	46,532	6,835	1,250	30,465	29,847	3,641	582	39,076	34,223	3,169	817
July	68,484	69,296	13,464	2,625	67,301	65,517	14,522	1,465	74,606	74,610	9,189	2,331
August	28,937	29,855	9,468	1,204	57,449	55,675	9,687	1,630	31,564	31,964	6,557	1,336
September	141,613	191,572	34,604	1,672	126,851	124,677	20,757	3,071	93,291	93,289	11,505	1,247
October	62,535	62,391	11,149	514	86,800	85,815	10,250	530	164,836	163,651	11,783	228
November	36,675	35,129	16,294	2,523	91,090	90,736	5,998	395	36,097	33,972	2,012	-
December	42,901	39,885	9,412	150	49,727	49,323	9,604	2,046	51,080	50,497	6,827	676
Total	685,046	679,995	116,003	14,315	720,773	710,015	94,151	17,245	716,907	705,268	67,886	12,508

Source: Livestock Development Agency.

[1]The 1980 export figures are for Berbera, Kismayo and Mogadishu and not for the smaller ports. All other export figures are for the three major ports and the smaller ports.

TABLE 9--Continued

Month	1978				1977				1976			
	Sheep	Goats	Cattle	Camels	Sheep	Goats	Cattle	Camels	Sheep	Goats	Cattle	Camels
January	61,015	61,038	4,141	2,933	28,437	28,651	5,325	3,499	71,331	71,070	1,599	2,682
February	50,526	48,386	5,062	3,147	31,171	91,787	2,797	2,068	47,313	47,832	2,897	4,106
March	48,534	44,269	3,115	2,549	40,560	42,322	4,261	4,743	39,643	39,369	1,173	4,539
April	52,757	49,070	3,029	1,234	15,195	13,852	1,048	3,650	15,153	10,338	2,431	719
May	42,190	48,599	5,636	616	21,151	20,756	1,917	1,285	10,872	10,686	4,845	1,565
June	49,357	50,657	4,385	824	26,409	26,431	5,128	2,964	10,417	11,887	3,669	2,141
July	60,787	60,667	8,838	2,862	25,119	25,914	7,513	2,010	22,873	22,853	4,688	3,581
August	56,294	49,884	7,230	3,120	54,809	50,419	4,958	2,515	34,670	34,670	6,125	2,434
September	40,441	39,203	6,322	1,118	37,969	36,250	5,534	2,315	38,169	38,524	6,283	4,058
October	125,059	117,663	15,322	1,569	66,347	69,832	6,706	4,762	27,750	28,048	13,746	4,031
November	103,366	100,098	10,429	337	91,269	89,676	7,967	816	35,170	35,758	55,955	1,336
December	48,517	45,237	3,445	1,271	26,569	29,405	3,565	2,651	31,331	31,071	4,923	1,950
Total	738,848	714,771	76,982	21,580	465,005	461,258	54,956	33,296	384,911	381,106	58,385	33,502

mutton and goat meat. Instead, many small ruminant carcasses are bulldozed under or incinerated at Mecca. While at least 800,000 and perhaps over 1.2 million sheep and goats are sacrificed at the time of the hadj in Saudi Arabia, probably no more than one-third of the meat from these animals is actually consumed. The other two-thirds is wasted.

The seasonality of exports has important implications for the organization of the live animal trade. No less than 38.5% and as much as 46.4% of the sheep exported from Somalia from 1976 to 1981 were shipped to the Gulf States during the three peak months of the year. This seasonal concentration of shipping puts great pressure on the marketing infrastructure and on the Somali-Hellenic Shipping Agency, which was granted a monopoly in 1979, to move maximum numbers of livestock as quickly as possible.

Just before and during the peak export period, livestock prices attain their annual peak. Producers are well apprised of current prices and the seasonality of demand. Herders and livestock collectors know when the exporters will be in the markets to acquire large numbers of animals. In recent years demand for livestock has been greatest following the Gu rains and during Hagai, when livestock aremost dispersed. Nevertheless, it is reported that some producers leave their wet season grazing areas to sell animals at the principal assembly markets for export.

Sales of cattle and camels exhibit less seasonality than exports of small ruminants. In recent years greater exports of cattle have taken place before the hadj, while exports are lowest during Gu, when cattle and camel herds are dispersed.

The pre-hadj peak period has coincided with the months following the Gu rains during most of the last eleven years. By 1988 Ramadan will begin in late April, when the condition of livestock is improving but not

at its best (during the year). By 1995 Ramadan will take place during Jilaal, when livestock are in their poorest condition during the year, and the hadj will occur during Gu.

Since livestock assembly will be carried out increasingly during months when animals are at less than optimal weight and strength in the next 10-20 years, it will become far more important to provide better veterinary care and improved holding, watering, quarantine and port facilities for trade stock. If the livestock marketing infrastructure remains at its present inadequate level, then the weight of exported animals will decline and mortality will increase under the more stressful conditions of assembly, transport, loading and shipment that will prevail in the coming years.

C. Organization of the Livestock Trade

The organization of the livestock trade in Somalia has been described in considerable detail in earlier reports and has changed little in the past twenty years.[1] This section will briefly outline the organization of the trade.

The principal actors in the livestock trade are the:

1. Exporters (ganascato), based in the large coastal towns (Berbera, Mogadishu and Kismayo) or in the large commercial centers of the interior (Burao, Hargeisa);
2. Their buying agents, who may be based in the above centers or in smaller towns in the interior;

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[1] Hunting Technical Services Limited et al., Livestock Sector Review and Project Identification, Volume 3, Annex F, Marketing and Processing," 1976.

Mahoney, Frank, "Livestock Marketing in the Somali Republic," 1963.

3. Livestock collectors (gedisley), who live in the smaller towns in the interior and assemble herds for sale to the exporters;
4. Independent livestock traders, who assemble herds in rural areas and markets and move them to larger markets, such as Burao and Hargeisa;
5. Intermediates (dilaal), who act as brokers and receive modest commissions, usually from the sellers, and
6. Auctioneers (falisaad), found principally in the markets of the Inter-Riverine and Trans-Juba regions of Southern Somalia.

Few of the livestock exporters have the time to assemble more than a fraction of the livestock for export themselves. Letters of credit, which expire after 30-90 days, require rapid purchase of wholesale lots rather than prolonged negotiation over individual animals. Consequently, the exporters rely on buying agents and collectors who purchase livestock at markets in the towns of the interior and in remote villages and grazing areas.

Buying agents are typically relatives of exporters who attend regional livestock markets as well as travelling to rainy season grazing areas. These receive a commission for each animal purchased.[1] Buying agents for exporters based in Northern Somalia often buy livestock in the Haud, which straddles the border of Somalia and Ethiopia.

The livestock collectors are independent buyers who live in towns of the interior, such as Baidoa, Dusa Mareb and Galcaio and assemble wholesale

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[1]The Mogadishu exporters report paying commission of 10 So.Sh. per sheep and goats, 40 So.Sh. for cattle, and 70 So.Sh. for camels.

lots of trade animals suitable for export over periods of several weeks to several months. Livestock collectors typically buy animals for low prices during Jilaal, the long dry season, and hold them on the range for several months, sometimes providing fodder to maintain the condition of the animals. These animals are held during part of the Gu rainy season for reconditioning and then sold to the exporters at attractive prices during late Gu and Hagai, which presently coincide with the period preceding that of peak demand in Saudi Arabia. By benefitting from the seasonal improvement in the condition and prices of livestock, the livestock collectors are able to realize considerable profits. However, they invest large amounts of capital for extended periods and undertake substantial risks in buying livestock when range and water resources are scarcest. When the Gu rains are late, holding operations become quite costly, as fodder and water must be purchased.

Intermediaries and auctioneers facilitate the sale of livestock in towns and village markets, obtaining modest commissions, generally from sellers, for their services. Typical commissions are 20 So.Sh. for sales of small ruminants, 50 So.Sh. for cattle and 80-100 So.Sh. for camels. When exporters buy livestock directly from producers at markets, they invariably use intermediaries to carry out transactions.

D. Organization of Livestock Shipping

1. Changes in Shipping and Port Capacity Over Time

The location and capacity of the principal ports has had important implications for livestock flows in Somalia. Berbera and several smaller ports along the Gulf of Aden (Mait, Zeila, Las Qaray) were the points from which dhows carried livestock exports to the Arabian Peninsula during

the nineteenth and first half of the twentieth centuries. As larger, diesel-powered vessels began to replace dhows in the transport of livestock, shipping became increasingly concentrated through Berbera. By the 1970s long-distance trekking of livestock from Northern, Central and Southern Somalia to Berbera had become quite common. The small ports that figured importantly in the dhow trade had greatly declined in significance by the 1970s. The export of the vast majority of trade stock from Berbera resulted in a shipping bottleneck, particularly during peak periods, which was only partially alleviated by the construction of a modern port at Berbera in the late 1960s. The improvement of the port at Kismayo in the late 1960s tapped the exportable surplus of Southern Somalia, but the irregularity of shipping from Kismayo to the Arabian Peninsula led to under-utilization of the port until recently. After the construction of the deep-water port at Mogadishu in the late 1970s and the improvement of shipping from Mogadishu and Kismayo following the creation of the Somali-Hellenic Shipping Agency in 1979, increasing numbers of cattle and camels have been shipped from the south. This has led to a marked decline in long-distance trekking of large ruminants from Southern Somalia to the port of Berbera for export.

2. Creation of the Somali-Hellenic Shipping Agency

After the closure of the Suez Canal in 1967 Saudi Arabian Shipping Companies monopolized livestock shipping between East African supplying countries and Saudi Arabia. In 1974 the Somali government entered into a joint venture with the Libyans, creating the National Shipping Lines, which owned three livestock carriers. Shipping of livestock was, for the most part, inadequate and irregular during the 1970s, which contributed to the stagnation in exports during the 1970s.

Recognizing that shipping was a major constraint to expansion of exports and following Saudi imposition of livestock shipping regulations in 1979, the Somali government entered into a joint venture with a Greek shipping company to form the Somali-Hellenic Shipping Agency (SHSA) in 1979. The SHSA provides and charters livestock carriers for the Somali-Saudi Arabia live animal trade, having replaced the Somali Shipping Agency. Livestock exporters are required to ship their animals through SHSA and are not allowed to charter vessels privately. During the peak export season SHSA charters additional vessels for the exporters. At other times of the year the SHSA fleet of four livestock carriers and three Saudi liners, which run between Berbera and Jeddah, are usually sufficient to meet the exporters' needs.

The livestock carriers have a normal capacity of 13,000-17,000 sheep equivalents. One bull equals six sheep equivalents, while one camel equals twelve sheep equivalents. During the peak period shipments can be increased from an average of 15,000-16,000 sheep equivalents per vessel to roughly 20,000. Each of the livestock carriers has a ventilation and water distribution system. Exporters have to provide their own livestock feed. A minimum of one livestock attendant per 2,000 small ruminants is required for feeding and looking after the livestock on board ship.

SHSA claims that it is able to charter sufficient numbers of vessels to meet peak season demands, yet some exporters argue that shipping is still one of the principal constraints to expanding livestock exports. Some exporters claim that they were previously able to charter vessels more readily and at lower cost before SHSA was formed. In March 1982 SHSA reduced its rates on livestock exports from Mogadishu and Kismayo to Jeddah from $14.50 to $13 per sheep equivalent while, while freight from

Berbera to Jeddah remains $6.50 per head.

Despite complaints about the cost of shipping, livestock exporters acknowledge that mortality is now lower than before 1979. This is due primarily to the provision of adequate water and ventilation on the livestock carriers, which was the result of SHSA's compliance with Saudi regulations concerning the shipment of livestock, first imposed in 1979 but not enforced until recently.

The Saudi regulations state that all livestock be shipped on proper livestock carriers, fitted out with ventilation and watering equipment, pens with restrictions on the maximum numbers of animals they are to hold, and entrances through which livestock can walk on to and off of the vessel. The SHSA livestock carriers are generally converted cargo vessels, while Saudi carriers that transport livestock from Australia are often converted tankers. The "Red Sea" liners are capable of carrying 6000-18,000 sheep equivalents, while most of the ocean-going vessels used for the Australia-Gulf states trade carry 30,000-40,000 sheep.[1]

SHSA argues that improved shipping since 1979 is responsible for the increase in livestock exports from considerably less than two million sheep equivalents before 1979 to two million in 1979 and 2.25 million in 1981. According to SHSA, exports would have been greater in 1981 had livestock exporters not protested over the imposition of higher customs duties, which resulted in the loss of twenty days in shipping during the peak period. SHSA also reports that periodic shortages of diesel cause shipping delays, as exporters are hampered in trucking animals to the ports.

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[1]There are also two livestock carriers that transport at least 100,000 sheep per voyage from Australia to the Gulf. A third vessel with a capacity to carry 100,000 head will begin operating in 1983.

SHSA claims that it can ship (and arrange to have shipped) three million sheep equivalents per annum. The shipping agency nearly invested in two to three new carriers in early 1982 but decided that underutilization of the existing fleet during a large part of the year would make such an investment economically unviable. Consequently, the present system of chartering vessels for the additional demands during the hadj period is not expected to change in the near future.

3. Distribution of Livestock Exports by Port, 1975-81

Greater numbers of cattle and camels have been shipped from Mogadishu and Kismayo since 1975, as shown in Table 10. The construction of the deep-water port at Mogadishu and the improvement of shipping from Mogadishu and Kismayo to Saudi Arabia since 1979 are primarily responsible for the increasing importance of the two ports of Southern Somalia. Mogadishu and Kismayo were roughly equal in terms of export volume in 1981, although more camels were shipped from Kismayo and more small ruminants from Mogadishu.

Berbera, through which nearly 90% of small ruminant exports, 83% of cattle exports and 76% of camel exports were shipped in 1975, is still the most important port in the livestock trade. Although the proportion of cattle exports passing through Berbera has declined in the last few years, more than 50,000 cattle were shipped from Berbera each year from 1979 to 1981.[1] Moreover, over 90% of the small ruminants exported from Somalia passed through the port of Berbera from 1979 to 1981.

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[1] Ninety percent of the cattle exported on the hoof from Somalia from 1969 to 1973 were shipped from Berbera. Similarly, 92% of sheep and goat exports and 94% of camel exports passed through Berbera. See World Bank, Somalia: Recent Economic Developments and Prospects, August 1975.

TABLE 10

LIVESTOCK EXPORTS BY PORT, 1975-1981

	1975		1976		1977		1978		1979		1980		1981	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cattle														
Berbera	32,998	82.7	30,180	51.7	45,730	82.3	24,706	68.0	53,408	78.7	56,001	59.5	51,912	44.8
Mogadishu	2,485	0.2	2,050	2.5	700	1.3	500	1.4	Nil.	Nil.	13,776	14.6	31,009	26.7
Kismayo	4,400	11.0	26,155	44.8	8,476	15.4	11,060	30.4	14,200	30.9	24,374	25.9	31,889	27.5
Small Ports[2]	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	71	0.2	278	0.4	Nil.	Nil.	1,193	1.0
Total	39,883		58,385		54,956		36,337		67,886		94,151		116,003	
Camels														
Berbera	25,903	75.7	26,302	78.5	28,853	86.7	12,355	79.0	8,733	69.8	8,050	46.7	4,663	31.7
Mogadishu	5,320	15.5	1,735	5.2	250	0.8	110	0.7	Nil.	Nil.	3,251	18.9	3,678	25.0
Kismayo	3,000	8.8	5,465	16.3	4,193	12.6	3,177	20.3	3,755	30.2	5,944	34.5	6,384	43.4
Total	34,223		33,502		33,296		15,642		12,508		17,245		14,725	
Sheep														
Berbera	781,697	87.6	323,441	79.5	419,008	85.3	317,780	79.2	674,921	94.1	709,122	94.9	640,188	93.5
Mogadishu	38,015	4.3	14,500	3.6	1,400	0.3	7,500	1.9	700	0.1	6,500	0.9	28,057	4.1
Kismayo	4,630	0.5	7,765	1.9	7,423	1.5	8,100	2.0	5,284	0.7	5,151	0.7	1,665	0.2
Other Ports[2]	68,360	7.7	61,255	15.0	63,672	13.0	67,984	16.9	36,302	5.0	26,305	3.5	15,136	2.2
Total	892,702		406,961		491,503		401,364		716,907		747,078		679,995	
Goats														
Berbera	626,654	90.6	324,137	85.3	406,126	88.0	304,643	84.2	663,229	94.0	699,194	95.2	640,940	94.3
Mogadishu	43,172	6.2	11,202	3.0	2,600	0.6	7,500	1.9	1,300	0.2	6,710	0.9	28,057	4.1
Kismayo	5,670	0.8	7,765	2.0	17,321	3.8	8,100	2.1	5,282	0.7	4,371	0.6	2,538	0.4
Other Ports[2]	16,263	2.3	37,002	9.7	35,221	7.6	45,456	11.8	35,457	5.0	23,835	3.3	8,460	1.2
Total	691,759		380,106		461,268		385,699		705,268		734,110		685,046	

Source: Livestock Development Agency.

[1]The data for 1978 are incomplete for cattle and camels, representing probably only six months of information.

[2]The small Ports are Maydh and Laas Qaray.

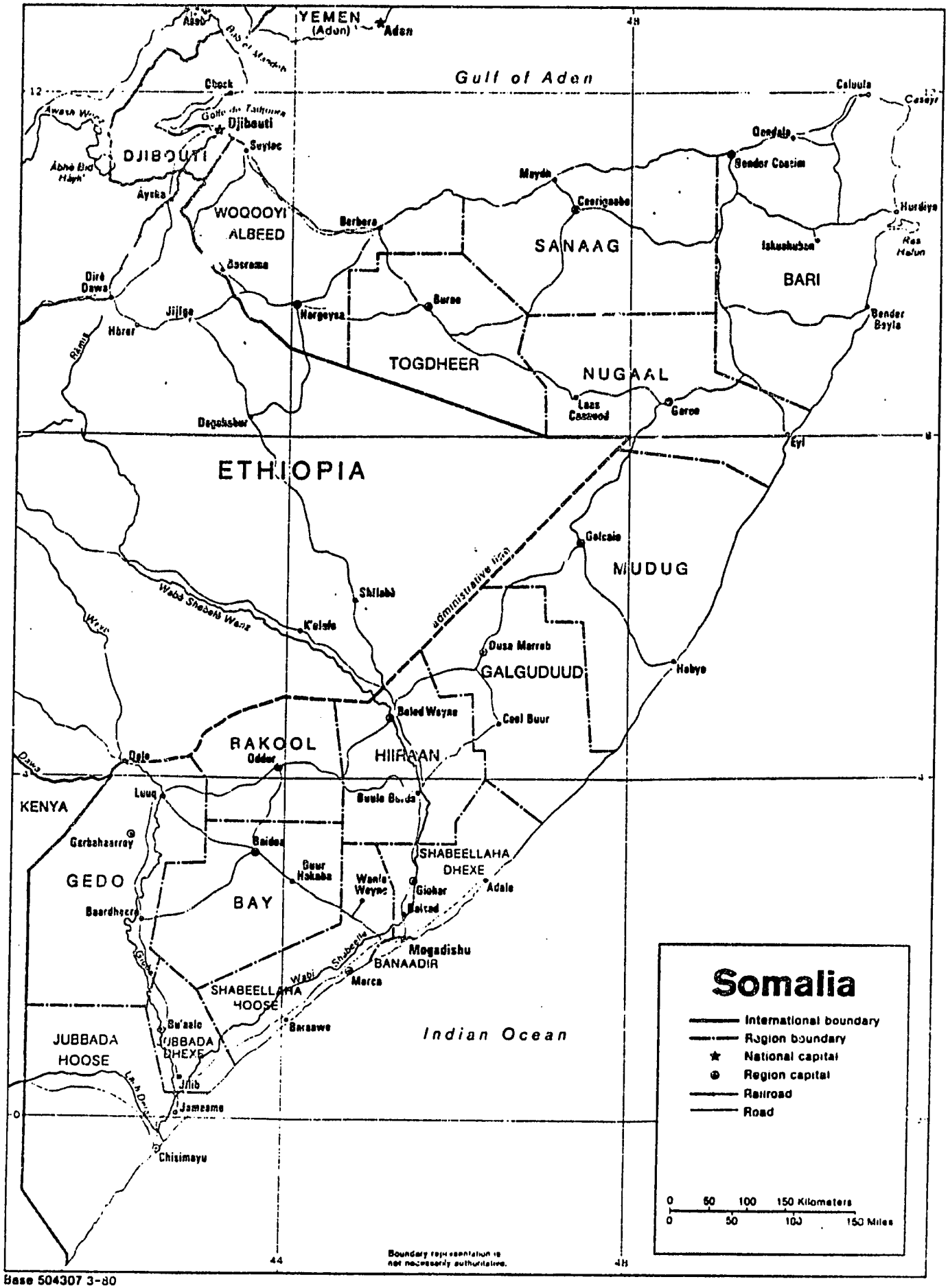
E. Livestock Transport and Flows

Although trekking was the predominant mode of transporting small ruminants through much of the 1970s, trucking has become far more prevalent in the late 1970s and early 1980s. Six-ton Nissan and Isuzu trucks haul 80-90 sheep and goats per trip at rates that vary with the distance between points. Some Fiat trucks with trailers are also used to transport small ruminants, carrying up to 200 head per trip (80 head in the truck and 120 in the trailer). Truckers charge 30-40 So.Sh. per head to haul small ruminants from the Haud to Burao and Hargeisa and 10-20 So.Sh. per head for the trip from these two redistribution centers to Berbera. Trucking from Galcaio and Dusa Mareb, which are regional capitals in the central rangelands area, costs between 50 and 80 So.Sh. per head.

Sheep and goats are trucked from all of the northern regions (Northwest, Togdeer, Sanaag, Nugaal and Bari), the central rangelands area (Mudug, Galguduug, Hiraan), and the Haud in Ethiopia to the major redistribution markets at Burao and Hargeisa, where they are sold and staged for export via Berbera. Assembly and movement of sheep and goats for export from the central rangelands area is concentrated before Ramadan and the hadj. During other periods northern exporters are able to acquire most of the sheep and goats needed for export from the northern regions and the Haud.

Trucking rates depend upon the seasonal demand for exports and hence the availability of trucks and fuel. The variation in livestock prices between the export triangle formed by Berbera, Hargeisa and Burao, other

FIGURE 4


YEMEN
(Adun)
Aden
Gulf of Aden
Obock
Djibouti
DJIBOUTI
Seylac
Ayrika
WOQOOYI
ALBEED
Berbera
Caluula
Qandala
Bender Cesim
Maydh
Ceerigaabo
SANAAG
Hurdiya
Ishaashuban
BARI
Ras Hafun
Dire Dawa
Jijiga
Harar
Gashamo
Hargeysa
Burco
Bender Beyla
TOGDHEER
NUGAAL
Lees Caanood
Garoe
Degahabur
Eyl
ETHIOPIA
Galcaio
MUDUG
Wabi Shebelli Wenz
Shilabo
K'elafo
Dusa Marreb
GALGUDUUD
Hobyo
Beled Weyne
Ceel Buur
RAKOOL
Oddur
HIIRAAN
Ogle
Luuq
KENYA
Buale Burda
Garbahaarrey
Baidoa
SHABEELLAHA
DHEXE
GEDO
Guur Hakaba
Wanla Weyne
Giohar
Adale
BAY
Baardheere
Balcad
Mogadishu
BANAADIR
Wabi Shebelle
Marca
SHABEELLAHA
HOOSE
Indian Ocean
Bu'aale
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Somalia
International boundary
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Region capital
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Boundary representation is not necessarily authoritative.
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areas in northern Somalia, the Haud and the central rangelands area can be attributed primarily to transport costs. The price of sheep in Burao (± 800 So.Sh. per head) represents the Dusa Mareb price (± 600 So.Sh. per head) plus transport and transactions costs.

While the vast majority of sheep and goats are now trucked to the principal ports throughout Somalia, many cattle and all camels are trekked from assembly markets in the hinterland to the ports. The reasons for trekking are essentially two-fold. First, camels and cattle can be trekked considerable distances (30-50 kilometers) each day, while small ruminants are moved slowly on foot. Camels can trek five to six days without water with minimal weight loss (once rehydration takes place). Cattle require daily watering during long treks, but they lose little weight when trekked at a moderate pace during the rainy season, when adequate forage is available. A second reason for trekking large ruminants is that suitable trucks for transporting cattle and camels are not available. While sheep and goats can be hauled in all-purpose vehicles, large ruminants require larger, specially outfitted trucks to keep per unit costs as low as possible. In the absence of special cattle carriers, bruising, stress losses and the high per unit costs of transporting cattle make trucking economically unviable except during periods of high demand or temporary shortage, when large price differentials between points more than cover the high cost of motorized transport. Camels are never trucked.

The time and distances involved in trekking camels and cattle induce exporters to move their large ruminants the shortest distances to the nearest ports. Cattle and camels bought in the Lower Juba and along the Kenyan border are trekked to Kismayo, while large ruminants assembled in the inter-riverine areas are trekked to Mogadishu. Most cattle and all

camels acquired in the North-West Region and the Haud are moved on foot to Berbera. Some cattle and camels are also trekked from the Upper Shabelli (Jowhar) region and from Hiraan (Belet Weyne) to the export triangle, but such long-distance movement of large ruminants has become unusual with the opening of the new port at Mogadishu.

Although trekking of cattle is more common than trucking, trucking of cattle has increased in recent years, particularly in the northern regions. Many of the exporters own and operate at least one six-ton truck for transporting livestock and fodder. Other merchants and truckers hire out their vehicles for transporting livestock. One exporter based in Hargeisa claims to truck all his trade cattle between Hargeisa and Berbera. He reports that the opening of the paved road in the late 1970s lowered trucking costs and ensured that cattle arrive in good condition at the port. It costs 1,200 So.Sh. to transport 13-14 head of cattle from Hargeisa to Berbera in a six-ton truck. The trader is willing to pay the higher per unit cost of trucking, because he reports that weight losses are too high in trekking cattle from the highlands to the hot and dry coastal plain, where little grass and water are available. Moreover, trekking cattle is time consuming, as the animals should be moved slowly to maintain their condition as best as possible. The completion of the Burao-Berbera paved road in 1980 also has lowered trucking costs and led to increased trucking of cattle and small ruminants from Burao to Berbera.

IV. Major Constraints to Improving Livestock Production, Marketing and Export

A. Supply Constraints

1. Range Resources

It has been estimated that Somalia's rangelands are overstocked by 200-300%. Overstocking during the past quarter century has led to progressive deterioration in Somalia's range resources. The large numbers of stock held on the range exacerbated the effects of the 1973-75 drought, during which an estimated 6.3 million animals died, and the 1978-80 drought, which may have resulted in mortality exceeding five million head of livestock. In response to the deterioration in the rangeland and the drought-induced losses, the Somali government allocated 14.5% of planned investment in the livestock and range sector to rangeland development during the Five Year Development Plan (FYDP) of 1974-78 and 39.8% of planned sectoral investment in the Three Year Development Plan (TYDP) of 1979-81.[1]

The two most important interventions underway are the Northern Rangelands Development Project (NRDP), financed by the Kuwait Development Fund since 1976, and the Central Rangelands Development Project (CRDP), funded by USAID, the World Bank and German technical assistance. The rangeland development projects aim to increase forage production, develop water resources in grazing areas that are presently underutilized, establish drought and grazing reserves, and improve veterinary services. As a

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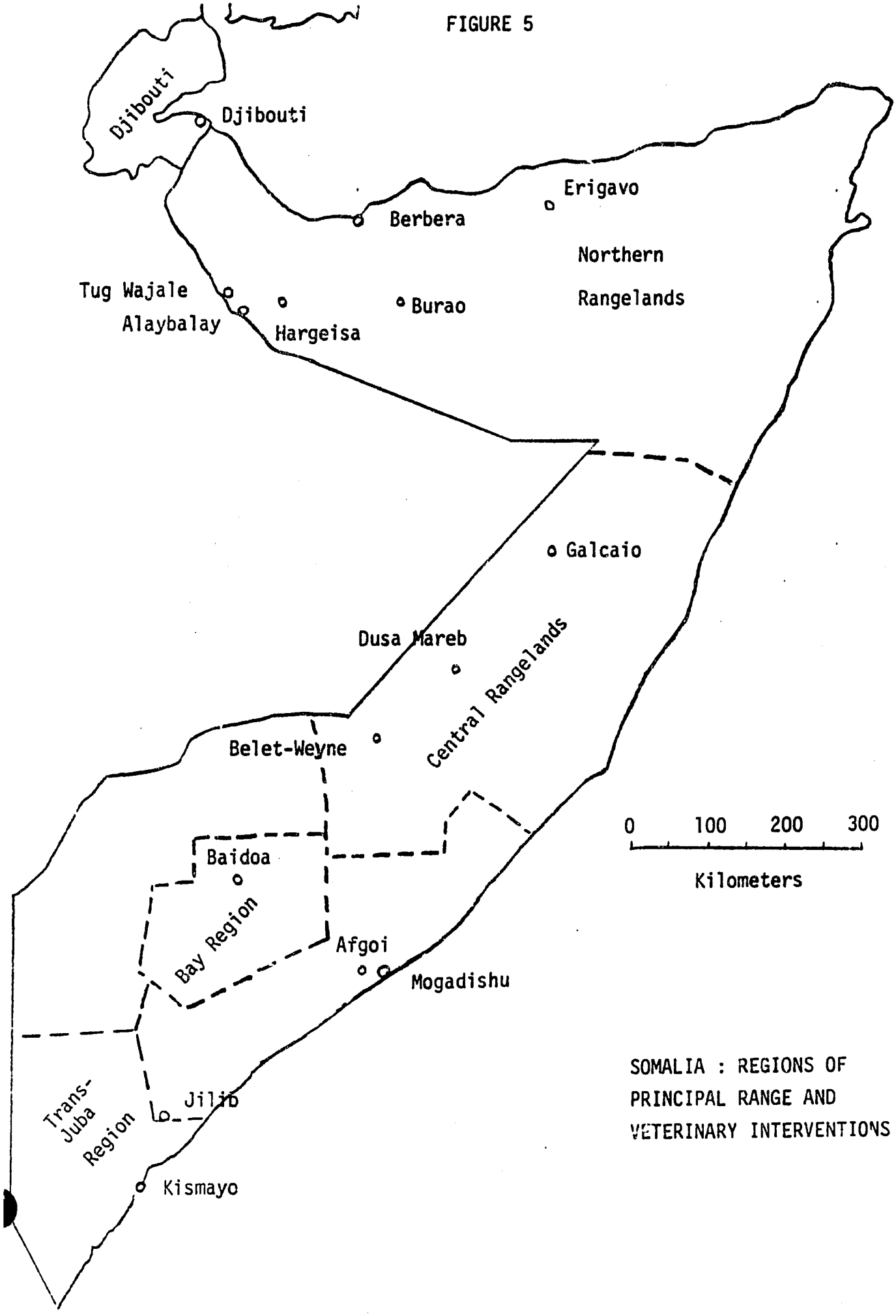
[1] The Ministry of National Planning was collecting information in May 1982 on actual budgetary allocations to livestock sector development during the two preceding development plans, but the information was not yet available for comparison with planned investments.

FIGURE 5



SOMALIA : REGIONS OF PRINCIPAL RANGE AND VETERINARY INTERVENTIONS

precondition for financing the NRDP, the Kuwait's insisted on the creation of a National Range Agency (NRA) for implementation of rangeland development projects. The NRA has also been charged with the maintenance of the livestock marketing infrastructure since the Livestock Development Agency (LDA) was abolished in 1981.

Given the importance of the national range resource base to livestock production, the emphasis in livestock sector development is justifiable. Most livestock mortality in the past decade has been due to inadequate animal nutrition, particularly in times of drought. During periods of nutritional stress livestock are more susceptible to disease and the debilitating effect of parasite infestation. In Somalia the probability that rainfall in any particular year is less than 75% of the annual average ranges from .25 to .50 for most locations in Somalia for which rainfall records are available.[1] In the drier areas the probability of receiving less than 75% of average annual rainfall in any given year is .35-.55, which means that rainfall is apt to be inadequate every second or third year. Rain shortfalls in drier regions are apt to have greater negative consequences on forage production than shortfalls in wetter regions, since the former areas are in more tenuous ecological balance.

Although the importance of attempting to maintain and upgrade rangeland resources is beyond question, the emphasis that rangeland development has received in recent years relative to animal health may be undue. Some have argued that the potential for increasing forage production has been

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[1] Jeremy Swift, "Pastoral Development in Somalia: Herding Cooperatives as a Strategy against Desertification and Famine," in Desertification: Environmental Degradation in and around Arid Lands, edited by Michael Glantz, 1976.

overestimated in Somalia.[1] Three-quarters of the total land area of Somalia receives less than 300 mm. average annual rainfall, as illustrated by the map on the following page. The paucity of rainfall constrains rangeland development in Somalia, especially in the central and northern rangelands, where the most massive infusions of capital have taken place. Reseeding and water spreading techniques can partially overcome this constraint, but rainfall with continue to constrain increased forage production, which will in turn limit the numbers of livestock that can be held on the range.

2. Animal Health

a) pastoral knowledge of animal diseases

The Somali breeds of livestock are generally highly resistant to drought and disease. When disease outbreaks do occur, Somali pastoralists are quick to diagnose the disease. Indeed, it is the pastoral producers who usually bring disease outbreaks to the attention of the town-based veterinary staff, describing the symptoms accurately and identifying the diseases correctly by their Somali name.

In addition to being very knowledgeable about the causes and symptoms of animal disease, nomadic producers have devised clever though rudimentary means of treatment. Separation of diseased stock from healthy animals is a widely practiced form of quarantine. Holding livestock exposed to or showing symptoms of contagious diseases downwind of healthy stock is also standard practice. A crude form of vaccination against contagious bovine pleuropneumonia, practiced by traders in Southern Somalia in the 1950s

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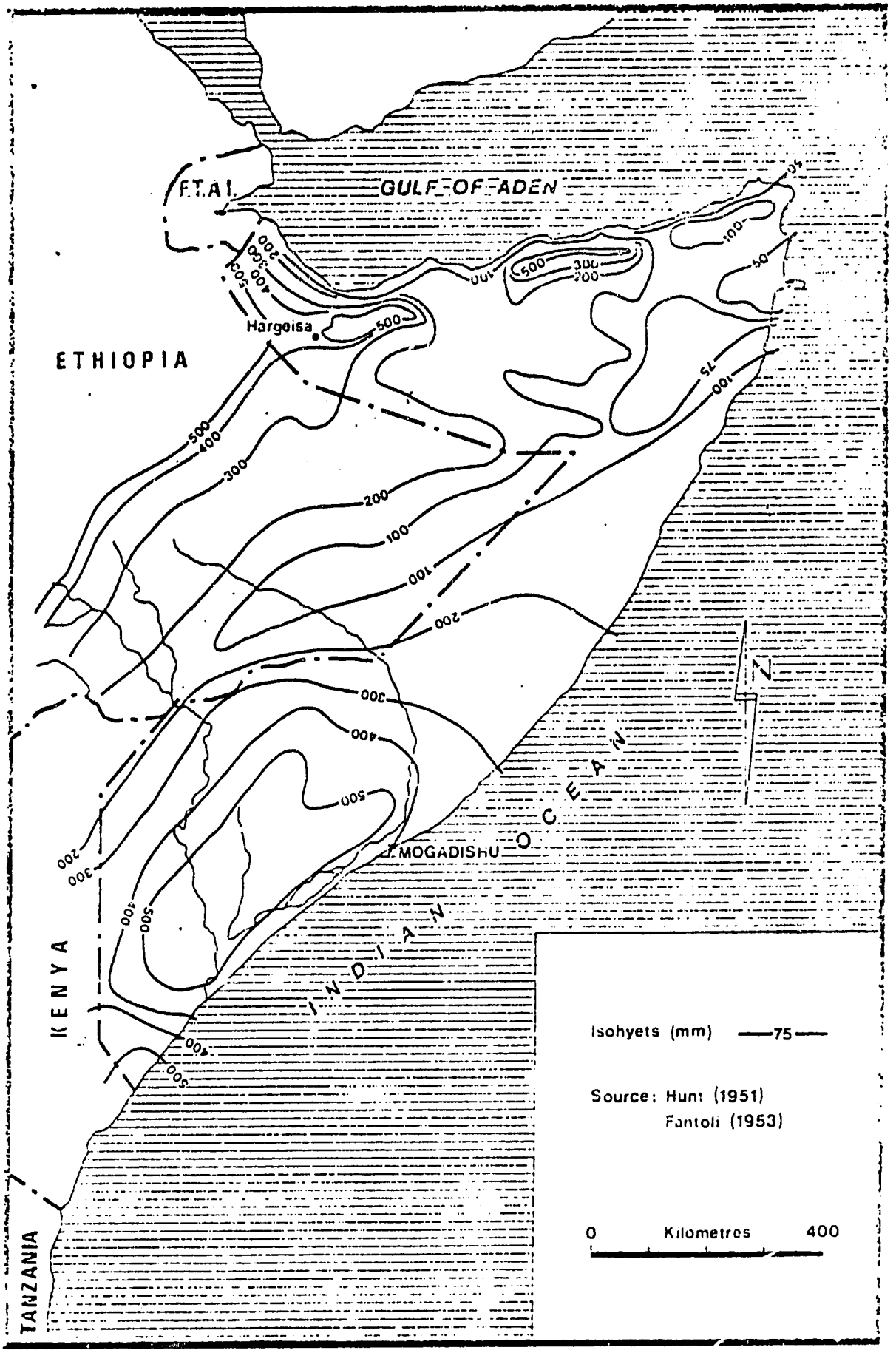
[1]Ministry of National Planning, "Livestock and Range Sector Study," Mogadishu, 1981.

FIGURE 6

MEAN ANNUAL RAINFALL DISTRIBUTION



and 1960s, involved applying infectious tissue to slits made on the animals' noses. When anthrax outbreaks occur in an area, pastoralists will typically burn the surrounding pasture and browse to destroy the bacterial agent.[1] These examples of the skill and ingenuity of Somali livestock producers illustrate that the level of pastoral knowledge regarding animal diseases does not constrain livestock production.

b) estimated livestock mortality

Although the Somali breeds of livestock are highly disease resistant and stockowners are knowledgeable in ways of minimizing the risk of disease outbreaks, mortality takes a high annual toll on the national herd. Estimated mortality for mature and immature stock during normal years is 139,000-229,000 cattle, 224,000 camels, and 1,490,000 small ruminants, as shown in Table 11. Annual calf, kid and lamb mortality is probably higher in absolute terms than mortality for immature and mature stock. Kid and lamb mortality may be as high as 3.5 million per year, due to a high estimated mortality rate of 30%.

Although some livestock mortality is caused by disease, inadequate nutrition is responsible for most mortality. Poor nutrition weakens livestock and increases susceptibility to disease. Despite the fact that animal health and nutrition are highly interrelated, livestock mortality

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[1]Another example of the knowledge of Somali livestock producers concerns their method of handling outbreaks of foot and mouth disease. When foot and mouth infects several of a nomadic producers' cattle, he will spread the disease using the infected animals' saliva. Local strains of foot and mouth, which debilitate cattle but rarely cause mortality, generally run their course in 18 to 20 days. By afflicting all of his animals at the same time, the producer minimizes the period over which his herd suffers from the disease. This practice eliminates the need to separate and provide special treatment for individual animals over an extended period while the herd is on the move. The pastoral producer therefore minimizes labor inputs and simplifies herd management under difficult circumstances.

TABLE 11

ESTIMATED LIVESTOCK MORTALITY

Species	Adult Mortality			Calf/Kid/Lamb Mortality		
	Estimated[1] Population	Mortality Rate	Estimated Annual Losses	Estimated[1] Population	Mortality Rate	Estimated[2] Annual Losses
Cattle	2,792,500-2,867,900	5-8%	139,600-229,400	854,200-929,600	15-30%	150,700-301,500
Camels	4,486,099	<5%	224,300	811,140	25%	231,800
Sheep	5,463,671	10%	546,400	3,968,649	30%	1,400,700
Goats	9,432,657	>10%	934,300	5,842,901	30%	2,062,200

Note: These estimates of livestock mortality are for years of normal rainfall. During years of drought adult mortality would be significantly higher and calf, kid and lamb losses would be nearly zero, since little reproduction occurs under drought conditions.

Source: Mortality rates are from the World Bank's Agricultural Sector Review, Annex 1, "The Livestock and Wildlife Subsector," December 1980. Livestock population figures are from the 1975 national census.

[1]The calf/kid/lamb populations are estimated in the following ways: (1975 census estimate) x (% female breeding animals in national herd) x (calving/kidding/lambing rate) x (1 - (50% of calf/kid/lamb mortality rate)). The last term is included, because we assume that half of the calf/kid/lamb crop for the year has already died at the time the estimates are made. The percentage of female breeding animals in the respective herds is based upon research findings for African herds and is assumed to be as follows: 45% for cattle, 50% for camels and goats and 55% for sheep. Birth rates, taken from the Agricultural Sector Review, are as follows: 60% for cattle, 35% for camels, and 90% for sheep and goats. The "adult" livestock population, which includes immature as well as mature stock, is calculated as a residual (Total Population - Estimated Calf/Kid/Lamb Population).

[2]Annual calf/kid/lamb losses are calculated not as a proportion of the estimated calf/kid/lamb population but as a proportion of calculated births during normal (non-drought) years.

could perhaps be reduced by one third if animal health services were improved.[1] By decreasing mortality among mature and immature stock alone, 46,000-76,000 head of cattle, 74,000 camels, and 492,000 sheep and goats could be saved per year, resulting in savings of at least 560 million So.Sh.[2]

c) vaccination of livestock against contagious diseases

According to MLFR officials livestock in Somalia are vaccinated against contagious bovine and caprine pleuropneumonia, rinderpest, foot and mouth disease, sheep pox, anthrax, blackquarter and haemorragic septicemia. MLFR estimates of annual vaccinations indicate that coverage is not complete, however, as indicated by Table 12.[3] Production of vaccines takes place at the Serum and Vaccine Institute in Mogadishu. The Institute is able to produce sufficient quantities of vaccines, but the MLFR is not always able to distribute these vaccines to the district level on a timely basis. Three lorries transport the vaccines to the regional veterinary centers, but transport and storage of vaccines is inadequate in moving vaccines from the regional to the district level. By the time vaccines reach the district level, many have lost their effectiveness due to lack of refrigeration and slow distribution.

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[1] MLFR officials believe that livestock mortality would be reduced by 50% following the implementation of a national animal health project.

[2] This figure is obtained by valuing cattle at 2000 So.Sh., camels at 3000 So.Sh., and small ruminants at 500 So.Sh. These prices are at least 33% below current prices paid by traders for export stock, reflecting the lower average value of the immature and mature stock that would be saved through improved animal health.

[3] The MLFR records the the number of vaccinations and treatments administered, which does not correspond to the number of animals treated, since multiple treatments of some animals take place.

TABLE 12

ANNUAL VACCINATIONS AND TREATMENTS 1970-1981

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Vaccinations ('000)												
Rinderpest	1,716	1,817	1,143	1,205	863	1,132	1,202	863	403	794	127	106
CBPP	607	228	525	595	391	817	721	158	569	759	7	311
Anthrax	128	48	83	273	595	470	368	148	439	782	282	108
Blackquarter	94	84	64	127	183	296	94	67	378	475	282	425
CCPP	-	-	-	597	386	321	619	73	6	475	427	687
Foot and Mouth Disease	-	-	-	36	35	30	57	3	-	-	-	-
Haemorragic Septacaemia	-	-	-	86	83	80	118	251	251	330	693	547
Sheep Pox	-	-	-	-	-	-	-	199	31	156	50	79
Erterotoxemia of Sheep	-	-	-	-	-	-	-	-	190	-	-	-
Bovine Paratyphoid	-	-	-	-	-	-	-	190	190	-	-	-
Total	2,545	2,177	1,815	2,919	2,536	3,146	3,179	1,952	2,537	3,771	1,873	2,263
Treatments ('000)												
Trypanosomiasis	164	184	178	434	1,430	1,698	1,822	933	685	1,542	1,737	1,154
External Parasites	555	293	2,291	6,906	12,163	13,794	9,277	6,954	8,542	6,736	10,622	9,659
Internal Parasites	166	114	138	847	750	712	449	437	453	405	711	2,826
Non-Specific Diseases	-	-	-	284	680	1,024	1,228	564	659	1,445	2,620	1,185
Total	885	591	2,607	8,471	15,023	17,228	12,776	8,888	10,339	10,128	15,690	14,824
Diagnostic samples handled by Central Veterinary Laboratory	200	-	2,200	800	2,000	3,400	2,400	8,400	7,400	14,000	N.A.	N.A.

Source: Veterinary Service, Table adapted from "Livestock and Range Sector Study," Ministry of National Planning.

A large part of the MLFR vehicle fleet at the regional and district level is of JP-15 vintage. The JP-15 vaccination campaign against rinderpest was carried out in East Africa from 1969 to 1973. As a result of the campaign, rinderpest was nearly eradicated in Somalia by the mid-1970s, but it has been reintroduced, probably from Ethiopia. The MLFR has not been able to maintain the high level of efficiency and enthusiasm generated by the JP-15 campaign in recent years, due primarily to inadequate funding of animal health programs. Appropriations to the Veterinary Service are typically cut by the Ministry of Finance, so that vehicles are not adequately maintained or not always replaced when needed. Consequently, the Veterinary Service primarily responds to disease outbreaks, often belatedly and not over a wide enough area, rather than undertaking regular prophylaxsis.

Transportation is the principal constraint to the MLFR's undertaking of prophylactic vaccination campaigns and to prompt action to minimize the adverse effect of disease outbreaks. Veterinary officials are unable to reach producers during the rainy season, when herders are dispersed and travel to remote rangelands is all but impracticable. Although the National University is graduating increasing numbers of trained veterinarians each year, these graduates receive little instruction in extension techniques, little or no logistical support, and no incentives in the way of professional encouragement, recognition and hardship allowances to leave the towns, except when curative vaccination programs are launched.

The Veterinary Service generally has a good rapport with pastoral producers, despite isolated instances of veterinary misdiagnosis of animal disease and the resistance of some pastoralists to dry season vaccination of their livestock. Prophylactic vaccinations are typically administered during Jilaal, when nutrition is poorest and animals are therefore in

their weakest condition, because large herds of livestock congregate around dry season watering points and are easily accessible at that time. This lowers the cost of administering vaccinations, but vaccination of female stock at that time does induce abortion in some instances.[1] Once the rains begin and pastoralists take their herds to remote grazing areas (which are often located in Ethiopia), vaccinating large numbers of animals becomes far more difficult and costly and in some cases impossible.

While most livestock producers appreciate the results of vaccination campaigns, herders are unwilling to pay for vaccinations. The MLFR claims that prophylactic vaccinations have to be administered free of charge in order to ensure the cooperation of pastoralists. In West Africa herders do not pay for vaccinations, but they do pay an annual cattle head tax. Although herders try to evade the head tax by presenting only part of their herd to revenue collecting officials, the head tax does generate revenue for the Veterinary Service (and other government agencies). In Somalia livestock producers pay no head tax yet still receive free vaccinations for their livestock. On economic grounds the policy of not making producers pay for vaccinations (either directly or indirectly) is indefensible, as it lowers the marginal cost of holding animals on the range. Since pastoralists are not required to pay for vaccinations, they have less incentive to sell livestock. This policy therefore contributes to the degradation of the rangeland.

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[1] Calving, kidding and lambing occurs during Gu, the principal rainy season that follows Jilaal.

d) treatment of ecto- and endo-parasites

Pastoral producers are obliged to pay for drugs used in treating ecto- and endo-parasites. According to veterinary officials, tick-borne diseases are the number one animal health problem in Somalia. Although tick-borne diseases rarely cause mortality, they weaken livestock and lower rates of gain and milk production. The tick challenge is greatest, of course, during the rainy season when pastoral herds are on the move. This movement makes regular dipping or spraying of livestock next to impossible, and it also contributes to the spread of the vector and the diseases it carries.

Parasite treatment centers were introduced during the 1971-73 Development Plan but have been expanded little since then due to lack of funds. Spraying and dipping of livestock was free until 1976, at which point it became necessary to charge for the service. In 1975, 13.8 million treatments were administered, while 9.7 million treatments were recorded in 1981 (see Table 12). Expansion in the number of centers for dipping sheep and goats and the equipping of mobile vaccination teams with portable sprayers for treating cattle and camels were proposed in the 1979-81 Development Plan and have been proposed in the 1982-86 Plan, but funds have not yet been allocated. Moreover, it will be necessary to appropriate funds for the replacement of existing equipment, particularly portable sprayers, many of which are not in working condition.

Most treatment against ticks is presently done by producers themselves, who hand-dress their animals. The producers buy the drugs when they are available from the regional and district veterinary centers. Pastoralists are very willing to pay for the drugs, but frequent shortages of these drugs are common, since the MLFR purchases large consignments on an irregular basis.

The Veterinary Service tells herders how to apply drugs at the time of purchase.[1] Yet veterinary officials report that the drugs used in treating ecto-parasites are often not applied in prescribed doses nor at optimum intervals. These drugs are also applied in a manner that is often detrimental to human health. The MLFR is presently incapable of supervising the application of ecto-parasite treatment, since tick infestation is worst during the rainy season, when pastoral producers are farthest from the towns and veterinary centers. Any improvement in control of ecto-parasites will have to be accompanied by more vigorous extension efforts by the MLFR, which will require improved mobility for the veterinary field service. Alternatively, better packaging of acaricides for simpler application, accompanied by demonstrations at district level veterinary centers, could reduce the incidence of drug misapplication.

Antihelmintics are also in high demand in Somalia. Irregularity of supply plagues producers, whose immature stock suffers lower rates of gain and greater susceptibility to disease resulting from parasite-induced weakness.

3. Potential for Increasing Offtake from the Somali National Herd

a) previous estimates of offtake

Offtake for a particular livestock species, which is the ratio of internal slaughter plus net exports to the population of that species, is one measure of the commercial responsiveness of livestock producers. In a semi-arid country such as Somalia, offtake may vary greatly from year to year, depending on variation in annual rainfall and its effect on the condition of the rangeland, the availability of water, reproductive rates for livestock, and producers' decisions to sell, slaughter or hold back livestock. During the last decade several different

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[1] Stockowners also receive instructions in drug application during weekly extension broadcasts over the radio.

organizations attempted to calculate offtake rates using data of questionable reliability and comprehensiveness, which were obtained for different years. As one might expect, the rates of offtake vary widely, depending on the year for which the calculation was made and the assumptions made in doing the calculation. Calculations of offtake in the 1970s are summarized in the "Livestock and Range Sector Study" prepared by the Ministry of National Planning and shown in Table 3 of Annex 7.

Most of the calculated offtake rates are low, primarily because purchases of hides and skins, which are supposed to be a good indicator of slaughter for internal consumption, do not capture all slaughter. Many of the hides and skins are not sold to the Hides and Skins Agency (HASA), a parastatal organization that does not manage to exercise monopoly buying rights. Using HASA estimates of livestock slaughter for 1979, it has been calculated that HASA purchased only 35% of the cattle hides, 33% of the camel hides, and 69% of the sheep and goat skins from animals slaughtered in 1979.[1] Although most calculations of offtake make some adjustment for hides and skins that do not enter market channels, the adjustment is usually not sufficiently large. Using the HASA estimates of slaughter in 1979 rather than first purchases of hides and skins yields the following estimates of offtake for 1979: 7.0% for cattle; 1.2% for camels; and 27.7% for sheep and goats.[2]

It is important to point out that there are also methodological problems in using export figures in estimating offtake. While hides and skins purchases understate slaughter in Somalia, recorded export figures

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[1]Ministry of National Planning, "Livestock and Range Sector Study," Mogadishu, March 1981.

[2]Ibid., p. 17.

overstate offtake from the national herd. Substantial but unknown numbers of cattle exported from Somalia originate in Kenya and Ethiopia.

b) estimated offtake for 1981

In estimating the offtake rates for 1981, we adjust the HASA figure for hides and skins purchases upward, assuming that the number of hides and skins purchased by HASA was the same proportion of total slaughter in 1981 as in 1979. This gives us a rough estimate of total internal slaughter. We then add exports to estimated slaughter, adjusting the cattle export figures downward by 33% to account for imports of trade stock from Kenya and Ethiopia. The choice of 33% is arbitrary. It may be that an even greater proportion of cattle exports originate outside Somalia. Moreover, large but unknown numbers of cattle, camels, goats and sheep are herded into Ethiopia during the rainy season, returning to watering points in Somalia during Jilaal. The 1975 livestock population census, which was conducted during Jilaal at the height of the 1973-75 drought, captured not only the Somali herd but an unknown number of livestock that are typically not herded into Somalia from Ethiopia. Although most knowledgeable sources recognize that the 1975 census was an overcount, it is assumed that the 1980-81 livestock population was roughly equal to that obtained in the 1975 census.

Using the above methodology and the 1975 livestock population figures, we obtain estimates of offtake for 1981 shown in Table 13. The estimated cattle offtake of 10.9% is considerably higher than earlier estimates for Somalia, although it is typical for African developing country cattle herds. In recent years there have been increasing indications that cattle are raised more and more for commercial purposes. Several observors have noted a change in the species composition of pastoral herds, whereby

cattle have substituted increasingly for camels.[1] Yet it is also possible that the cattle population in 1981 was higher than the 1975 census estimate, which would lower offtake. Officials of the Ministry of Livestock, Forestry and Range claim that the cattle population has grown at an average annual rate of 2.5-3.0% since 1975, having attained 4.3-4.5 million head by 1981. If this is true, then offtake was 9.1-9.4% for 1981, which is still higher than most earlier estimates.

Estimated rates of offtake for both small ruminants and camels for 1981 appear low. It is more likely that sheep and goat offtake is closer to the 27.7% estimated by the "Livestock and Range Sector Study" for 1979 than to the 18.6% calculated above. Offtake for sheep and goats is typically estimated to be 30-33% in West Africa. Yet is is possible that high mortality among small ruminants necessarily lowers the number of animals that stockowners can slaughter or sell. It is important to remember that the offtake rates calculated in Table 13 represent offtake net of mortality. Adding the World Bank estimate of mortality of 10% for small ruminants to intended offtake, which is comprised of internal slaughter and exports, yields the more plausible estimate of 28.6%. The low offtake rate for camels is probably due in part to the use of the 1975 population figure for the Somali camel population, which suffered serious losses during the 1973-75 drought, during and after which (1975-77) camel exports and municipal slaughter of camels were highest. Since camels have a longer generation interval and lower calving rates than cattle and small ruminants, herd regrowth is very slow following two to three successive years of

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[1] ILO/JASPA, Economic Transformation in a Socialist Framework: An Employment and Basic Needs Oriented Development Strategy for Somalia, Addis Ababa, 1977, pp. 61-62.

TABLE 13

ESTIMATED OFFTAKE FROM THE SOMALI LIVESTOCK HERDS, 1981

Species	Population Estimate[1]	HASA Purchases of Hides and Skins	Adjusted Slaughter[2]	Exports[3]	Total Offtake	Rate of Offtake
Cattle	3,722,151	115,412	329,748	77,722	407,470	10.9
Camels	5,297,239	34,973	105,978	14,315	120,293	2.3
Sheep and Goats	24,707,878	2,221,000	3,218,840	1,365,041	4,583,881	18.6

[1]The population estimates used are the 1975 census figures. The camel population was probably considerably lower in 1981.

[2]Adjusted slaughter is calculated by taking HASA figures for hides and skins and assuming that the ratio of HASA purchases to actual slaughter was the same in 1981 as in 1979, when the HASA survey of internal slaughter was conducted.

[3]Cattle exports are adjusted downward 33%, as we assume (arbitrarily) that 33% of the exported cattle originated in Kenya and Ethiopia. Small ruminant exports could also be adjusted downward, as substantial but unknown numbers of sheep and goats originate in Ethiopia. We do not make any downward adjustment, however.

drought.[1] If we add the World Bank's estimate of adult camel mortality to our estimate of camel offtake, which is net of mortality, we obtain an estimate of about 7%, which is considerably more plausible than estimates in the 1-3% range.

c) potential for increasing offtake

1) in the absence of improvement in animal health

In the absence of reliable census, slaughter and net export data, any estimates of the potential for increasing offtake are speculative. Depending on the set of offtake estimates used, and assumptions regarding attainable offtake, the potential for increasing offtake will vary greatly. If our estimates of offtake for 1981 are used, then offtake could have increased by the following amounts in 1981, shown below.

	Estimated Offtake Rate, 1981	Attainable Offtake Rate	Potential Incremental Offtake
Cattle	10.9%	11.0%	3,700
Camels	2.3%	5.0%	143,025
Sheep and Goats	18.6%	30.0%	2,816,698

While the estimate of potential incremental offtake for cattle is plausible, the estimates for camels and sheep and goats are too high. If the estimated offtake rate of 27.7% for 1979 is used, the potential availability of sheep and goats drops to 568,281 head. Adding this amount to recorded exports in 1981 yields potential exports of 1,933,000 small ruminants, which is plausible.[2]

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[1] See "Long Term Effects of Disaster to Pastoral Herds," in Dahl, Gudrun and Hjort, Anders, Having Herds: Pastoral Herd Growth and Household Economy, pp. 114-129.

[2] The World Bank Livestock Marketing Project Identification Mission predicting that sheep and goat exports would increase to 2.25 million head by 1980/81. The World Bank Agriculture Sector Review forecast that small ruminant exports would increase to 1.88 million by 1990.

B. Livestock Marketing Infrastructure

1. Staging of Livestock for Export

a) the export triangle

The towns of Berbera, Hargeisa and Burao in Northern Somalia form the export triangle. The livestock shipped from the port of Berbera are staged for export on the high plateau (3000-6000 feet above sea level), which rises precipitously some 50 kilometers from the Gulf of Aden. The low coastal plain lying between the escarpment and the Gulf, which is called the guban (literally, "burned"), is far too hot and sparsely vegetated to accomodate large numbers of trade stock, especially during the coastal hot season (May-October), which now coincides with the peak export season. Staging the livestock for export on the high plateau is desirable for maintaining the condition and health of trade stock. Once animals are moved to Berbera, where water and fodder supplies are inadequate, it is estimated that sheep and goats lose up to two kilograms in three days during the hot season.

The livestock exporters stage their trade stock on the open range around Burao and Hargeisa while their animals receive vaccinations 14 days prior to shipment and while awaiting word from the Livestock Traders' Committee to move the animals to the port for final veterinary inspection and shipment. Fodder is sometimes purchased around Burao and Hargeisa as feed for the lower numbers of animals exported during Jilaal. Alternatively, traders pay for grazing trade stock on enclosed tracts of the rangeland during ilaal, especially around Hargeisa. Finally, some traders enclose productive areas of the rangeland for grazing of their trade stock or for harvesting forage that is fed to the trade stock.

1) the northern Somalia holding grounds

The Somali government established two holdings grounds in the North in 1972-73. One is located at Aroori, which is about 10 kilometers west of Burao along the Burao-Hargeisa road, and the other at Qoolcaday, 45 kilometers south of Hargeisa along the Ethiopian border. These holding grounds were managed by the Livestock Development Agency until July 1981, at which point the LDA was disbanded and its functions taken on by the National Range Agency (NRA). During the last year the holding grounds have been poorly managed, although the NRA has proposed rehabilitating these facilities in the preparation of the 1982-86 Development Plan.[1] From 1974 to 1979, the holding grounds were reserved as a staging point for LDA animals and not available for use by export stock owned by private traders. Fencing, boreholes, water reservoirs and buildings were constructed at the holding grounds, which were intended as livestock vaccination, treatment, quarantine and reconditioning facilities for the trade stock on the way to Berbera.

The holding ground at Aroori has not been well managed and, given typical stocking rates and the estimated carrying capacity of the range, has been greatly overgrazed. Moreover, pastoral producers have resented government enclosure of some of the best grazing lands and periodically cut wire-fences, enabling their animals to graze inside the enclosures. When the rains fail, the holding ground at Aroori is used as a drought reserve for local producers. In addition, traders are permitted to graze their animals during Jilaal, provided they pay 1 So.Sh. per animal unit per day.[2]

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[1] Improvement of the northern holding grounds was also proposed but not financed during the 1979-81 Development Plan.

[2] One A.U. equals a cow plus calf or one camel or ten small ruminants.

The holding ground at Qoolcaday was also reserved for use by LDA trade stock and has not functioned fully since 1979. During the drought of 1979-80 nomads cut fences in order to graze their malnourished animals. Furthermore, the drilling of a deeper borehole in 1979 (from 950 to 1150 feet) without increasing the power of the pump that drives the water to the surface made the borehole completely inoperative. During recent dry seasons trade stock has been permitted to graze within the holding ground. The Qoolcaday holding ground is not particularly well located for handling trade stock, since the principal assembly markets for cattle and small ruminants are located some 100 kilometers to the north-west along the border.[1]

2) veterinary treatments of trade stock

While vaccination of trade stock was intended to take place at the holding grounds near Burao and Hargeisa, it is actually carried out by district level veterinary staff at livestock markets and, to a lesser extent, by mobile teams. Cattle are vaccinated against rinderpest, anthrax and contagious bovine pleuropneumonia and then held for fourteen days near the principal markets for observation. After two weeks the cattle are trekked or trucked to Berbera. While cattle usually receive vaccination before export, sheep and goats are rarely vaccinated, Instead, they are visually inspected by veterinary service personnel before issuance of the veterinary inspection certificate. After inspection at Burao and at the district level in North-West Region, sheep and goats are invariably trucked to Berbera. When outbreaks of disease occur among small ruminants in a particular district, the regional office of the MLFR

[1]The principal markets are at Alaybalay and Tug Wajale.

dispatches a mobile team to administer preventive vaccinations in that area. As a result, goats are sometimes vaccinated against contagious caprine pleuropneumonia, sheep against sheep pox, and both sheep and goats against anthrax. Regular vaccination of small ruminants before export does not take place, however. Camels exported from Berbera receive little or no veterinary care, given the limited resources of the MLFR and camels' greater resistance to drought and disease than other ruminant livestock.

Dipping or spraying of exported cattle and small ruminants against ticks is not widely practiced. A small number of spray pumps and portable dips are presently in use. Permanent dips are located at the holding grounds in the export staging area. The dip at Qoolcaday has not been used for several years.

b) staging of livestock for export in Southern Somalia

1) Kismayo

The EC Economic Development Fund and the Livestock Development Agency established two holding grounds near Kismayo during the late 1960s and the 1970s for vaccinating, observing, treating and reconditioning cattle to be exported from Southern Somalia. Each holding ground encloses 20,000 hectares of high quality rangeland. When LDA was buying cattle for export in the Lower Juba region, it often purchased immatures that were fed up to export weights at the holding grounds. Now that the NRA is managing the holding grounds private traders will be permitted to recondition their cattle before export at Laheley and Jilib, which are 25 and 100 kilometers respectively from the port of Kismayo.

Maintenance of the facilities at Laheley and Jilib has been poor to date. One of the boreholes at Laheley, which is located near the

quarantine station in the middle of the holding ground, is barely operating, pumping a low volume of sandy water to the surface. A second borehole, which is seven to eight kilometers from the quarantine station, is in good working order. As a result, animals at the quarantine station and in other areas of the holding ground are trekked to this borehole, which defeats the purpose of any quarantine and leads to deterioration in the grazing area between the quarantine station and the borehole. Daily movement of cattle to the watering point also makes any rational management of the rangeland within the holding ground impossible. Although it was intended that rotational grazing be practiced and paddocks were established for that purpose, a good part of the fencing has been knocked down and grazing is, for all practical purposes, uncontrolled.

According to a recent report, only 3200 of the 20,000 hectares at Jilib have been debushed, and heaps remaining from the bush clearing process cover grazing area and harbor wild animals. Tsetse flies and elephants pose problems for stocking and management of the holding ground and the water reticulation system is often out of order.

2) Mogadishu

Livestock exporters based in Mogadishu make their own arrangements to hold livestock within 100 kilometers of the port. Livestock held beyond Afgoi, which is about 25 kilometers from the port, is grazed free of charge, although dozens of herders must each be paid 30.00 So.Sh. per day to look after the animals. Staging the livestock greater than 25 kilometers from Mogadishu necessitates longer treks to the port, which increases animal fatigue and thirst prior to loading. Livestock staged for export between Afgoi and Mogadishu graze and browse on enclosed holdings owned by the farmers with traditional rights to the land.

Mogadishu based exporters claim that they pay up to 20,000-30,000 So.Sh. per shipment (16,000 sheep equivalents) to hold their livestock in this area close to Mogadishu. Veterinary inspection and vaccination of trade stock takes place in the staging areas around Afgoi. Since the livestock are free to graze the open range in these areas, there is no effective quarantine before export.

Livestock exporters report that the quality of trade stock shipped from Mogadishu could be improved if a holding ground was created near the port. The exporters would like trade stock to be exported in optimum condition, since considerable weight losses are incurred during the five to six day voyage to Jeddah, a good part of which takes place in the rough seas of the Indian Ocean. The exporters claim that they are willing to pay for use of a government-managed facility near the port.

2. Water and Feed Resources Along Stock Routes

Nearly all small ruminants are trucked from assembly markets to the principal ports for export, despite the rising cost of fuel in Somalia (1 liter = 10 So.Sh. = $.80). Trucking of cattle has become increasingly common in Northern Somalia, but virtually all cattle are trekked to the ports in Southern Somalia. Long-distance trekking of cattle and camels from Central and Southern Somalia to Berbera is no longer common. These animals are now exported from the southern ports of Kismayo and Mogadishu, from which shipping has improved greatly in recent years.

a) water and feed resources along northern stock routes

As trucking of livestock becomes increasingly important in Northern Somalia, the need to invest in holding and reconditioning facilities along stock routes declines. Nevertheless, cattle and camels are still trekked from markets along the Ethiopian border to Hargeisa and Burao and

thorn on the Berbera. Stock routes have been constructed in different areas of passage, most notably along the precipitously descending highway between Burao and Berbera. Water for livestock is obtained in natural depressions or dug-out basins. Some traders have also constructed cement-lined wells as well as thorn enclosures for livestock, in which trade animals are held at night.

Providing sufficient feed and water for cattle and camels that are trekked is no problem during the rainy season. Trade animals are trekked slowly, so they have ample opportunity to graze or browse and therefore lose little weight. During the long dry season (Jilaal) fewer animals are exported, yet the cattle that are exported are often trucked, particularly in the North. Exported cattle that are not trucked are fed cut forage or grazed within areas enclosed by farmers. Forage is purchased from farmers or produced by traders on enclosed plots. Enclosure of the rangeland is illegal, but it has become increasingly common, particularly in the North. The local authorities destroy enclosures periodically, and herders sometimes break through enclosures, allowing their livestock to graze. Increasing enclosure of highly productive rangeland, which limits the availability of dry season grazing for traditional pastoralists, has led to increasing conflict between pastoralists and agriculturalists, particularly in the North.

b) water and feed along southern stock routes

Stock routes exist in Southern Somalia in both the Trans-Juba and Inter-Riverine regions, along which water reservoirs and veterinary centers were constructed in the 1960s and 1970s with World Bank and EC funds. The veterinary centers have never been used on a regular basis. Livestock traders oppose the rough handling their animals receive in

holding pens, weigh bridges and crushes at such stations. The reservoirs along some of the stock routes are no longer operational. The plastic linings are ruptured, the sides of some of the reservoirs have partly collapsed, considerable silt deposits reduce the potential volume of water, and water pumps are not working. These reservoirs need to be completely overhauled and others require regular maintenance.

Recent and planned investments in developing water resources along stock routes will help to reduce the stress on trade animals, as well as weight losses in the course of trekking. Eighteen new boreholes have been drilled in the Trans-Juba region of Southern Somalia and will shortly be operating (when the headworks arrive). In addition, 33 of 40 water reservoirs in Southern and Central Somalia will be rehabilitated with $3.0 million provided by the United Nations Capital Development Program (UNCDP) and $0.5 million by UNDP.

3. Livestock Holding and Loading Facilities at the Ports

a) Berbera

Berbera is the port through which most small ruminants, nearly half of the cattle and a third of the camels are exported from Somalia. The livestock holding and expediting facilities at Berbera are woefully inadequate for handling the large numbers of animals that pass through the port, particularly during the pre-hadj peak season, when as many as 35,000-40,000 small ruminants are shipped out per day.

1) quarantine facilities

The livestock quarantine facilities constructed by the British at Berbera in the early 1960s and expanded by LDA in the late 1960s have been poorly maintained, deteriorating progressively since their construction.

Unusually heavy flooding in the highlands near Hargeisa in April 1982, caused flash flooding that washed away large parts of a 30-35 kilometer stretch of the paved Hargeisa-Berbera road, as well as most of the temporary pens and shade structures alongside the quarantine station at Berbera and parts of the "permanent" quarantine facility built by the LDA in the late 1960s. Although the original British station was no longer being used to hold livestock, since the water reticulation system had not been operating for years, the flooding further degraded the quarantine facilities that did exist and prompted the government to send representatives of the Ministry of Planning, the MLFR, and the National Range Agency (NRA) to assess the damage. The NRA was asked to prepare rough estimates of the costs of overhauling the present facilities and of building additional facilities at the ports.

In recent years livestock traders have preferred to keep their animals in temporary shade structures built with local materials. These structures, which are adjacent to the facilities constructed by the LDA, are cooler and closer to the piles of fodder that traders must truck from the inland plateau in order to feed livestock awaiting shipment. The traders' shaded grounds are not, however, enclosed. They also have to be rebuilt each year. Moreover, animals held at the shade structures have to trek around or across the present quarantine facilities to reach the reservoir supplied with water diverted from a gravity propelled pipeline running from the inland hills to the town.[1] The passage of livestock through the quarantine facilities to water and their unrestricted movement from shaded

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[1]The water supply alongside the quarantine station is inadequate for the large numbers of animals held at Berbera during the peak season.

areas to the sparsely vegetated rangeland in the surrounding bush makes effective quarantine impossible. Although livestock are, in principle, surveilled under quarantine for 48 hours before shipment, it is obvious that this procedure is no longer being followed. It is imperative that the present facilities be rehabilitated and maintained at a level that meets international standards.

2) provision of feed for livestock at the port

Nearly all of the cut forage fed to livestock at Berbera and on board ship en route to Jeddah is trucked down to the port from the high plateau. Little forage is produced near Berbera, as the coastal plain is too dry and hot and grazed by trade stock awaiting shipment near the port. The sparsely vegetated coastal lowlands are also grazed and browsed by livestock that transhumes from the plateau during the dry season. Forage trucked to the port is heaped in piles in the sun and left to dry out in the open air. It therefore rapidly loses its nutritive value.

The cost of providing fodder becomes quite high during the peak export period. Delays in loading and shipping also increase the cost of providing fodder. The exporters report that one six ton truckload of forage weighing 3-4 tons, which cost 4000-6000 So.Sh. (forage plus transport to Berbera) and will feed 2000 small ruminants for two days.[1] Waits of five days or more at the port of Berbera are not unusual, although better coordination of loading and shipping since the creation of the Livestock Traders' Committee in 1979 and the Somali-Hellenic Shipping Agency in

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[1] If there are three to four tons of forage per truckload, then each sheep or goat would receive only 1.5-2 kilograms in two days. Small ruminants will consume two or more kilograms of feed in one day. Either the small ruminants held at Berbera are receiving an inadequate ration, or six-ton trucks are able to haul six tons of hay, in which case the sheep and goats would receive 1.5 kilograms per day, which approaches a normal maintenance ration.

1979, has reduced delays.

3) marshalling yard and quay-side loading procedures

The main marshalling yard is located alongside the water front, some 500 meters from the quarantine facilities and 200-300 meters from the loading area alongside the livestock carriers. Shade structures with corrugated iron roofs are capable of holding perhaps 10,000 small ruminants, but they are in disrepair and water is provided in very limited quantities by only two small troughs. Most of the animals are marshalled in a large open area adjacent to these structures, which also runs along the shore. There is no shade for camels. Repair of the existing facilities and provision of additional shade structures and water are badly needed.

Given the limited marshalling facilities and relentless daytime heat at Berbera, all loading of livestock takes place at night. When livestock is ready to be loaded, port attendants drive the animals some 200 meters across the water via a narrow causeway. The causeway was at one point fenced but there are now large gaps in the fence through which livestock can pass to drink the salt water. During the hot season this results in a few instances of mortality. In order to facilitate more rapid loading, the passageway should be widened and refenced on both sides.

Once the livestock arrives on the quay, there is no orderly procedure for moving the animals directly to the gangways alongside the ship. Large open areas behind and to the side of the warehouse on the quay serve as pre-loading holding areas, from which the livestock are driven to the gangways. This loading procedure necessitates a large number of stick-wielding attendants, who spend a good deal of time chasing after the unruly and recalcitrant animals. Although the port veterinarian claims

that it is possible to load three ships per night during the peak period, it is probably unusual when more than two ships are loaded in one night.[1]

b) Mogadishu

Exports of cattle and camels have increased dramatically in the last three years and will continue to increase. Although the port is sufficiently large for handling the volume of exports passing through it, the marshalling yards near the port are inadequate and quay-side loading pens and chutes are not available. There are no pens for separating and holding animals suspected of being diseased. Moreover, there are not enough watering troughs for the large number of animals held at the marshalling yard, and few shade trees protect the livestock from the sunlight. Exporters are required to purchase and truck feed to the marshalling yard, or they pay to have donkey-cartloads brought to the port.

As at Berbera, loading takes place at night, primarily because livestock have to be trekked from the staging areas beyond Afgoi and between Afgoi and Mogadishu along roads that are heavily travelled during the day. The animals are then rested at the marshalling yard and loaded the following night. The trade stock therefore spend a full day in the sun with with inadequate shade and water awaiting shipment.

c) Kismayo

The port of Kismayo was improved by the United States Army Corps of Engineers in the late 1960s and is generally adequate for the volume of

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[1] During the month of September, 1981, 423,012 sheep equivalents (370,010 small ruminants plus 8667 cattle) were shipped from Berbera. Hence, an average of 14,100 sheep equivalents were shipped per day, which is roughly the capacity of a Somali-Hellenic livestock carrier. Assuming that loading did not take place on Fridays, the Moslem day of rest and prayer, 17,625 sheep equivalents were loaded per day.

animals that move through the port. The marshalling yards near the port are, however, in disrepair, as the shade structures are heavily rusted and falling down. The quarantine facilities are located at Laheley holding ground, which is 25 kilometers from the port. There are no facilities for separating and treating sick animals at the port.

4. Communication Network

There are presently telecommunications facilities at Mogadishu and very limited telephone service between the important points in the livestock trade (Mogadishu, Berbera, Burao and Hargeisa). No telecommunications facilities have been installed in the towns of Northern Somalia. As a result, there is a communications lag of several days between exporters based in Northern Somalia and importers based in Jeddah. Consequently, it is almost impossible to make last minute changes in livestock quantities and quality (age, liveweight) specified in the letter of credit. This absence of direct and prompt communication between Somalia and Saudi Arabia rankles Saudi importers, who desire the flexibility to alter livestock shipments in response to changing market conditions in Jeddah.

5. Specific Problems During the Peak Period

The peak period for livestock exports is before and during Ramadan and before the hadj, which falls two months after the end of Ramadan. The far greater demand during this period, particularly for sheep and goats, places great stress on the livestock marketing and animal health infrastructure to move as many animals as possible. The facilities for holding, quarantining, treating and loading livestock, which are at best barely adequate during non-peak periods, are severely strained before the Moslem holidays. Moreover, shortages of petrol and trucks sometimes constrain transport within Somalia. Finally, the far greater demand for

shipping before the hadj places pressure on the Somali-Hellenic Shipping Agency to charter additional ships for transport of the tons of thousands of addition of livestock to Saudi Arabia.

C. Institutional Constraints

1. Taxation of the Livestock Sector

The animal health and marketing infrastructure in assembly areas in the hinterland, along stock routes, at staging areas near the principal ports, and at the ports is generally poor and deteriorating. Water reservoirs, crushes and ecto-parasite treatment facilities (dips, spray pumps) are not operating, holding grounds are badly maintained or reserved for other uses, and quarantines facilities are nonexistent or in disrepair. Yet traders are required to pay local government and port taxes, veterinary inspection fees, and customs duties with little or nothing in the way of services in return. The government, at all levels, seems to perceive the livestock trade as a source of badly needed revenue, which is understandable given the trade's impressive contribution to the Somali economy and foreign exchange earnings.

In the second half of 1981 the Ministry of Finance unilaterally decided to impose a 25% ad valorem tax on livestock acquisition prices paid by exporters in assembly markets. This measure provoked vehement protests by the livestock exporters, who elected not to ship any livestock during a twenty day period in the middle of the peak export season rather than to pay the ad valorem customs duty. The Somali government, fearful of losing valuable foreign exchange earnings, sent an interministerial delegation to Berbera to negotiate with the Livestock Traders' Committee. After a good deal of haggling, the exporters compelled the government to reduce the base prices used in calculating the tax from real acquisition prices

in assembly markets to agreed upon minimum export prices. Although the proportion (25%) of the ad valorem tax remained the same, the base upon which the tax is calculated was cut to approximately 40% of the actual assembly market prices. Even after this concession, the exporters continue to complain about the magnitude of the tax, arguing that the government should not penalize its most productive sector and most important source of foreign exchange.

There is a growing awareness on the part of many officials at the ministerial level that present levels of taxation of the livestock trade need to be reduced. In fact, an interministerial commission was formed in March 1982 with representatives from all the ministeries and agencies that derive revenue from or are concerned with the livestock trade (the Ministries of Commerce, Finance, Local Government, Livestock, Forestry and Range, the National Range Agency, the Somali-Hellenic Shipping Agency, the Somali Ports Authority, the Ministry of Marine Transport). This commission was established to assess critically government taxation of the livestock trade, with the intention of reducing taxes where the services rendered by each taxing agency are not commensurate with the level of taxation. In May 1982, the Commission proposed reducing taxes from 5 to 7% on exported livestock by cutting the charges, duties and fees collected by a number of ministries. In order to make more than token concessions, however, it will be necessary to reduce the customs duty on exported livestock.

2. Banking and Financial Procedures Affecting Livestock Exports

Letters of Credit specifying the number and value of livestock to be exported are opened jointly by importer and exporter through the Commercial Bank of Somalia. The prices used in determining the value of the shipment are cost and freight (landed) prices at Jeddah, which use the minimum

export prices established by the government. These prices are considerably below actual prices prevailing in assembly markets, which are 600-900 So.Sh. per small ruminant, 3000-4000 So.Sh. per bull or steer, and 5000-8000 So.Sh. per camel.

The Commercial Bank of Somalia grants certain established exporters the privilege of overdrafting funds for purchasing livestock. The amount of money advanced in this way is determined by assessing the value of exporters' fixed assets (buildings and property). Vehicles, which are the most common investment for exporters, are not accepted as collateral. The exporters complain that the funds advanced by the Commercial Bank cover no more than 20-30% of their cash needs for acquiring livestock. Exporters without fixed assets do not receive any overdraft privileges.

Virtually all exports complain of increasing indebtedness and their inability to make cash purchases, which they feel has put them "at the mercy" of livestock suppliers. The Somali Commercial Bank does not make funds available to most exporters for assembly of trade herds when they are most needed, which is when the letter of credit is first opened. The Commercial Bank will extend credit for payment of freight, customs duties, certificates of veterinary inspection, loading charges, local government taxes, and various municipal taxes and fees at the port of embarkation only after the exporter has obtained all of his livestock for export and presented the necessary official documents to the Bank, which is when the livestock are on the point of being shipped.[1] The payment of various taxes and fees is made directly by the Commercial Bank to the concerned agencies and authorities.

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[1]The documents that must be presented to the Commercial Bank at the time of shipment include the bill of lading, invoice for the livestock, veterinary certificate, and freight certificate.

The effect of advancing so little money for acquisition of livestock to the exporters, although financially prudent from the Commercial Bank's standpoint, has contributed to the inflation in livestock prices by compelling the exporters to buy 70-80% of their livestock on credit. Livestock collectors and producers are generally willing to sell on credit, but they ask exporters to pay premium prices, which are significantly higher than prices paid in cash.[1] This difference represents an implicit interest rate which is higher than the interest paid on funds advanced by the Commercial Bank (10% per annum). The formal interest paid on bank loans is far below the opportunity cost of capital, given current rates of inflation, and hence capital received by the Bank for livestock acquisition is subsidized. In contrast, the implicit interest rate paid when animals are purchased on credit is probably at or above the opportunity cost of capital. Livestock exporters report that they currently pay 800 So.Sh. per sheep or goat bought on credit in the northern regions and 700 So.Sh. for small ruminants acquired with cash. Collectors and producers are paid only after the (Saudi) importer receives the shipment and transfers hard currency to the exporter's account in the Commercial Bank. Final payment may take from one to seven months from the time of acquisition, depending on the size of the shipment and the area over which the exporter assembles, the seasonal movement of pastoral producers away from towns and livestock markets with the rains, and the promptness with which the importer pays for the shipment. Three to four month credit is typical.

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[1] Unlike the livestock trade in West Africa, where producers are usually unwilling to accept deferred payment, the livestock trade in Somalia is financed in large part by producers.

If collectors and producers wait an average of four months for payment, the above price differential (100 So.Sh. per sheep or goat) represents an annual interest rate of 43%. Clearly, livestock producers and assemblers are aware of the time value of money, and it is quite possible that their inflationary expectations have contributed to the rapid rise in the price of livestock and consumer goods in recent years. This is not to argue that pastoral producers caused the runaway inflation in Somalia. The fundamental causes of this inflation were rapid urbanization and increased demand for consumer goods, the expansion of the franca valuta system as a means of satisfying this demand, and the ability of the Saudis to pay high prices for Somali livestock since the mid-1970s. At the very least, the increasing dependence of the livestock exporters on producer and assembler credit since the mid 1970s is both a consequence of inflation and a contributing factor to its recent acceleration.

Although foreign exchange and capital for making loans are in short supply in Somalia these days, advancing more funds to exporters for livestock acquisition would dampen the rise in livestock prices. Exporters would be able to buy more animals with cash, paying producers and collectors lower prices than in the case of sale on credit. One means of improving exporters' liquidity would be for the Commercial Bank to accept vehicles as guarantees against bank loans.

3. The Shortages of Data and Policy Relevant Information on the Somali Livestock Sector

The World Bank Mission of Somalia in 1975 deplored the paucity of statistics and inadequacy of data that is collected by various agencies in Somalia.[1] Little has changed since 1975 and data regarding the livestock

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[1] World Bank, Somalia: Recent Economic Developments and Current Prospects, Annex II, "The Statistical System of Somalia," August 1975.

sector remains inadequate for many policy-making purposes. Information concerning the livestock sector is collected by a number of different agencies, including the MLFR, the Ministry of Planning, the Ministry of Industry, the Somali Leather Agency, the Central Bank of Somalia, and various Municipal authorities. FAO Advisors working in coordination with the Ministry of Planning and the Ministries of Agriculture and Livestock, Forestry and Range have made commendable advances in collecting, organizing and making available data on the livestock sector. They are also training Somali counterparts in data analysis, sector planning and project evaluation.

Most of the data on the livestock sector are generally available only at a high level of aggregation, making it necessary to generate separate sets of estimates for individual regions. The data are also rife with discrepancies and anomalies, most of which cannot be traced or accounted for, which raises serious doubts about the accuracy and reliability of official estimates. These characteristics of the Somali data base compound the difficulty of planning at both the national and regional levels. The highly aggregated data that are available may be satisfactory for some macro planning purposes, but they obscure regional and seasonal variation. Projects concentrated in particular regions are planned with little information other than data obtained and guesstimates made by appraisal missions. A good deal of this information not only risks being unrepresentative in a statistical sense, but it is usually collected once and may only be true the season during which the data were collected.

Somali agricultural and livestock production vary widely from year to year, reflecting the amount, timing, spacing, and geographic distribution of rainfall. This effects livestock mortality, reproduction, slaughter

and sale, as well as the movement and distribution of livestock. Consequently, climatic variability has important implications in livestock marketing and exports. In addition, seasonal variation in the geographic distribution and condition of livestock and in the environmental forces influencing the behavior of pastoralists, butchers and traders greatly affects livestock slaughter and export. Interannual and interseasonal variation interact in complex and subtle ways to determine flows of slaughter and trade stock. While the macroeconomic information on livestock marketing and trade that is available provides a general understanding of flows and trends, it needs to be supplemented by longitudinal data disaggregated by region and by month. Slaughter, sale, movement, price and export data are required in order to gain a more detailed and accurate understanding of livestock marketing in Somalia. Moreover, up-to-date information on the volume and prices of livestock and meat imports in Saudi Arabia and other important (or potentially important) markets is required for intelligent forecasting, planning and policy-making.

4. Inadequate Marketing Intelligence

The Ministry of Commerce has commercial officers in the Somali embassies and consultates at Jeddah, San'a' (North Yemen), Qatar, Rome, Bonn, Peking and Brussels. These officers are charged with reporting economic developments in the countries where they are stationed, particularly as these affect Somali imports and exports. Information about import and export restrictions, market conditions, current commodity prices, and composition of the country's imports (by supplying country and commodity--particularly those commodities exported by Somalia), and any other commercial developments, such as trade fairs, international conferences and the like, are, in principle, sent to the Ministry of

Commerce on a monthly basis. In practice, monthly reports are not always filed. According to the Ministry of Commerce, the commercial councillor at Jeddah had not filed a report for several months (as of mid-May 1982).

Although Somalia does have a marketing intelligence network of sorts, this network is not sufficient for promoting livestock exports and gathering detailed information on trends, prices and market conditions. As part of the embassy or consular staff, the commercial officer is saddled with a wide range of responsibilities and is probably unable to devote much time to a detailed analysis of market prospects for livestock and other export commodities. In the highly competitive international trade in live animals and livestock products, the paucity and irregularity of up-to-date market intelligence is a grave shortcoming for Somalia, a country which can ill-afford to lose any more of its share of the Saudi market to lower cost and aggressive suppliers such as Australia and New Zealand. For all practical purposes, Somalia lost its former markets in Kuwait, Oman Qatar, Bahrain and Egypt during the 1970s. Although these countries were never major importers of Somali animals, they did provide alternative outlets for Somali exports, reducing Somalia's dependence on the principal market, Saudi Arabia. Moreover, even though livestock exports have increased greatly to the United Arab Emirates since the early 1970s, exports might have expanded even more had Somalia been able to respond more effectively to the profitable opportunities. Somalia has been able to increase exports to North Yemen, given the proximity of Berbera to San'a'.

In the scramble to supply livestock and meat to the Gulf States that followed the boom in oil revenues, better organized and informed suppliers such as Australia, New Zealand, South America, India and the

U.S. and certain EC exporters were able to capture larger shares of the burgeoning Gulf State markets than Somalia. Somalia was largely unable to tap this new market potential for several reasons. First, Somali exporters were hampered by irregular and uncertain shipping, which prevented them from being able to deliver shipments of specified numbers of live animals and quality at the specified time. When Somali exporters were able to procure ships, they proved to be the high cost supplier. Finally, poor marketing intelligence probably had something to do with the demise of Somali livestock exports to the Gulf States. There is only one Somali commercial officer stationed in the Gulf (at Qatar), representing Somalia's interests in the entire region.

5. Organization of Livestock Exportation

Before the creation of the Livestock Traders' Committee and the Somali-Hellenic Shipping Agency in 1979 export of livestock from Northern Somalia was uncoordinated and disorganized. Exporters competed for the limited available shipping, as the granting of special privileges to certain exporters were alleged to abound. A common response to the availability of shipping was to rush trade stock down the escarpment to Berbera from the export staging areas near Burao and Hargeisa. Exporters were also forced to hold livestock at Berbera for periods well in excess of the obligatory two to three days when delays in shipping occurred.

Since 1979 the coordination of livestock shipping has improved greatly, and the order of individual shipments is now determined by the date on which letters of credit are opened. Livestock are shipped on proper livestock carriers. Despite these improvements, Saudi importers still complain about the fragmentation and disorganization of the export trade in Somalia. Saudi importers report that they do not do business

regularly with any particular Somali exporters. They therefore take the risk of not being able to deliver livestock to institutions and wholesalers in Saudi Arabia when they open letters of credit with Somali exporters. In contrast, a handful of Australian export firms that supply sheep to Saudi shippers are able to deliver specified quantities and qualities of sheep to Australian ports of embarkation at the desired time.

6. Organization of the Veterinary Service

The Ministry of Livestock, Forestry and Range is highly centralized in providing veterinary care, as are livestock ministries in most countries of Africa. Vaccinations are administered by the Veterinary Service, as vaccines are distributed from Mogadishu to the regional centers and on to the district posts. Although it is difficult to envision successful vaccination campaigns implemented in the absence of such a structure, ecto- and endo-parasite infestation may be more effectively controlled through greater decentralization and an extension program using trained nomadic producers as extension agents and livestock producers themselves. The organization, training, management and advantages of an extension network utilizing nomadic stockmen have been discussed in detail elsewhere and will not be repeated here.[1]

Simultaneously or alternatively, the MLFR could involve the private sector, particularly livestock traders, in the sale and distribution of veterinary drugs. Traders and their agents are in contact with producers frequently and during the rainy season, when inadequate transport limits the mobility of the Veterinary Service. In addition to distributing drugs,

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[1]Pamela Procella, "Analysis of Animal Health Projects in Somalia," USAID/Mogadishu, September 1981. Brendan Halpin, "Vets: Barefoot and Otherwise," Pastoral Network Paper No. 11C, Overseas Development Institute, January 1981.

livestock traders could assist the Veterinary Service in monitoring animal health in remote areas and in areas where trade stock on the move come in contact with pastoral herds. This assistance could help the Veterinary Service to minimize the transmission of disease by trade animals, particularly those that pass through the Ogaden and Haud regions of Ethiopia, where animal health care is allegedly poor to nonexistent.

7. Training of Veterinarians and Veterinary Assistants

The National University School of Veterinary Medicine has offered four-year degree programs in Veterinary Science and Animal Husbandry since 1974. Since Italy provides lecturers for upper division courses, students are required to learn Italian during a six-month period before beginning the degree program. About 25 veterinarians are graduated from the program each year, but they receive little practical training before their first field assignments.

Two-year paraprofessional training in animal health, laboratory technology, meat inspection, animal production, and range management has been offered to over 700 students at the Institute of Animal Science, founded in 1967 with UNDP/FAO assistance. The Institute also offers short courses of four months to a year for junior laboratory technicians, junior range management assistants, junior hides and skins assistants, poultry specialists and in-service officers. In the mid-1970s entrance requirements were lowered and it became increasingly difficulty to graduate satisfactorily trained individuals after two years of training. This led to the decision to extend the program from two to three years.

Once animal health assistants are trained, they are placed in field positions at the district and village levels. They are inexperienced and often lack the means (transportation, drugs, storage facilities, equipment

and communication capability) by which to perform their jobs effectively and gain the necessary experience. No allowance is granted to the field staff, nor is adequate supervision or encouragement provided. The field staff generally lacks training in extension and the resources with which any extension activities could be carried out.

D. Demand Factors

1. Trends in Urban Slaughter and Meat Consumption

Recorded municipal slaughter of cattle fluctuated greatly during the 1970s in response to variable rainfall and range conditions, as shown in Table 14, but overall slaughter was at roughly the same level in 1980-81 as a decade earlier. Municipal camel slaughter also fluctuated widely during the 1970s but appears to be trending upward in the 1980s. In contrast, municipal slaughter of sheep and goats declined 33% from 1970-71 to 1980-81.

Converting the recorded municipal slaughter figures to carcass weight equivalents reveals that the urban meat supply increased modestly (17%) from 21,611 metric tons in 1970 to 25,432 tons in 1981.[1] At the same time the urban population increased greatly, probably doubling in the course of a decade. Consequently, urban meat consumption declined during the 1970s.[2]

The official slaughter statistics, although of questionable reliability, accord with most people's observations that urban meat consumption has been falling. Most individuals attribute this decline to rapidly rising meat prices, which is due largely to the strong demand for livestock exports.

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[1]The carcass weights used in the conversion are 125 kg. for cattle, 200 kg. for camels, and 12 kg. for sheep and goats. Slaughter stock generally have lower carcass weights than export stock.

[2]After adjusting the 1981 slaughter figures for unrecorded slaughter, we calculate that urban meat consumption (excluding offals) was 20.7 kg. per capita in 1981. The municipal slaughter figures are adjusted upward as follows: cattle, 10%; camels, 5%; sheep and goats, 33%. Urban population in 1981 is estimated as 1.366 million or 25% of the projected Somali population of 5.464 million. This population estimate is calculated using the 1980 Somali government estimate of 1980 (5.3 million) as a base and an assumed population growth rate of 3.1%. In calculating urban meat consumption for 1970, we make the same adjustments for unrecorded municipal slaughter and estimate the Somali population, assuming a population growth rate of 3.1% per annum during the 1970s. This yields an estimated total population of 3,788,180 for 1970, of which we assume that 20% or 757,636 was urban. Urban consumption of red meat can then be estimated as 17.3 kg. per capita.

TABLE 14

RECORDED URBAN SLAUGHTER IN SOMALIA, 1970-1981

Year	Cattle		Camels		Sheep and Goats	
	Mogadishu	Municipal	Mogadishu	Municipal	Mogadishu	Municipal
1970	75,283	81,594	13,172	31,194	103,344	435,231
1971	101,174	105,317	15,116	31,491	174,445	438,259
1972	80,424	103,880	16,036	43,618	113,906	347,519
1973	50,372	63,634	11,629	30,119	101,614	259,316
1974	59,036	105,330	15,488	37,968	173,722	499,197
1975	58,742	76,208	20,828	56,509	120,517	454,265
1976	32,817	88,170	13,344	38,987	52,131	221,674
1977	30,897	88,170	11,846	75,978	57,443	185,483
1978	37,567	66,454	10,166	26,351	68,683	237,838
1979	42,321	88,170	13,559	38,987	82,071	221,674
1980	55,178	95,452	20,644	51,962	101,236	303,063
1981	63,390	91,451	19,657	53,238	71,545	279,401

Sources: Statistical Abstracts, Ministry of National Planning, Central Statistical Department and Ministry of Livestock, Forestry and Range.

In urban areas meat prices have increased as rapidly as or more rapidly than the prices of other consumer goods. As shown in Tables 7 and 8 most meat prices have kept pace with the rise in the consumer price index in Mogadishu since 1966. It is reported that beef, which cost 2.5 So. Sh. per kilogram in 1968, now costs 40-50 So. Sh. per kilogram in Mogadishu. In recent years the inflation in meat prices has also been rapid in towns other than the capital. In Baidoa the price of beef rose from 10 So. Sh. per kilogram in 1979 to 25 So. Sh. per kilogram in 1982, an increase of roughly 25% per annum. The price of one kilogram of goat meat rose from 25 So. Sh. in 1979 to 45-50 So. Sh. in 1982 in Burao. The increase in the price of mutton at Burao was even greater; a kilogram of mutton which cost 35 So. Sh. in 1979 sold for 80-100 So. Sh. in April 1982. These urban price increases for all types of meat were paralleled by rural price increases. One veterinarian reported that a meal of meat and rice costing 10 So. Sh. in the bush of Northern Somalia in 1979 cost 35 So. Sh. by April 1982.

Many urban consumers would be willing to buy more meat if prices were not so high. They bemoan the steady decline in their own meat consumption, which they claim is due to the relative increase in the price of meat over the last 10-15 years. While demand for red meat has not decreased during the last decade in Somalia, the supply of animals for urban slaughter has generally failed to keep pace with the growth in urban population. The droughts of 1973-75 and 1979-80 led to temporary increases in the supply of animals for urban slaughter (in 1974, 1975, 1980), as greater numbers of immature and weakened mature stock were culled for slaughter. Since 1970 the higher quality animals, as well as considerable number of substandard and immature stock, have been exported to the Arabian Peninsula, where demand is booming.

Although this report focusses on the export potential for Somali livestock, there is clearly potential for increasing internal meat consumption. Therefore, it is likely that at least some part of the incremental increase in offtake resulting from an animal health project would enter domestic urban market channels. Increasing the availability of livestock for commercial sale would probably dampen the urban meat prices, thereby enabling Somali consumers, who highly value red meat, to purchase more meat. Rural consumers could also benefit from the increased offtake.[1]

2. Potential for Expanding Exports to the Arabian Peninsula

Since the early 1970s Somalia has lost its share of the market in Kuwait, Qatar, Bahrain, Egypt and the People's Democratic Republic of Yemen. The principal remaining markets are Saudi Arabia, the Yemen Arab Republic (North Yemen), and the United Arab Emirates. Projections of the demand for red meat in Saudi Arabia over the course of the next decade show that red meat consumption will double from 1980 to 1990. Per capita consumption will expand from 25.0 kilograms in 1980 to 29.2 kilograms in 1985 and 32.9 kilograms in 1990.[2] Local production in Saudi Arabia will probably meet only a fraction of the anticipated increase in red meat consumption during the next decade. The remaining red meat will be imported.

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[1]Rural red meat consumption can also be estimated by taking the adjusted total slaughter figures for Somalia, which are shown in the calculation of offtake for 1981 (see Table 13), and netting out municipal slaughter. Using this method we estimate rural consumption of red meat in 1981 was 17.3 kg. per capita.

[2]The Red Meat Study carried out by the Jeddah Chamber of Commerce forecasts that per capita red meat consumption will increase from 29.6 kilograms in 1982 to 35.0 kilograms in 1985.

Australia's share of the Saudi market has increased dramatically since the mid 1970s, as Australia exported 1.8-2.0 million sheep to the Kingdom in 1981. The Australians have entered the Middle Eastern market in a highly organized and well coordinated fashion, meeting importers' time, quantity, quality and locational specifications. Sophisticated marketing intelligence and promotional activities and cost economies achieved through large-scale shipping of live animals on specially designed and ventilated livestock carriers (capable of carrying over 100,000 sheep equivalents) have given the Australians a competitive edge in the Middle Eastern markets.[1] Moreover, Australia is able to supply the Saudi market at far lower cost than traditional East African sources. Wholesale prices for Australian sheep in Jeddah are half the price of Somali and Sudanese sheep when compared on a carcass weight basis.

Yet many consumers living in Saudi Arabia prefer the leaner meat of Middle Eastern and East African stock to the fattier meat of Merino sheep.[2] The higher prices for East African lamb and mutton reflect a willingness and ability on the part of large numbers of consumers to pay for the leaner African stock. Moreover, the demand for non-castrated Somali and Sudanese sheep and goats is strong prior to Ramadan and the hadj and will continue to rise as the number of pilgrims increases in the coming decade. In the final

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[1] In addition, Saudi importers have become increasingly irritated with Somali suppliers. Failure to fulfill letters of credit, shipment of sub-standard animals, prolonged haggling over the landed price of livestock, and irregularity of supply are inducing the major importers to rely more heavily on dependable suppliers, most notably Australia.

[2] Consumers in the Middle East prefer local stock to imported animals but livestock from the Horn and East Africa, particularly the fat-tailed sheep, command premium prices. Australian animals, particularly the Merino sheep, are considered inferior, since carcasses contain 3.5-7 kilograms of body fat.

analysis, the demand for small ruminants from Somalia should continue to expand in Saudi Arabia during the 1980s. However, livestock production, the livestock marketing and animal health infrastructure, and institutional organization and procedures may continue to constrain expansion in Somali exports.

The demand for beef will also increase greatly in Saudi Arabia during the 1980s, as per capita consumption increases from 7.3 to 9.6 kilograms. Somalia has exported increasing numbers of cattle since 1978 in response to rising demand for beef in Saudi Arabia. Although the potential for increasing offtake in Somalia is probably limited, there is potential for expanding cattle exports from Ethiopia and Sudan.

Demand for camels will increase in the 1980s but not nearly to the extent that demand for small ruminants and cattle increases. The income elasticity of demand for camel meat is lower than for other red meats, and Saudi consumers prefer to slaughter younger camels rather than the mature camels exported from Somalia. Moreover, the inability of Somalia during the past three years (1979-81) to export half as many camels as during the 1975-77 period has perhaps encouraged a shift in Saudi consumption habits.

V. Policy Recommendations

A. Recommended Interventions in Animal Health

1. Upgrading Animal Health Services in Somalia

a) improving the capability of the MLFR to carry out vaccination campaigns

Providing additional transport and "cold chain" facilities would improve both the distribution of vaccines and the mobility of the veterinary field staff, enabling the MLFR to undertake prophylactic vaccination campaigns in addition to responding to sporadic disease outbreaks. Moreover, trade stock could be systematically vaccinated against the principal contagious diseases in accordance with international animal health regulations governing the trade in livestock. By carrying out vaccinations campaigns on a regular basis, livestock mortality could be reduced and more animals would be available for offtake. Moreover, the risk of high losses from epidemic outbreaks would be reduced, particularly in periods of drought or when livestock are under stress.

b) improving the diagnostic capability of the MLFR

By improving the mobility of the veterinary field staff and its ability to transport blood, tissue and excretory samples to laboratories for analysis, the diagnostic capability of the Veterinary Service would be markedly improved. This would result in greater utilization of the veterinary laboratories at Mogadishu and Kismayo, which by all reports have been vastly underutilized to date. Disease surveys, which are badly needed to guide the thrust of initial veterinary interventions, could be undertaken throughout Somalia. Rehabilitation of the veterinary laboratory at Hargeisa, which was well-equipped and effectively operating during the tenure of the ODA-funded British veterinary team (1971-73), could facilitate rapid and timely diagnosis of animal disease and the

carrying out of disease surveys in Northern Somalia. In addition, the establishment of regional diagnostic centers in regions that are far from the principal laboratories would greatly improve the diagnostic capability of the MLFR.[1] By developing greater capability to diagnose diseases on a regional basis, the overall cost of vaccination campaigns could be lowered significantly. Costly prophylaxsis of diseases that do not exist in particular regions could be avoided. Prophylactic campaigns against specific diseases could be tailored to regions where these diseases are endemic.

c) improving the treatment of parasitic diseases

Most livestock owners and veterinary officials state that tick-borne diseases are the most serious animal health problem in Somalia. In addition, ticks cause damage to hides and skins, which lowers potential earnings for producers who sell hides and skins and for HASA, which exports hides and skins, principally to Italy.[2] By dipping and spraying greater numbers of livestock and improving distribution of acaricides, economic losses resulting from poor growth, reproductive and milk-producing performance and from damage to hides and skins could be minimized.

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[1]The establishment of six regional diagnostic centers was proposed during the 1974-78 and 1979-81 Development Plans but under-funded. The construction of four diagnostic centers at a cost of seven million So.Sh. has been proposed in the 1982-86 Development Plan. The centers would be located in the Lower Shabelli, Bakool, Gedo and Lower Juba regions. The Development Plan assumes that diagnostic centers will be constructed and equipped in the central and northern rangelands under the veterinary components of the Central and Northern Rangelands Development Projects.

[2]See Annex 2 for a discussion of hides and skins exports.

While expansion of the network of parasite treatment centers was proposed under the 1974-78 and 1979-81 Development Plans, funding was insufficient. Consequently, hand-dressing became widely practiced in the second half of the 1970s. In recognition of the often partial effectiveness of this method in combatting ticks and its potentially negative impact on human health, the MLFR has proposed the acquisition of 20 spray races, 50 portable dips for small stock and 400 mobile sprayers for large stock. This would be supplemented by investment in transport and construction at a total cost of 9.3 million So.Sh. over the first three years of the present development plan (1982-86).

2. Monitoring of the Movement of Livestock

Improving the monitoring of trade stock moving on the hoof and by truck from the hinterland to the ports is necessary in order to reduce the transmission of contagious and tick-borne diseases. In Southern Somalia veterinary services need to be improved along stock routes over which large numbers of cattle and camels are trekked. These services should be provided at the watering points which are being rehabilitated.

Although veterinary inspection stations already exist at some of the watering points constructed by the EC and the LDA, such facilities need to be better equipped and staffed to control the movement and monitor the

health of trade stock. Open holding areas with adequate watering facilities need to be provided, where trade animals can be inspected for signs of disease. Diseased stock should be held back for treatment and rest. Livestock traders already separate unhealthy and weak stock from healthy animals, holding them back for rehabilitation and later shipment and sometimes treating them with drugs procured on the black market. The Veterinary Service should provide these services, especially since it already charges traders for veterinary inspection.

In Northern Somalia the movement of trade stock from Ethiopia to Berbera and the seasonal transhumance of pastoralists' herds in and out of the (Ethiopian) Haud require better monitoring near the border. Since veterinary services are not provided to Somali pastoralists' herding or moving livestock through Ethiopia, it is extremely important to upgrade inspection, livestock treatment facilities, and anti-parasite treatment for livestock entering (or re-entering) Somalia.

One means of monitoring the movement and health of trade animals, the volume of trade flows, and disease outbreaks along stock routes is to issue livestock movement permits for all trade animals. Cattle movement permits issued by veterinary officials in West African countries such as Cameroon have proved to be a reasonably effective means of monitoring the health of trade cattle which are trekked across international borders (Chad-Cameroon-Nigeria). Although trade livestock is generally in good health, periodic inspection and necessary treatment of trade animals is a low-cost method of reducing the risk of their introducing parasites and diseases from regions of origin or passage to other regions of passage or final destination.

3. Establishment of Intensive Veterinary Care Zones

The establishment of an intensive veterinary care zone in the export triangle of Northern Somalia was first proposed by the World Bank Livestock Marketing Project Identification Mission in 1978.[1] The livestock population of the export triangle is high and moves into the Haud (part of which is in Ethiopia) during the rainy seasons. Moreover, large numbers of trade stock are staged for export within the triangle and then pass to Berbera for shipment to the Arabian Peninsula. During certain periods of the year, particularly before the hadj, there are large agglomerations of livestock in the triangle which have a high economic value. Any outbreak of disease would have severe economic consequences, resulting in considerable mortality and perhaps temporary closure of important markets. Needless to say, the foregone foreign exchange earnings in such an instance are a consequence that Somalia can ill-afford to suffer at this stage of its economic development.

While no action has been taken to establish an intensive veterinary care zone in Northern Somalia, the "Livestock and Range Sector Study" argued that intensive veterinary care zones are required near all three of the principal ports.[2] Such an intervention would be enthusiastically supported by the Saudis and FAO Animal Health officials, who have expressed increasing concern over the exportation of contagious and tick-borne diseases from East Africa to the Arabian Peninsula. They attribute this

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[1] See Annex 2 prepared by the Identification Mission on "Livestock Marketing Performance."

[2] Ministry of National Planning, "Livestock and Range Sector Study," Mogadishu, March 1981.

international transmission of disease to inadequate vaccination, quarantine and treatment of trade stock in the supplying countries.[1]

The Office International des Epizooties has prepared an International Zoo-Sanitary Code, which specifies in considerable detail the internationally accepted standard operating procedures for ensuring the health of trade stock before and at departure, in transit from exporting to importing country, and on arrival at the importing country.[2] FAO has proposed that disease-free zones be established to facilitate the adoption and observation of the International Zoo-Sanitary Code.[3] Saudi Arabia has not yet restricted imports from livestock exporting countries known to be violating internationally accepted animal health regulations, but it has announced and intends to enforce livestock shipping regulations, penalizing those who ship trade stock on improperly fitted and ventilated livestock carriers. Imports restrictions on livestock and livestock products have sometimes been motivated by political and economic considerations in the past, particularly with regard to foot-and-mouth disease. The enforcement of measures that ensure the health of exported livestock is justifiable, however, as a means of preventing the transmission of disease from

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[1] In addition to Somalia, Sudan has come under increasing criticism to improve quarantine and holding facilities. The Sudanese have attempted to set up a disease-free zone, which has proven to be unsuccessful to date, according to FAO animal health officials.

[2] Office International des Epizooties, International Zoo-Sanitary Code, Amended Edition, 1976. See Annex 6 for a more detailed discussion of these procedures.

[3] FAO, "Establishment and Operation of Specific Disease-Free Zones," from the Manual on Standards of Veterinary Services, Meat Hygiene and Meat Inspection, Post-Mortem Judgement of Slaughter Animals and Establishment of Specific Disease-Free Zones, 1974.

one country to another.

The establishment of disease-free zones in Somalia, although desirable in principle, is probably unattainable in practice. Not only is the movement of livestock unrestricted in the pastoral economy of Somalia, but uncontrolled and unmonitored movement of trade stock and the intermixture of pastoral herds and trade animals with Ethiopian livestock would undermine the creation of disease-free zones. Yet concentrating the limited resources of the MLFR in zones of intensive veterinary care near the ports is a practical alternative to a massive animal health intervention throughout Somalia that might prove to be difficult to implement and coordinate with ongoing veterinary interventions.

It is strongly recommended that the export triangle in Northern Somalia be established as the initial zone of intensive veterinary care. Extending the southeastern and southwestern corners of the triangle to the Ethiopian border would facilitate monitoring of the health of animals crossing the border. This would reduce transmission of diseases to Northern Somalia.

B. Recommended Improvements in the Livestock Marketing Infrastructure

1. Provision of Adequate Holding Grounds in Export Staging Areas

It is essential that the best possible health and condition of trade stock be ensured before the animals arrive at the ports. The facilities at the ports, particularly Berbera, are glaringly inadequate and contribute to the poor condition of some of the livestock exported from Somalia. However, the stress on livestock shipped to the Arabian Peninsula can be greatly reduced if the animals arrive at the ports in good condition, having received adequate feed, water and rest and necessary veterinary inspection and treatment in export staging areas. By detecting illness or weakness in export stock well before they arrive at the ports, sick animals can be isolated before affecting healthy stock.

The two holding grounds in the North and the two holding grounds near Kismayo were closed to the trade stock of private exporters from 1974, when the LDA began to buy cattle for export, until 1979. It was common for the LDA to hold large numbers of immatures at the holding grounds, which proved to be costly in light of unsatisfactory rates of gain. Since the LDA ceased exporting cattle in 1979, the holding grounds have been available, at least in principle, for use by private traders. However, inadequate maintenance of the facilities at the holding grounds and opening of the holding grounds to pastoralists' herds during the 1979-80 drought have limited traders' access to the LDA-managed facilities. The NRA, which has managed the holding grounds since the LDA was abolished in 1981, has proposed that the facilities be renovated and opened to private traders, who would pay for the right to graze, water and rest their livestock.

a) improvement of existing holding grounds

Development of the holding grounds at Jilib, Arooi and Qoolcaday has been proposed in the 1982-86 Development Plan at a total investment cost of 10.13 million So. Sh. Development expenditures would be 4.055 million So. Sh. for Jilib and 6.075 for the Northern holding grounds. It is hoped that roughly half of the funds would be provided by foreign donors. Improvement of the three holding grounds was included in the 1979-81 Development Plan but not financed.

Renovation of the Northern holding grounds necessitates improvement of the water supply through drilling of boreholes and provision of watering troughs. Additional fencing of the holding grounds is also required for controlling livestock movement and grazing. Development of the holding ground at Jilib should include provision of additional water supplies, stock-handling facilities and staff housing, as well as bush-clearing and control trials to determine whether it is feasible to increase carrying capacity.

b) development of new holding grounds

The rapid expansion in livestock exports from the port of Mogadishu since 1979 has made it essential to invest in a holding ground near the capital. The Somali government has identified a site for a 20,000 hectare holding ground at Warmahun, which is 46 kilometers west of Mogadishu near the Shabelli River. Development of the proposed facility at Warmahun was not financed during the 1979-81 Development Plan, so it will be funded during the 1982-86 Development Plan. The estimated cost of establishing a holding ground and marketing center, at which sorting of stock for export

and for slaughter at Mogadishu would take place, is 9.950 million So. Sh., 6 million of which would be provided by foreign donors.

Before funds are committed to developing the holding ground at Warmahun, it would be sensible to determine the extent to which the 20,000 hectares along the Shabelli River provide dry-season grazing for pastoral herds. NRA officials claim that the proposed site has few alternative uses, but it may be that the grazing area, although seemingly insignificant, may permit nomadic producers to keep large herds which can be grazed over a much larger area following the rains. Prior to investment in holding grounds in the export triangle and near Kismayo, land use issues did not receive adequate attention. Enclosure of 35,000 hectares in the North and 40,000 hectares in the South led to conflict between pastoral producers and guards at the holding grounds. Nomads have broken down fences to permit grazing by that livestock during Jilaal and especially during the 1979-80 drought. The fact that armed guards have proved to be necessary along the perimeter of the holding grounds suggests that the high-quality enclosed rangeland, although limited in area relative to the surrounding lands, may provide dry-season grazing for some livestock. Nevertheless, the establishment of holding grounds is probably justified on economic grounds, as the avoidance of weight losses and mortality in trade stock may more than offset the economic value of maintaining limited numbers of livestock on the same rangeland, particularly during the dry season.

2. Improving Livestock Holding and Loading Facilities at the Principal Ports

a) Berbera

1) Renovation of the Quarantine and Holding Facilities

The livestock quarantine facilities are in need of complete and immediate rehabilitation or replacement, as they have constituted a health

hazard for trade stock for years. By providing sufficient water and shade for trade stock under observation for the obligatory two days, the stress on livestock held at the port prior to shipment could be reduced. Live weight losses, particularly those incurred during the hot season, would be minimized. The marshalling yard also requires renovation and expansion, since trade stock receive inadequate water and shade while being marshalled for loading. Since most of the marshalling and all of the loading takes place at night, expansion and improvement of watering facilities should take precedence. Although the municipal government of Berbera has committed itself to providing additional watering troughs near the quarantine station and at the marshalling yards, there was no evidence that this construction was underway during the consultant's visit (late April 1982).

According to preliminary NRA estimates, it cost 7.0 million So. Sh. to renovate the existing facilities at the port of Berbera. This sum can be broken down as follows:

A.	Quarantine Station	3,900,000
1.	10 hangars (shade structures)	2,000,000
2.	Repair of existing hangars	500,000
3.	Partitioning of quarantine area and repair of surrounding wall	500,000
4.	Overhaul and extension of water reticulation system	500,000
5.	Extension of Berbera electrical system to quarantine station	300,000
6.	Purchase of veterinary drugs & medicines	100,000
B.	Marshalling Yard	3,100,000
1.	Repair and extension of present facility	1,500,000
2.	6 hangars	1,200,000
3.	Repair of causeway (between marshalling yard and quay-side loading area)	400,000

Yet before investing large sums in rehabilitation of the existing facilities at the port, careful consideration should be given to relocating and replacing

the quarantine facility. One trader has obtained permission from the Berbera municipal authorities to fence off a quarantine and holding area about five kilometers south of the port, to which he intends to truck cut forage and pipe-in water. In May 1982 an NRA engineer was sent to inspect the quarantine station at Berbera and identify alternative sites not located in the flood plain, where the current facility is located. He was asked to submit more detailed cost estimates for constructing a new quarantine station. Choosing a suitable site near the port for a new quarantine station will pose a problem, since the government has fenced off well-situated and elevated areas for petrol storage and a military encampment at the port.

2) increasing production and improving storage of fodder

One means of expanding the feed supply for animals held at the port and shipped to Jeddah would be to capture rain water that flows down the escarpment to the coastal low lands and into the Gulf of Aden. This water could be used for irrigated fodder production at the foot of the escarpment. Current prices for grasses trucked from the high plateau are highly attractive and might justify investment in reservoirs that will hold water for irrigated fodder production.

Storage of cut forage at the port could be improved through ensilage. Silos could be constructed near the port using locally available materials or storage pits could be dug out of the sandy soil and reinforced with logs and lined with plastic. These sorts of innovations should be undertaken by the traders themselves and not by the government, however.

Presently the traders have little incentive to improve storage of forage at the port, since Saudi importers do not always penalize Somali exporters for shipping animals in less than optimum condition. As the Saudis become less willing to accept imports of substandard livestock, Somali exporters

will realize that it is in their best interest to maintain the quality of exported stock through proper feeding, watering and rest. It is unlikely that traders who presently use their own trucks to transport forage which they produce on enclosed sections of the rangeland would find investment in improved storage at the port economically feasible. Traders who do not own trucks nor harvest forage from enclosed plots have stronger incentives to improve storage at the port, since they must pay premium prices for forage during the peak season, when livestock exports and the demand for feed is greatest.

3) improving the water supply at livestock holding facilities

Livestock exporters presently pay 0.20 So. Sh. per sheep equivalent to the Berbera municipality for water provided to livestock held at the port prior to shipment. The municipal government will hopefully complete planned investments that would improve the water supply, such as construction of additional watering troughs, or increase the water supply through construction of another gravity-propelled pipeline that brings water from reservoirs at the foot of the escarpment to the quarantine station. The Livestock Traders' Committee, the port veterinarian, and the exporters feel that the municipal government should fund any improvements in the water supply. In addition to paying for water, exporters also pay a municipal tax of 0.85 So. Sh. per sheep equivalent, which they perceive as a revenue-raising tax rather than a legitimate charge for services rendered. A detailed analysis of the investment and operating costs of improving the water supply and of the extent to which present levies on the exporters cover municipal costs in providing water is required before intelligent decisions regarding levels of taxation can be made. Nevertheless, there is little doubt that the water supply at Berbera needs to be improved.

4) improving loading of livestock

Investment in moveable quayside pens and chutes could save a lot of time and effort and is recommended for speeding up loading during the peak period. Such an investment might allow an additional ship to be loaded per night and would reduce the number of attendants required to load vessels. Presently the port of Berbera can accommodate only two livestock carriers at one time. Livestock carriers do have priority in loading over vessels carrying other goods, which helps to reduce delays in loading. During the hadj period loading constrains livestock exports, however. Investment in an additional berth would help to alleviate the loading bottleneck. The Somalis have been courting Arab organizations such as the Arab Organization for Agricultural Development, the Islamic Bank and the Arab Chamber of Commerce in recent years, and efforts to induce Arab investment in expanding the port of Berbera should be encouraged. An alternative to constructing a new wharf would be to install a livestock loading jetty using floating pontoons. This approach is presented and analyzed in the Livestock Sector Review and Project Identification carried out by Hunting Technical Services et al.[1]

b) Mogadishu and Kismayo

Although the volume of livestock (expressed in sheep equivalents) exported from Mogadishu and Kismayo does not begin to approach livestock exports from Berbera, livestock exports are increasing from the two ports of Southern Somalia and are concentrated prior to the hadj, putting great stress on the inadequate infrastructure. At a minimum the marshalling yards at the ports require expansion, as livestock should be provided with additional

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[1]Hunting Technical Services Ltd. et al., op. cit., Volume 2, "Project Identification," 1976.

shade and water. A quarantine station should be established near Mogadishu at the proposed holding ground located at Warmahun or between Afgoi and Mogadishu (or in some other suitable site within 50 kilometers of the port).

The borehole near the quarantine station in the Laheley holding ground should be deepened or a new borehole should be drilled. Providing water at the quarantine station is essential if legitimate quarantine of livestock is to take place and trampling and overgrazing of those areas of the holding ground between the quarantine station and the presently operating borehole is to be avoided.

3. Improving Communications Within Somalia and Between Somalia and the Arabian Peninsula

Installing telecommunications facilities at Berbera, Burao and Hargeisa would improve coordination of shipping and facilitate rapid and orderly export of the maximum number of animals from this highly congested port. Rapid and reliable communications between Northern Somalia and Jeddah would give Saudi importers more flexibility in modifying the species composition and volume of livestock shipments as market conditions change in Saudi Arabia. Expanding the capacity and improving the reliability of the telephone connections between Burao and Berbera and between Hargeisa and Berbera and between Mogadishu and all three points is also of prime importance, since telephone service between these points is presently restricted to certain hours and frequently not at all available.

C. Strengthening Institutions to Promote Livestock Exports

1. Establishing a Livestock Sector Analysis Unit

Investment in a livestock information collecting and analyzing unit within the MLFR would improve the capacity of the MLFR and other governmental agencies (NRA, WDA, HASA and various ministries) to plan and select

policies that will help to promote increased livestock production and export expansion. This livestock information unit could also monitor rainfall, range conditions, and livestock reproduction, mortality, slaughter and sales in selected regions. The livestock information center would be staffed with individuals with training in animal production, animal health, livestock marketing, agricultural economics, statistics, rural sociology/anthropology, extension, data processing and international trade. It could assist the various regional development project in collecting and analyzing baseline data and in monitoring and evaluating the effect of ongoing projects and programs. The livestock information unit would be a data processing, storage and retrieval center that would serve an information clearing house for government ministries and agencies, donor organizations, research institutions, private firms and individuals, and other interested parties. The use of one or more microcomputers and programmable calculators would facilitate rapid and timely data processing. Somali officials and students with an interest in livestock production and marketing, economics and statistics would be trained to collect and analyze data useful for livestock sector policy-making. The livestock information unit would not simply serve as a price and export information service. It would also collect and analyze livestock production data and report (or make available) its findings.

Although the livestock information unit would be willing to provide interested exporters, traders and producers (firms or individuals) with livestock sector data, it is not expected that livestock sector participants would show much interest in the activities of the information center, at least initially. Livestock producers, traders and exporters have developed their own networks that disseminate information on livestock movement,

geographic distribution of prices,and the volume and direction of livestock trade flows that is accurate and timely. The importance of lineage affiliations and close ties between town dwellers and related nomadic pastoralists facilitates the rapid flow of information. Pastoral producers are generally well-apprised of livestock prices in major markets and of the activities of principal traders in their region. The primary purpose of establishing a livestock information center would be to aid government, parastatal, joint venture and donor planners in formulating intelligent, coherent and consistent livestock sector policies.

If the information center were adequately funded and staffed with trained individuals, then it could consider carrying out baseline surveys and ongoing surveys either independently or in cooperation with other projects and agencies. The monitoring of the impact of livestock and range development interventions could be a medium to long run goal of such an information unit. In the long run a more active extension role could be played in order to promote livestock marketing and export. The sophistication and organization of the Australians in promoting exports of livestock to the Gulf States should be illustrative to poorly organized and high cost suppliers such as Somalia and Sudan. Australia's vigorous export promotion is based in part on excellent market intelligence.

2. Improving Livestock Marketing Intelligence

Previous missions to Somalia have recommended the creation of a livestock price reporting service in order to inform producers of changing market conditions within Somalia. This consultant found that stock owners were quite well-apprised of livestock prices and the numbers of animals (by species) offered for sale at nearby markets. Word travels quickly in closely-knit

Somali society, where urban dwellers are apt to entrust livestock to kinsmen in the hinterland, with whom they remain in close contact. Therefore, investment in a price reporting service would represent a misallocation of resources at this time.

On the other hand, there is a very real and urgent need for improving marketing intelligence in important and potential export markets. The paucity of analytical capability regarding the economics of livestock production, marketing and exportation in the MLFR and the Ministry of Commerce is disturbing in light of the increasing dependence of the Somali government and economy on foreign exchange earnings from livestock exports. Although training is provided by FAO experts in the MLFR and the Ministry of National Planning and occasional seminars are conducted by organizations such as the International Trade Center, the provision of masters level training in the economics of agricultural marketing and trade for promising Somali nationals would be a worthwhile investment.

3. Formation of a Consultative Group on Livestock Marketing and Export[1]

Livestock exporters have formed traders' associations in Northern and Southern Somalia within the last four years and these associations have been consulted by the MLFR, Ministry of Commerce, and inter-ministerial delegations deliberating policies regarding taxation of livestock exports. Nonetheless, there is need for a permanent consultative group that meets periodically to debate livestock sector development and livestock marketing policy issues. Permanent members of the group would include representatives from exporters' associations, the MLFR, the Commercial Bank of Somalia, the NRA, the Somali-Hellenic Shipping Agency, and the Ministries of Commerce,

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[1]The idea of a consultative group is not new. The Livestock Marketing Project Identification Mission to Somalia proposed the establishment of a Livestock Export Industry Association, as well as high level intergovernmental delegations that would discuss policy issues with Saudi Arabia.

Local Government and Marine Transport. Members of this consultative group could be included in Somali delegations to Saudi Arabia and other Gulf States that are dispatched to promote foreign investment in agricultural and livestock sector development and to discuss shipping regulations, importation procedures, subsidies and trade barriers. In addition, the consultative group could meet annually or bi-annually with Saudi officials from the Ministries of Commerce, Agriculture and Finance and National Economy and the Ports Authority, as well as Saudi shippers and importers, to discuss matters of mutual concern.

VI. Economic Analysis of a Possible Animal Health and Livestock Marketing Project

A. Assumptions of the Economic Analysis

1. A ten year time horizon is assumed, over which project costs would be incurred and benefits would accrue.
2. USAID Project funds would be distributed over the course of five years in the following proportion: Year 1 - 30%; Year 2 - 25%; Year 3 - 15%; Year 4 - 15%; Year 5 - 15%.
3. The Somalia contribution to the project would be 25% above and beyond the USAID funding, equal to 3.375 million or 42,052,500 Somali Shillings. The funds would meet, at least in part, Somalia recurrent costs and also capital investment costs in the project (incurred in year 6) once USAID funding has expired.

   The Director of Animal Health Services believes that the investment costs in year six would be relatively modest compared to the initial investment costs funded by USAID. Once the various contagious diseases are under control and the disease incidence greatly reduced, then the follow-up would require less in the way of vehicles, staff, fuel, refrigerators, staff and veterinary equipment. The buildings, crushes, dips, spray races, and marketing infrastructure would still be in place, requiring recurrent maintenance costs but little additional investment. Establishing veterinary checkpoints at strategic locations along the border and stock routes in the initial five years of the project would help reduce the risk of reintroducing contagious diseases into areas where they are effectively eradicated during the initial five years of the project.
4. USAID project funds would be distributed between a nation-wide animal health program ($9 million) and marketing infrastructure

investments ($4.5 million). These investments would include rehabilitation and upgrading of holding grounds and quarantine facilities at the principal ports. The investment in infrastructure would be required to ensure urban consumption and export of the increased numbers of animals available for offtake.

5. Incremental increases in herd offtake resulting from improved veterinary services are based on herd models developed by the World Bank in its appraisal of the Central Rangelands Development Project. The Bank's assumptions about herd composition, offtake, the additional proportion of livestock treated under an improved animal health program, and the probable effects of improving animal health are quite conservative and appear reasonable.[1] The Bank has incorporated drought into its model, occurring once every five years and in earlier years (year 2 and 6) rather than in later years, so as to avoid overstating benefits. In the absence of any reliable data about herd and flock production parameters for Somalia, the Bank's estimates will be used.

6. A shadow foreign exchange rate of $1.00 = 18 So.Sh. is used in the economic analysis. Although the official exchange rate is $1.00 = 12.46 So.Sh., it is possible to obtain up to 20 So.Sh. to the dollar on the parallel market for foreign exchange.

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[1] In the course of the project an additional proportion of the national herd would be treated, phased in over the life of the project as follows: Year 1 - 6%; Year 2 - 12%; Year 3 - 18%; Year 4 - 24%; Years 5-10 - 30%.

7. Livestock population estimates from the 1975 census are used in all the calculations. The national livestock herd was 5.3 million camels, 3.7 million cattle, 9.4 million sheep and 15.3 million goats in 1975. Although the 1975 census is believed to be an overcount, the Ministry of National Planning's "Livestock and Range Sector Study" concludes that the livestock population had approached the census estimates by the end of the decade.

   It is assumed that the national livestock herd would remain constant during the ten year period when benefits accrue. All additional livestock available for offtake are assumed to be slaughtered or sold. The periodic recurrence of drought would help to keep herd growth in check. Mortality during years of drought would exceed mortality during years of normal rainfall and birth rates would approach zero. Moreover, the rangeland, which is overstocked by 200-300%, would not permit any further herd expansion in the short run without inducing greater mortality due to inadequate nutrition.

8. It is assumed that the animal health project would be carried out nationwide, supplementing and complementing the improved veterinary care provided by the Central and Northern Rangelands Development Projects and the Bay Region Development Project. The exact relationship of the national animal health improvement project to these ongoing and proposed interventions would be worked out at a later date. Perhaps the national project should concentrate its resources outside of areas where efforts at improving animal health are already underway.

9. The following livestock prices, received by producers in assembly markets in Southern and Central Somalia in April 1982, are used to value the incremental offtake: camels, 4,500 So.Sh.; cattle, 3,000 So.Sh.; small ruminants, 650 So.Sh. These prices are for mature animals of exportable quality. Maturity is achieved at 2-3 years in small ruminants, 4-5 years in cattle, and 5-6 years in camels. It should be noted that the prices used in the analysis are on the low side. Prices for export stock in Northern Somalia are often 15-20% higher than the above prices. One reason for not using higher prices in the economic analysis is that some of the additional animals taken off the national herd will be sold for internal slaughter. These animals are often immatures or no longer reproducing females and generally smaller, lighter and hence worth less than animals of exportable quality.

B. Results of the Economic Analysis

Potential project costs and benefits and the sensitivity of the internal rate of return (IRR) to various cost-increasing and benefit-reducing factors are shown in Tables 15 to 17. The incremental offtake resulting from improved animal health is calculated and displayed in Table 15. Increasing numbers of animals are treated as the project progresses, resulting in greater offtake from the regional herd. The offtake rate rises over time as a result of more widespread veterinary care and the eventual maturation of treated livestock and their availability for slaughter or sale. The cost and benefit streams for the initial calculation of the IRR are shown in Table 16. Finally, the sensitivity of the IRR to increased costs and delayed or reduced benefits is shown in Table 17.

TABLE 15

INCREMENTAL OFFTAKE FROM IMPROVED VETERINARY SERVICES

	1	2	3	4	5	6	7-10
A. Small Ruminants							
No. of small ruminants treated ('000)	1,482.5	2,964.9	4,447.4	5,929.9	7,412.4	7,412.4	7,412.4
Incremental rate of offtake (%)	0.4	0.8	1.2	1.6	2.06	2.06	2.06
Incremental offtake	5,930	23,720	53,369	94,878	152,694	152,694	152,694
Value ('000 So.Sh.)	3,854.5	15,418.0	34,689.9	61,670.7	99,251.1	99,251.1	99,251.1
B. Cattle							
No. of cattle treated ('000)	223.3	446.7	670.0	893.3	1,116.6	1,116.6	1,116.6
Incremental rate of offtake (%)	0.2	0.4	0.6	0.8	1.0	1.2	1.4
Incremental offtake	446	1,786	4,020	7,145	11,166	13,399	15,633.0
Value ('000 So.Sh.)	1,138.0	5,358.0	12,060.0	21,438.0	33,498.0	40,197.0	46,899.0
C. Camels							
No. of cattle treated ('000)	317.8	635.7	953.5	1,271.3	1,589.2	1,589.2	1,589.2
Incremental rate of offtake (%)	0.1	0.2	0.3	0.4	0.5	0.55	0.6
Incremental offtake	317	1,271	2,860	5,085	7,945	8,740	9,535
Value ('000 So.Sh.)	1,426.5	5,719.5	12,870.0	22,882.5	35,752.5	39,330.0	42,907.5
D. Total Value of Incremental Offtake	6,419.0	26,495.5	59,619.9	105,991.2	168,501.6	178,778.1	189,057.6

Note: It is assumed that the following proportions of the small ruminant, cattle and camel herds are treated under the project in successive years: year 1, 6%; year 2, 12%; year 3, 18%; year 4, 24% and years 5-10, 30%.

TABLE 16

COST AND BENEFIT STREAMS OVER TEN YEAR TIME HORIZON
('000 So.Sh.), Economic Analysis

Year	USAID Contribution	SDR Contribution	Total Costs	Total Benefits	Benefit Stream
1	72,900	2,803.5	75,703.5	6,419.0	-69,284.5
2	60,750	2,803.5	63,553.5	26,495.5	-37,058.0
3	36,450	2,803.5	39,253.5	59,619.9	20,366.4
4	36,450	2,803.5	39,253.5	105,991.2	66,737.7
5	36,450	2,803.5	39,253.5	168,501.6	129,248.1
6		16,821.0	16,821.0	178,778.1	161,957.1
7		2,803.5	2,803.5	189,057.6	186,254.1
8		2,803.5	2,803.5	189,057.6	186,254.1
9		2,803.5	2,803.5	189,057.6	186,254.1
10		2,803.5	2,803.5	189,057.6	186,254.1

IRR = 57%.

TABLE 17

SENSITIVITY OF INTERNAL RATE OF RETURN TO VARIOUS FACTORS

	Internal Rate of Return
Initial IRR	57
Benefits Delayed:	
1. One year	39
2. Two years	28
Higher Investment Cost in Year One	52
Increase in Foreign Exchange Costs (contingency):	
1. 10% increase	52
2. 20% increase	48
Only 50% of Incremental Offtake Obtained	26

Improvements in animal health are capable of generating an IRR of 57%. The IRR is not very sensitive to cost increases in the foreign exchange component of the project. Moving more of the foreign exchange costs into year one does little to affect the IRR. THe IRR is, however, quite sensitive to any delay in realizing project benefits (incremental offtake), dropping to 39% if benefits are lagged one year and 28% if benefits are lagged two years. In addition, the IRR is cut in half (26%) if only 50% of the incremental offtake is realized. In this latter case, the IRR would decline even more if the adverse effects of holding additional animals on the range could be quantified, thereby reducing the benefit stream. Since delays and difficulties in establishing a cold chain and forming smoothly operating mobile units are quite possible, delays in realizing projected rates of incremental offtake could lower the IRR. Nevertheless, the IRR would still be satisfactory, which suggests that improving animal health in a country such as Somalia is economically viable.

Another factor that could reduce potential benefits would be a decline in livestock prices in real terms in the years to come. As Australia continues to capture a greater share of the Saudi market, supplying two to three million sheep at 50% the cost of Somali sheep (on a carcass weight basis), consumers in Saudi Arabia may demonstrate a less marked preference for Somali small stock. This would put downward pressure on prices for Somali sheep and goats and lower returns to a project. In addition, a non-marginal increase in offtake from the Somali herd may reduce livestock prices independently of expansion in Saudi imports of Australian stock. The relatively high prices for Somali stock are in part a function of frequent shortages.

C. Other Potential Project Benefits

A number of benefits of the project, which we have not attempted to quantify are as follows:

1. Rates of gain for livestock would be higher. Female stock would attain earlier sexual maturity and male livestock would be available earlier for commercial sale.
2. Female livestock would be able to increase milk production, due to reduced stress following reduction in ecto- and endo-parasite levels. This additional milk could be consumed by stockowners or sold to others, thereby improving human nutrition. Alternatively, the additional milk could be reserved for calves, kids and lambs, which would lead to higher rates of gain, better health and earlier sexual maturity and the availability for offtake among offspring.
3. The liveweight of slaughter and exported animals would probably increase.
4. Tissue losses incurred during the marketing process would be reduced. Dips and spray races, improved watering facilities, marshalling yards and holding grounds, and reduced delays in loading livestock at the principal ports would help to maintain the condition of the livestock that are exported.
5. Foreign exchange earnings would increase, thereby increasing government revenues, which could be used in part to maintain animal health and livestock marketing facilities.
6. Reduction in mortality due to more regular and systematic vaccination and improved condition of livestock resulting from widespread use of acaricides and antihelmintics would improve

the rapport between the veterinary service and pastoralists. More regular supplies of vaccines and drugs would remove the Veterinary Service's stigma of being an uncertain source of supply. Dipping, spraying, deworming and vaccination of trade stock on a regular basis would cause traders to shed their current perception of the veterinary service as principally a revenue raising rather than a service organization.

7. The experience and knowledge of the veterinary field staff would increase.
8. The laboratories at Mogadishu, Kismayo and Hargeisa would be utilized more fully. By carrying out intensive vaccination campaigns, establishing a cold chain, and improving transportation for the veterinary service, the MLFR field staff would be able to supply the laboratories with blood, tissue and excretory specimens, which would facilitate the rapid and timely diagnosis of disease.
9. The risk of outbreaks of contagious diseases would be greatly lowered. This would reduce the vulnerability of the national herd to epidemics and the risk of temporary closure of export markets.
10. Improving animal health would decrease the incidence of diseases transmitted to man, including brucellosis, tuberculosis, salmonellosis, anthrax, pasteurella, cysticercus and echinococcus. The risk of contaminating humans with diseases and parasities carried by slaughtered livestock would be reduced. Precautionary slaughter and the risk of consuming meat or infected organs from unhealthy animals would be reduced.
11. Domestic consumption of red meat might increase if some of the additional offtake were slaughtered in Somalia.

D. Potential Costs and Problems

Several potential problems with an animal health and marketing project also deserve mention:

1. Although improved veterinary services may lead to greater availability of animals for offtake, it is not certain that additional animals would actually be taken off the national herd. Incentives facing pastoralists are mixed. While higher prices for principal consumer goods (sugar, tea, cloth, shoes/sandals) and rising cash expenditures for non-essential consumer goods, such as radios, and for schooling of children create incentives for sale, higher livestock prices and the risk of drought provide herders with incentives for holding additional animals on the range. Although investment in shops and real estate in towns and in vehicles and attractive investments for some pastoralists, many pastoralists cannot afford such investments and therefore elect to keep their investment on the hoof. The omnipresent risk of drought compels the wary producer to maximize his holdings so as to ensure survival of a sufficiently large part of his herd/flock to regenerate his wealth following drought.

2. If pastoral producers decide to hold back additional livestock for herd growth, then the range resources would deteriorate further. This would worsen the nutrition for individual animals and lead to greater losses in times of drought.

   Poor nutrition and the unavailability of water are the main causes of mortality in periods of drought, and improved veterinary services can do little to prevent drought-induced losses.

3. The MLFR argues that incentives must be provided to veterinary field staff in order to undertake prophylactic vaccination campaigns. Paying a premium to the field staff would establish a dangerous precedent that would complicate recruitment once the project expired and salary incentives were removed.
4. There is a temptation to levy higher taxes and fees on livestock traders to help pay for the improved veterinary and marketing services. Livestock traders, as well as a good number of government officials, feel that little is provided in the way of services relative to the charges and duties paid. These fees should not be increased unless services are upgraded.
5. Although vaccinations should be initially provided to herders free of charge to encourage their cooperation, pastoralists should eventually pay for vaccinations to help cover costs. It is possible that the pastoral beneficiaries of the project would be reluctant to pay for vaccinations, in which case vigorous extension efforts might be required to persuade stockowners to pay. At the same time livestock producers might be willing to pay for vaccinations if veterinary services were improved.
6. Pastoralists should continue to pay for anti-parasite drugs and treatments, but they should receive better instruction in how to administer these. Since the veterinary services cannot be everywhere at all times of the year, and pastoralists move far from veterinary posts once the rains arrive, it is essential to instruct pastoralists to apply anti-parasite treatments correctly, providing demonstrations if necessary.

7. Any improvement in veterinary services should be accompanied by greater extension efforts. The MLFR presently provides little in the way of extension to stockowners. Establishing an extension program would probably require training of pastoral producers to serve as at least some of the extension agents.

8. The MLFR must continue to commit funds to maintaining the improved animal health and livestock marketing services after USAID (or other donor) financing has been exhausted. Failure to do this might result in the reintroduction of diseases and losses in livestock after donor support was removed. Moreover, the quality of exported animals might decline, which would endanger Somalia's market share.

ANNEX 1

ANALYSIS OF THE SHEEP AND GOAT HERD STOCK AND FLOW DATA OBTAINED BY THE BRITISH VETERINARY TEAM, 1971-1972

The British Veterinary Team, based in Hargeisa, monitored three mixed flocks of sheep and goats in Northern Somalia from March 1971 through February 1972. An initial inventory of the livestock was taken in March 1971 and flows in the form of births, deaths, purchases, sales and slaughter were recorded during the ensuing twelve months. The pooled results for each species are shown in Table A1-1 with percentages indicating the composition of the pooled herd and the rates pertinent to each of the categories (reproduction, mortality, offtake and flock growth). The sample is, of course, small and the results of the survey should be interpreted with caution. Nonetheless, the findings are illustrative and generally supportive of the team's conclusions about pastoral production systems. Over half of the pooled goat herd and nearly two-thirds of the pooled sheep herd were mature females at the end of Jilaal in 1971. The high proportion of breeding ewes and does in the herds enables the pastoralists to meet their subsistence constraints mainly through milk consumption. This proportion also reflects pastoralists' strategy of minimizing the rate of growth in herd size. All females are retained for breeding purposes, while surplus males are slaughtered to supplement the monotonous milk regime and to substitute for grain during Jilaal or sold when the nomads need cash.

The proportion of breeding males in the herds is low for sheep (1.3%) but high for goats (7.3%), suggesting that the herders practice a more rigorous selection with sheep than with goats. This may be because sheep production is directed more toward the strong export market during the

Table A1-1 Sheep and Goat Flock Composition and Flows, Northern Somalia, 1971 - 72

		SHEEP		GOATS	
		Nos.	% Flock/ Pertinent Rate	Nos.	% Flock/ Pertinent Rate
Herd composition 3/71	Adults - Total	327		230	
	Breeding Females	281	62.0%	169	50.8%
	Breeding Males	6	1.3%	24	7.2%
	Castrated Males	40	8.8%	37	11.1%
	Immature M B F	126	27.8%	103	30.9%
	Total Flock Size 3/71	453	100.0%	333	100.0%
Changes in Herd Inventory, 3/71-2/72	Births (March '71-Feb. '72)	243	86.5%	232	137.3%
	Death from Disease	209		134	
	Adults	64	19.6%	53	23.0%
	Immatures	43	34.1%	35	34.0%
	Birth - 3 months	79	42.0%	26	19.8%
	4-12 months	23		20	
	Changes in Healthy Stock	+ 5		- 33	
	Bought	29		6	
	Sold	14	5.3%	30	11.7%
	Eaten	10			
	Change in Flock Size over twelve months	39	+ 8.6%	65	+ 19.5%

Source: The British Veterinary Team in Somalia, 1969-1972. Final Team Report. Overseas Development Administration, London, 1973.

three months preceding the hadj. Participants in the hadj prefer to slaughter sheep. Moreover, lamb and mutton are preferred to goat meat by most consumers in the Middle East and by most of the pilgrims. The greater purchases of sheep than goats (in both absolute and proportional terms), assuming that most of the livestock purchased is female, can be interpreted as a conscious management strategy by pastoralists to upgrade the breeding herd.[1] This may also reflect a greater commercial orientation in sheep than in goat production.

The pooled data show that goats are more prolific than sheep, resulting from a higher proportion of multiple births among goats and the fact that the goats in the three flocks often bred twice per year while the sheep bred only once. The mortality rates are nearly equal for adult and immature sheep and goats. The mortality among immatures is unusually high, because the immature category included animals born during the lambing and kidding seasons of the previous year which were from six months to one year old at the start of the survey. Hence, some of these animals were probably less than one year old at the time of mortality and should have been recorded in the under one year mortality category. Under one year mortality appears to be very high for sheep and low to normal for goats. The far lower mortality for goats is evidence of their robust nature, greater resistance to disease, and adaptability to the harsh pastoral environment. The British veterinarians report that the high lamb

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[1] It is unfortunate that the British Veterinary Team does not report the age-sex breakdown of the animals purchased, sold and slaughtered, although they do report that the animals were at least two years old. We can only surmise that most of the animals bought were females and that most of the males sold and slaughtered were males (especially castrated stock).

mortality, particularly in the 0-3 months category, was "quite acceptable to most stock-owners" and due predominately to pneumonia.

The offtake from the pooled sheep herd is very low (5.3%), which supports the conclusion of the British Veterinary Team that pastoral production is not market-oriented. The offtake rate for goats (11.7%) is double that of sheep but still low. The finding that twice as many goats are sold as sheep is surprising and does not hold on an aggregate level for exports. Goat offtake may, however, be higher if more goats are sold for local slaughter or sold as breeding stock than sheep. The far greater goat sales for the small sample monitored by the British veterinarians may also be an anomaly and therefore dismissed as unrepresentative. Finally, it is important to note that while two of the flocks in the sample are of average size for their regions, one of the flocks is 70-80% larger than the average sized flock estimated by the veterinarians for the third region. Since 59% of the animals in the initial sample are from the largest flock, the estimates of the offtake are probably biased downward. One would expect a pastoral family to sell or slaughter a lower proportion of a larger flock, as its nutritional and cash needs are, for the most part, independent of herd size.[1]

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[1]We assume that the size of the herd is directly related to the size of the stock-raising unit but not in a fixed proportion. That is, larger herds tend to be managed by larger families but the ratio of animals to man is not constant. More people are required to herd a larger flock, but there are labor economics of size in a pastoral setting where crop damage is not possible.

ANNEX 2

TRENDS IN PRODUCTION AND EXPORTS OF HIDES AND SKINS

Table A2-1 shows the value of hides and skins exports found in the annual reports of the Somali Leather Agency, while Table A2-2 shows the value reported in the Foreign Trade Returns of the Ministry of Planning. The reason for the great discrepancy in these figures is unknown. It is clear from both sets of estimates, however, that the value of exports has varied considerably from year to year, following no discernible trend. Deflating total export earnings reported by the Somali Leather Agency by the Mogadishu CPI shows that the real value of hides and skins exports was greatest in 1976. According to both the export returns recorded by the Central Bank of Somalia and the Ministry of Planning, the value of hides and skins exports, which was about one-fifth the value of banana exports in 1973, was greater than four-fifths the value of banana exports in 1979 and 1980. This change was due primarily to a decline in the quantity and value of banana exports. Although bananas are Somalia's number two export commodity, hides and skins are a close third.

From Table A2-1 it is clear that exports of sheep and goat skins generate far more foreign exchange than cattle hides. Camel skins are rarely exported and the hides and skins of various game animals are exported in small quantities. The Somali Leather Agency earns 80-90% of its revenues from the export of unprocessed hides and skins. Local sales comprise only 10-20% of all sales, and are not significant except in the case of camel skins.

The principal importer of Somali hides and skins is Italy, which absorbed 92% of the value of Somali exports in 1981. Somalia also

TABLE A2-1

EXPORTS OF HIDES AND SKINS, 1974 - 1981

Year	Sheep and Goats Skins '000 So. Sh.	Cattle Hides '000 So.Sh.	Total Value of Exports	
			Nominal Value '000 So.Sh.	Deflated Value '000 So. Sh.
1974	11,886.0	3,325.7	15,211.7	22,902.5
1975	19,480.7	3,727.7	23,208.4	29,274.7
1976	38,383.4	4,179.1	42.562.6	47,053.9
1977	20,842.6	2,603.7	23,446.3	23,446.3
1978	15,889.0	3,112.3	26,958.3	24,531.8
1979	24,721.8	2,100.2	50.673.6	37,204.8
1980	13,656.8	2,193.2	39,914.9	18,392.9
1981	25,379.6	890.9	26,270.5	8371.7

Source: Somali Leather Agency (Hides and Skins Agency).

Note: The Mogadishu Consumer Price Index is used to deflate nominal foreign exchange earnings from exports of hides and skins (1977=100).

TABLE A2-2

HIDES AND SKINS EXPORTS, 1974 - 1980

(Value in So. Sh. Millions)

	Unit	1974		1975		1976		1977		1978		1979		1980	
		Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Valu
Cattle	Kg.	414,042	2.7	1,100,030	6.6	702,558	9.4	18	-	38,710	0.4	74,700	1.2	2,731	0.2
Goats	No.	233,252	4.7	586,765	12.2	1,611,467	32.1	234,814	3.3	516.789	9.1	699,057	28.7	1,460,535	20.3
Sheep	No.	347,236	6.7	578,717	7.5	704,498	12.2	498,731	6.2	220,000	2.4	973,078	20.9	1,510,000	20.6
Camel	Kg.	-	-	11	-	20	0.1	-	-	-	-	-	-	-	-
Total			14.1		26.3		51.0		9.5		12.0		50.8		50.1

Source: Ministry of Planning, Central Statistical Department, Foreign Trade Returns.

exported hides and skins to Egypt (3.6%), France (2.3%) and Greece (2.3%) in 1981. In other years China, Spain, West Germany, the U.K. and Yugoslavia have imported hides and skins from Somalia. All of these countries except for China have been relatively insignificant markets. In 1974 and 1975, China imported more hides and skins than Italy and from 1976 through 1979 the PRC was the second most important market for Somalia. Since 1979, China has imported far fewer hides and skins, because the means of paying for these imports has changed from an annual balance of payments clearance arrangement between China and Somalia to a letter of credit procedure. Rather than paying the balance of goods and services owed to Somalia at the close of each year, the Chinese are now required to obtain hard currency from international banks in order to open up letters of credit. China has had difficulty in obtaining the necessary credit for hides and skins imports.

Officials in the Somali Leather Agency are confident that Italy can absorb greater exports of hides and skins and that Egypt and Greece will continue to be promising export markets. The unavailability of direct shipping between Somalia and Algeria, West Germany, Holland, the U.K. and Spain presently constrains expansion of alternative markets. Hides and skins are first shipped to Italy by Italian commercial lines, which are chartered by the Somali Shipping Agency, and then transshipped to other countries. This greatly increases the cost of Somalia's supplying markets other than the former colonial power. Somalia's competitive position in the international trade in hides and skins would be enhanced by direct shipping between Somalia and the promising alternative markets. As with live animal exports, an inadequate commercial fleet constrains expansion of alternative export markets. Not only is Somalia heavily

dependent upon the Saudi Arabia live animal export, but it has become increasingly dependent on the Italian market for hides and skins.

ANNEX 3

ANNUAL AND SEASONAL VARIATION OF LIVESTOCK SLAUGHTER IN SOMALIA

Slaughter of livestock in the towns and bush of Somalia is subject to interannual variation. During years of drought greater numbers of livestock are sold for slaughter, as herders attempt to minimize the complete loss represented by livestock mortality. Sales are low in the years following a drought, when producers reconstitute their herds.

Seasonal variation in livestock slaughter is also considerable. Greater numbers of livestock are sold and slaughtered during Jilaal than during the Gu rains. Forage availability is lowest during Jilaal, so milk production and the general condition of the livestock falls off. The nomads slaughter and sell more livestock, consuming more meat and using money from livestock sales to buy grain. Moreover, the nomadic herds are closer to towns and livestock markets, as the pastoralists return to dry season watering points for the fresh grass and browse and pools of water in the bush. Livestock become widely dispersed and therefore less accessible to butchers and traders. The condition of the animals improves and most of the calf, lamb and kid drop takes place at the beginning of Gu. Milk production is highest after the onset of the rains and milk becomes the principal item in the pastoral diet. Hence, herders have little need to sell livestock and little incentive, as they prefer to hold their animals while they are gaining weight.

Livestock slaughter by quarter since 1978 in the towns of the Baidoa district, confirms the interannual and interseasonal pattern of variation described above for cattle and camels in Table A3-1. From 1978 through 1980, annual slaughter of cattle and camels increased in urban areas in

Table A3-1 QUARTERLY RECORDED SLAUGHTER OF LIVESTOCK AT BAIDOA, 1978 - 1981

Year	Quarter[1.]	Cattle Nos.	Camels Nos.	Goats and Sheep[2.] Nos.
1978	1	346	595	1,788
	2	415	644	2,421
	3	328	449	2,292
	4 [3.]	299	618	2,046
	Total	1,388	2,306	8,547
1979	1	450	687	2,247
	2 [3.]	290	573	3,105
	3	454	767	1,951
	4	582	891	3,006
	Total	1,776	2,918	10,039
1980	1	886	1,562	3,339
	2	753	1,071	2,085
	3	865	1,023	5,071
	4	942	839	3,206
	Total	3,446	4,495	13,701
1981	1	696	989	4,073
	2	408	746	4,556
	3	523	683	3,638
	4	351	696	3,207
	Total	1,978	3,114	15,474

Table A3-1

Source: Monthly reports, Regional Veterinary Office, Baidoa.

1. The slaughter figures are broken down by quarter. Each quarter corresponds very roughly to one of the four seasons of the year: January-March = Jilaal; April - June = Gu; July - September = Hagai; October - December = Der. The four seasons do not fall neatly into three month blocks that coincide with the four quarters based on calendar months. The starting and ending points and the duration of the seasons in Somalia vary greatly from year to year. Hence, the presentation of the data by quarters cannot capture seasonal variation in slaugher accurately, but it does provide us with a rough idea of seasonality.

2. Goats and sheep are combined, because the variation in sheep slaughter in the original monthly slaughter figures is great, suggesting that little attention was paid to the species of small stock in the collection of the data. In the Somali language <u>arii</u> is used commonly to refer to small ruminants, regardless of species. According to the slaughter data, only 3.6% of the small ruminants slaughtered from 1978 through 1981 were sheep. This is somewhat difficult to believe, since there were an estimated 79,000 sheep in the Bay Region out of an estimated 247,000 small ruminants during the 1975 census. Although 22% of the small ruminants in the Bay Region were sheep in 1975, this proportion was probably exceptionally high, reflecting the movement of pastoral herds from drier regions into the better rangeland of the wetter Inter-Riverine region during the 1974 - 75 drought.

3. One month of data was missing in each of these two quarters. The missing values were replaced by interpolating between the immediately preceding and following months.

Baidoa district. Part of this increase was due to the expansion in population but a greater part was probably due to the 1979-1980 drought, which compelled herders to sell off large numbers of cattle and camels. The livestock population of the area around Baidoa, a relatively wet and fertile region, was higher during these years, on account of the influx of herds from drier regions, and the rate of offtake was higher. When the rains returned in 1981, livestock producers who had migrated into the region during the drought, remaining close to watering points when the 1979 Der and 1980 Gu rains failed, moved out of the region towards drier areas that received sufficient rainfall in 1981. Consequently, fewer animals were available for urban slaughter. Livestock were dispersed and producers were less willing to sell animals than during the drought years.

With the exception of 1978, cattle and camel slaughter in Baidoa generally follows the seasonal pattern discussed above. Slaughter during the Jilaal is higher than slaughter during Gu, while slaughter during Hadj and Der varies greatly, depending on rainfall during the preceding Gu, the duration of Hagai, and rainfall during Der.

Recorded slaughter of small ruminants at Baidoa increased steadily from 1979 through 1981, nearly doubling in the course of three years. The official statistics probably capture only a fraction of goat and sheep slaughter, since these animals are often slaughtered in the compound without veterinary inspection. Small ruminant slaughter is greater during the second quarter for three of the four years, which suggests that there is some substitution of goat meat for camel meat and beef once the Gu rains have begun and the pastoralists have taken their herds far from the towns in search of rainy season pasture. Butchers are able to acquire

stock for slaughter during the growing season from settled farmers. Slaughter of goats (and sheep) does not follow any consistent pattern during Hagai and Der.

ANNEX 4

THE MEAT FACTORIES AT KISMAYO AND MOGADISHU: PAST LEVELS OF OPERATION AND FUTURE PROSPECTS

The meat factory at Kismayo was opened in 1969, having an installed capacity of 60,000 head of cattle per year. The data that are available for meat factory has operated at 50% or more of capacity for only half of the years (1969-1980), as shown in Table A4-1. In five of the twelve years the factory has operated at less than 30% of capacity. The principal market until 1977 was the Soviet Union, which imported stewed steak produced at the plant. Russia constructed the factory and had planned to replace the machinery in the plant in 1979. Since the loss of the Soviet market, the meat factory has operated at a loss and at greatly reduced capacity. Capital investment is required to enable the meat factory to reach earlier levels of operation. Given international price trends in canned meat products and the preference for live animal imports in the Gulf States, the export of the tinned products, which was profitable through 1976, is no longer profitable. The Booker Agriculture International Pre-feasibility Study concluded that the operation of the Kismayo meat factory would not yield acceptable financial returns under current prices and management practices.[1] As long as the prices paid in Saudi Arabia and other Gulf States remain high for fresh meat and low for tinned meat, there is little justification for full scale operation of the Kismayo meat factory.

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[1]Booker Agriculture International Ltd., "Pre-feasibility Study for Carcass Meat Production," Arab Investment Company Ltd. and the Somali Democratic Republic, May 1980.

Table A4-1 INTAKE AND PRODUCTION OF KISMAYO MEAT FACTORY, 1971-78

	Unit	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Purchase of cattle	'000 head	38.0	53.0	28.0	50.3	46.0	41.0	33.5	2.9	10.1	14.6
Average Liveweight	Kg/head	255	242	246	216	244	242	225	n.a.	239	230
Meat Output	Tons	4,076	5,560	3,127	4,766	4,923	4,455	3,217	182	1,050	1,547
Tinned Products:											
- Stewed Steaks	'000 tins	11,922	16,584	5,733	9,934	13,363	10,648	6,636	10.6	65	-
- Corned Beef	" "	360	207	44	1,695	1,069	503	327	216	1,747	2,063
- Frozen Meat	Tons	-	-	1,291	-	-	-	-	-	-	-
- Meat in Gelatine	Tins	-	-	-	748	-	-	28	11,360	-	-
Sausages	Tons	2.0	0.7	0.2	0.3	0.1	-	-	-	-	-
Render fat/Tallow	Tons	77	153	73	94	125	77	17	-	-	-
Hides	Tons	379	557	336	531	420	366	256	-	81	130
Meat and Bone Meal	Tons	74	90	45	107	139	109	60	-	59	95
Profit (+), Loss (-)	So.Sh. Thousand	+ 421	+ 2,038	+ 1,161	+ 595	+ 1,406	+ 2,156	- 1,042	- 7,369	-14,655	-11,245

The Kismayo Meat Factory was supplied by the Livestock Development Agency (LDA) during the 1970s until the LDA was closed in 1981, and it also purchased cattle itself for a period. The LDA was granted monopoly buying rights in the southernmost regions of Somalia but offerred lower prices for cattle than the private traders. This was probably the impetus for much of the long distance trekking of cattle from Southern Somalia to the export triangle that occurred during the 1970s. During some years LDA offer prices also induced an inflow of cattle into Somalia from Kenya. Cattle exports have shown the greatest potential for expansion since 1979. If the government does not intervene to undermine price incentives and distort market forces in the future, then live cattle exports can be expected to increase, although not so dramatically as in the two years following the termination of LDA buying and selling.

The demise of the Kismayo Meat Factory may result as much from its management strategy to date as from recent market conditions. The average live weight of cattle purchased for slaughter has not exceeded 250 kilograms since 1971. Clearly, inferior, immature stock is acquired, which have little high grade meat. There may be a market in the Gulf States or perhaps elsewhere for high quality cuts of beef that command premium prices. The well-paid expatriate population in Saudi Arabia, which prefers beef to lamb/mutton, goat meat and camel meat, is a potential market. In order to meet this demand, the Kismayo Meat Factory would have to compete with cattle exporters in the South in buying larger and better fleshed animals for slaughter. Rather than closing down the meat factory completely, some experimentation in producing higher grade cuts of chilled or frozen beef for export might prove to be economically viable on a modest scale.

Table A4-2 INTAKE AND PRODUCTION OF SOPRAL MEAT FACTORY, 1971-76

	Unit	1971	1972	1973	1974	1975-76
Purchases of Cattle	'000 head	56	33	19	34	13
Liveweight Purchased	Tons	10,264	6,626	4,473	6,348	2,304
Average Liveweight	Kg/head	185	198	234	187	183
Deboned Meat	Tons	2,771	1,789	1,207	1,650	693
Cans	'000	11,235	6,657	5,072	5,439	2,053

Source: SOPRAL Meat Factory Mogadishu quoted by the Arab Organization for Agricultural Development Report: "Rational Development of livestock Sector in Somali Democratic Republic". Mogadishu, August 1978.

Moreover, as the Booker Agriculture International report suggests, continued operation of the Kismayo Meat Factory at some level below capacity may be financially unprofitable in the short-run but economically viable in the long-run. A functioning meat factory at Kismayo allows for some export diversification, at least a limited capacity to shift from live animal to meat exports if import restrictions are imposed in Saudi Arabia and other markets, and a means of minimizing losses in times of drought.[1]

The Kismayo Meat Factory could also experiment with manufacturing different types of canned meat products other than 150 and 350 gram tins of stewed meat and 198 and 340 gram tins of corned beef. Larger tins could be produced for export to markets such as the Middle East, Singapore, and Hong Kong. In addition, meat by-products could be more fully and effectively utilized than in the past, when the blood has not been used, meat and bonemeal has been sold to MLFR, and hooves, horns and dried bones have been sold to private entrepreneurs.

The SOPRAL Meat Factory at Mogadishu has not produced any meat products since 1976. The production data for the 1971-1976 period, when the meat factory was privately owned and operated by an Italian company as shown in Table A4-2. The meat factory produced corned beef for export to Italy and Belgium, but it was closed in 1976 due to financial losses. In late 1979 and early 1980 the Somali Government and the STAR group (of several Italian firms) conducted negotiations concerning the reopening of

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[1]Not only would a functioning meat factory be able to slaughter and process cattle that might otherwise die if held on the range in times of drought, but it would eliminate the risk of mortality incurred in shipping underweight and weakened cattle from Kismayo to Jeddah during drought periods.

the meat factory at Mogadishu. The joint venture proposal, which called for 51% government ownership, has not been approved.

ANNEX 5

THE PROPOSED WORLD BANK PROJECT IN LIVESTOCK MARKETING FOR SOMALIA: A BREIF HISTORY

In 1978 the World Bank asked the Somali government to prepare a brief for a national livestock marketing project. The Livestock Development Agency prepared a project brief which included the following components:

1. Development of a holding ground at Warmahun (45 km. outside Mogadishu).
2. Development of ten additional holding grounds in regions where there are none.
3. Rehabilitation and expansion of the quarantine station at Berbera.
4. Construction of new marshalling yards at each of the three major ports.
5. Improvement of assembly markets through the drilling of boreholes and construction of crushes, pens, yards, shade structures, shelters and water storage and reticulation systems.
6. Introduction of grading of live animals and weighing at assembly markets.
7. Construction of an additional berth at the port of Berbera.
8. Development of the smaller ports at Maydh and Bosasso.
9. Improvement of rural roads.
10. Purchase of two livestock carriers.
11. Reorganization of the LDA.
12. Purchase of additional trucks for hauling live animals.
13. Development of a cold storage and slaughter facility at Hargeisa.

The total estimated cost of this project was 177.28 So.Sh., broken down as follows: development of holding grounds, 55 million So.Sh.; purchase of livestock carriers, 30 million So.Sh.; improvement of rural roads,

27.19 million So.Sh.; Berbera port expansion, 4.3 million So.Sh.; and reorganization of LDA, 34.22 million So.Sh.

The World Bank responded to this proposal by the LDA by sending a series of missions to Somalia to evaluate the performance of LDA, the livestock marketing infrastructure, livestock marketing performance and the potential for expanding livestock and meat exports to external markets, most notably Saudi Arabia. After completing these missions, the World Bank was able to evaluate each of the LDA proposals critically. The Bank said that the proposed project would have to be greatly scaled down, as certain components such as the proposed investments at the assembly markets, the introduction of grading, the purchase of livestock carriers, and the development of a cold storage and slaughter facility at Hargeisa would have to be abandoned. The Bank recommended that special attention be given to establishing an intensive veterinary control zone in Northern Somalia, to improving the maintenance of rural roads, and to investing in "drought cropping" contingencies, whereby surplus stock could be taken off the range in times of drought and slaughtered for air-shipment to markets in the Gulf States. Although the World Bank did not approve of investing 55 million So.Sh. in holding grounds, it was willing to consider some investment in holding grounds, particularly those near the ports.

The World Bank never actually appraised any of the proposed marketing interventions. The World Bank expressed reservations about the involvement of the LDA in livestock marketing and particularly in the actual buying and selling of cattle. Rather than design and implement a marketing project through the LDA, the World Bank decided not to pursue any further identification and appraisal of the project. Now that the LDA has

been abolished and subsumed under the NRA as the Division of Livestock Marketing Services, the NRA has invited the World Bank to reconsider a livestock marketing project.

ANNEX 6

INTERNATIONAL ANIMAL HEALTH STANDARDS FOR TRADE STOCK

The Office International des Epizooties has prepared an International Zoo-Sanitary Code, which identifies animal diseases by priority grouping and arrangements for preventing their transmission, as well as outlining zoo-sanitary measures and formalities governing international trade in livestock and livestock products.[1] The International Zoo-Sanitary Code specifies in detail internationally accepted standard operating procedures for ensuring the health of trade stock before and at departure, in transit between exporting and importing countries, and on arrival at the importing country. The code requires that veterinary and frontier posts and quarantine stations be provided and staffed by exporting countries so that animals affected with or suspected of being affected with an epizootic disease can be detected and isolated, vehicles that transport livestock and livestock products can be disinfected, and the veterinary service can make clinical examinations and obtain specimens of material for diagnostic purposes from live animals or carcasses of animals affected or suspected of being affected with disease.

In accordance with the wish of importing countries, exporting countries must isolate, vaccinate and observe trade livestock before exportation. The period of isolation and observation varies according to the particular disease or set of diseases for which the animals are held in quarantine and the requirements laid down by the

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[1] Office International des Epizooties, International Zoo-Sanitary Code, Amended Edition, 1976. "List A" diseases relevant to Somalia include foot-and-mouth disease, rinderpest, contagious bovine pleuropneumonia, anthrax, sheep pox and goat pox, bluetongue, fowl plague and newcastle disease. The most common "List B" disease in Somalia is contagious pleuropneumonia of small ruminants.

importing countries. Two weeks is usually the minimum quarantine period. Detection of disease among trade stock by importing countries is grounds for curtailment of imports from supplying countries until the latter are able to ensure that livestock destined for export are properly vaccinated and have been closely observed under quarantine.

In order to facilitate the observation of the International Zoo-Sanitary Code, FAO has proposed the establishment and operation of specific disease-free zones.[1] These are strictly delimited, carefully demarcated areas within livestock raising countries where the following physical facilities are established: structures for separating and isolating livestock, control posts, quarantine stations, shelters, feeding and watering places, staff quarters, offices, tick baths, laboratories, repair shops and other necessary infrastructure. Disease-free zones are intended to be free of particular diseases, usually foot-and-mouth disease, rinderpest, and contagious bovine pleuropneumonia. The occurence of one of the specific contagious diseases in the disease-free zone results in the immediate implementation of precautions and control measures, including slaughter of affected and in-contact stock, isolation and intensive observation in the area surrounding the outbreak, suspension of exports, the investigation into the origin and possible spread of the outbreak, and the informing of the veterinary authorities of importing countries of the outbreak and measures undertaken to control it.

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[1] FAO, "Establishment and Operation of Specific Disease-Free Zones," from the Manual on Standards of Veterinary Services, Meat Hygiene and Meat Inspection, Post-Mortem Judgement of Slaughter Animals and Establishment of Specific Disease-Free Zones, 1974.

ANNEX 7 SUPPLEMENTARY TABLES

TABLE 1

LIVESTOCK AND HUMAN POPULATION OF SOMALIA, BY REGION

Region	Livestock Population				
	Camels	Cattle	Sheep	Goats	Human Population
Wagooyi Galbeed	606,224	145,154	2,241,685	3,076,087	439,833
Togdheer	320,432	43,554	917,490	902,387	257,771
Sanag	205,214	74,451	1,521,386	664,278	145,408
Bari	240,214	14,918	1,387,678	2,094,802	154,352
Nugal	154,734	12,386	223,411	611,296	85,140
Mudug	751,458	340,472	1,135,977	2,744,372	215,142
Galguduud	395,455	217,826	587,875	1,734,322	181,655
Hiraan	400,521	169,695	287,392	1,159,372	147,281
Shabelle Middle	236,966	365,683	324,831	720,318	236,399
Benadir	910	21,927	5,634	18,655	370,671
Shabelle Lower	292,730	418,911	89,521	200,000	398,086
Juba Middle and Lower	296,615	1,036,155	81,477	177,372	246,026
Gedo	784,283	527,696	500,095	724,888	212,091
Bay	361,619	254,877	54,626	191,999	302,054
Bakool	191,674	100,373	79,008	274,065	100,097
Total	5,297,239	3,722,151	9,432,320	15,275,558	3,492,006

Source: Somalia Population Census, 1975.

TABLE 2

FIRST PURCHASES OF HIDES AND SKINS BY THE HIDES AND SKINS AGENCY, 1974-1981

Year	Sheep and Goats Skins (pieces)	Cattle Hides[1] (estimated number)	Camel Hides (pieces)
1974	3,729,942	106,526	-
1975	3,844,787	132,107	11,533
1976	1,542,119	133,405	21,462
1977	1,790,536	117,497	20,114
1978	2,304,059	78,923	16,430
1979	2,766,476	68,874	18,710
1980	3,351,000	87,176	23,602
1981	2,221,000	115,412	34,973

Source: Annual Reports, Hides and Skins Agency (HASA); now the Somali Leather Agency.

[1]The number of cattle hides is estimated by dividing the total weight (in kg.) of purchased hides by an assumed average weight of 8.5 kilograms per hide.

TABLE 3

ESTIMATED RATES OF TOTAL OFF-TAKE DURING THE 1970s
(in percentages)

Source and Year	Cattle	Camels	Sheep and Goats
Official Govt. 1970	7.6	1.0	36.7
World Bank 1974	10.0	2.5	30.0
Huntings Sector Review 1975	5.8	5.1	16.2
Huntings recalculated against 1975 census	3.9	2.4	10.0
World Bank NRDP Appraisal 1975	6.3-11.0	0.8-5.7	4.6-15.0
World Bank CRDP Appraisal 1978	5-8	2-4	15-20
World Bank Agriculture Review 1979	4-5	1	11-20
Ministry of National Planning 1979	7.0	1.2	27.7
Food Security Project 1980	8.7	3.2	16.0

Source: Ministry of National Planning, "Livestock and Range Sector Study," Mogadishu, March 1981.

TABLE 4

CATTLE EXPORTS BY COUNTRY OF DESTINATION, 1971-1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Saudi Arabia	31,084	39,510	50,085	24,856	33,126	67,758	34,929	73,006	72,668	80,000
PDR Yemen	1,036	79	6		1,000	329				
Yemen Arab Republic						1,500	40		6,400	
Kuwait	2,289	5,017	3,150	550	927	200				
United Arab Emirates					210	3,850	1,100	71	278	5,389
Egypt	8,020	2,100	400							
Bahrain		1,500								
Kenya								349		
Total	42,429	48,206	53,641	26,406	33,126	73,637	54,381	73,426	79,366	85,389

Source: Ministry of National Planning, Central Statistical Department, Foreign Trade Statistics.

Note: The PDR Yemen is the People's Democratic Republic of Yemen, formerly Aden--The Yemen Arab Republic is North Yemen (San'a').

TABLE 5

SMALL RUMINANT EXPORTS BY COUNTRY OF DESTINATION, 1971-1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Saudi Arabia	964,720	1,354,948	1,088,546	1,106,938	1,424,060[1]	660,204	821,925	1,346,182	1,036,623	1,565,004[1]
PDR Yemen	191,854	225,258	209,040	88,848	54,851	9,891	8,463			
Yemen Arab Republic					800	1,800	898	500	55,206	74,592
Kuwait		14,350			2,000	350				
United Arab Emirates		9,303	6,995	8,700	81,580	72,898	69,604	104,123	100,513	139,696
Qatar	20,000	830		15,000	30,250					400
Bahrain	442	9,817	7,619							
Oman					10,400	2,475	1,000		2,000	
USSR							250			
China					500					
Total	1,184,498	1,614,506	1,312,200	1,219,486	1,603,641	747,618	902,140	1,450,805	1,194,342	1,779,792

Source: Ministry of National Planning, Central Statistical Department, Foreign Trade Statistics.

Note: The PDR Yemen is the People's Democratic Republic of Yemen, formerly Aden. The Yemen Arab Republic is North Yemen (San'a').

[1]The 1975 and 1980 exports to Saudi Arabia are exaggerated, resulting in total export figures well in excess of LDA estimates.

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