File - Packet for 625080 3

AID 1025.1 (7-71) (FACE SHEET)

NONCAPITAL PROJECT PAPER (PROP)

PD-AAB-723-D1 PAGE [illegible]

I. PROJECT IDENTIFICATION

1. PROJECT TITLE

CENTRAL AFRICA LIVESTOCK AND MEAT PRODUCTION

APPENDIX ATTACHED 39p.

☐ YES

2. PROJECT NO. 625-11-130-803

3. RECIPIENT (specify)

☐ COUNTRY

☒ REGIONAL RDO/Yaounde ☐ INTERREGIONAL

4. LIFE OF PROJECT

BEGINS FY 71

ENDS FY 77

5. SUBMISSION

☐ ORIGINAL

☒ REV. NO. 5/74

CONTR. EFF. DATE

II. FUNDING ($000) AND MAN MONTHS (MM) REQUIREMENTS

A. FUNDING BY FISCAL YEAR	B. TOTAL $	C. PERSONNEL (1) $	C. PERSONNEL (2) MM	D. PARTICIPANTS (1) $	D. PARTICIPANTS (2) MM	E. COMMODITIES $	F. OTHER COSTS $	G. PASA/CONTR. (1) $	G. PASA/CONTR. (2) MM	H. LOCAL EXCHANGE CURRENCY RATE (U.S. OWNED) (1) U.S. GRANT LOAN	H. (2) COOP. COUNTRY	
PRIOR YEARS												
ACTUAL FY	340	135	33			56	149	145	36			$ 32,100
BUDGET FY 74	364	49	12	15	48	112.5	187.5	49	12			21,925
BUDGET FY 75	421.2	118.5	25	51.9	78	39.5	211.3	118.5	25			19,900
BUDGET FY 76	133.0	61.7	13	35.5	70	24.5	11.3	61.7	13			19,900
BUDGET FY 77	145.3	78.5	17	48.5	122	7.0	11.3	78.5	17			14,925
BUDGET FY												
FUTURE YEARS												
GRAND TOTAL	1403.5	442.7	100	150.9	318	239.5	570.7	442.7	100			$108,750

=CFA 220

OTHER DONOR CONTRIBUTIONS

NAME OF DONOR	(B) KIND OF GOODS SERVICES	AMOUNT
1) UNDP/FAO	1) Personnel, Participants, Commodities	$ 990,000
2) FAC	2) Personnel, Commodities	$1,160,000

III. ORIGINATING OFFICE CLEARANCE

Detfendol/Pielemeier	TITLE
CLEARING OFFICER	TITLE

IV. PROJECT AUTHORIZATION

CONDITIONS OF APPROVAL

CLEARANCES

BUR OFF.	SIGNATURE	DATE	BUR OFF.	SIGNATURE

3. APPROVAL AA's OR OFFICE DIRECTORS

DATE

4. APPROVAL A.I.D (See M.O. 1025.1 VI.)

SIGNATURE

ADMINISTRATOR, AGENCY FOR INTERNATIONAL

PROJECT 625-11-130-803
CENTRAL AFRICA LIVESTOCK AND MEAT PRODUCTION

I. SUMMARY

Livestock production is a basic economic activity in central and northern Chad, northern Cameroon, and throughout most of the Sahelian region of Africa. It is also an important, and often the principal, source of government revenues in these regions. Harsh climatic and soil conditions make alternative uses of the land extremely limited. Livestock productivity throughout the area is presently very low and unreliable, with production confined almost exclusively to the traditional sector. At the same time, a rapidly growing market for meat in Africa assures a ready outlet for any increased livestock output. If there is to be any significant and enduring improvement in living conditions for the inhabitants of this area, livestock output must be increased on a sustained basis.

This project has for its objective the improvement of livestock production among traditional herdsmen in a limited, pilot zone of some 530,000 hectares, involving 130,000 cattle in Cameroon and Chad, just south of Lake Chad. The project is designed not only to increase production in the immediate project area, but, much more importantly, to provide a model for increasing livestock and meat production in similar areas of the Lake Chad Basin. An important consideration in selecting the pilot zone was that the variety of conditions found there are representative of the Chad Basin.

There are two features which differentiate this project from previous efforts in Francophone West Africa to increase livestock production. First, this is an integrated project which combines all essential elements for improved livestock production, including range management, animal nutrition, health, herd composition, and marketing. While each of these elements has been used

separately or in limited combinations, an integrated effort to improve traditional livestock combining all these approaches has not been attempted before in the Francophone areas of West and Central Africa. Second, the project focuses on improving the animal management practices of the traditional herdsmen. Previous projects have focused almost exclusively on the practices required for increased cattle production without considering their relationship to the intermediary African herdsman who must carry out these practices. Certainly the most important, and intractable, problem impeding increased livestock and meat production in Africa is how to improve animal husbandry practices among traditional herdsmen. Thus the project will demonstrate that livestock production by traditional herdsmen in the Lake Chad Basin can be increased through a well-planned, integrated approach which involves the key elements of range management, animal management, nutrition, health and marketing. Thereby the traditional herdsmen himself would have some control over the factors in his environment which tend to limit his productive capability.

This is the first phase of a major, comprehensive effort planned to improve livestock and meat production in the Lake Chad Basin.

Project results will be documented in two ways. First, behavioral change among local livestock producers will be measured through a base-line survey of cultural patterns and sociological factors bearing on livestock production and marketing practices (presently being carried out), followed by periodic follow-up research designed to measure behavioral change resulting from project-related activities. The sociologist will be assisted by information gathered by the project managers during the course of the project. Secondly, statistics verifying changes in animal production, husbandry, and marketing (e.g., annual calving rates, weaning rates, mortality rates, annual off-take) will be recorded

by the project.

The general approach followed in the project is to provide a small number of expatriate technicians, who will advise and assist host country counterparts working directly with herdsmen through their traditional social systems in the pilot zone. Limited commodity support will be provided in order to help establish cattle watering points, veterinary facilities, market areas, model herds, and to demonstrate the value of mineral and protein feed supplements. In addition, training will be provided, principally in Africa, for qualified Africans who will later assume the major responsibility for project activities. An important intermediate objective will be the organizing of livestockmen into cooperative tribal groupings to carry out improved animal husbandry practices, including range management and controlled grazing, group marketing of cattle, regular vaccination and parasite control, etc. In view of the importance and complexity of changing traditional behavior patterns, the sociological study mentioned earlier will describe for project personnel the customs of the local population and will suggest the best means of encouraging change in the project area.

The project will be carried out in two phases of approximately five years each, with foreign aid inputs expected to be minimal in the second phase. The first phase of the project has been broken down into a preliminary eighteen month stage ending March 1974, and a forty-two month period of full-scale project activity. A thorough multidonor evaluation of the project will be carried out in FY 76 to determine necessary donor inputs during Phase II of the project. The project will be transferred to LCBC and host country funding and implementation after FY 77. Planned targets (end-of-project status) of Phase I of the project are listed on page

The project has been conceived as a multidonor, as well as regional project.

It is anticipated that this will permit each donor to make those contributions to the project for which it is best suited, allow a more efficient pooling of national skills, stimulate greater donor cooperation in development projects in the region, provide better continuity to the program than could a single donor, and tend to insulate the project from non-developmental political pressures.

Cooperating donor agencies are the UNDP/FAO, FAC and AID. The donor agencies are responsible to the LCBC for leadership and coordination of the total project. UNDP/FAO is responsible for project administration and coordination with the LCBC and host countries. FAC and AID handle project operations in the Assale region of Chad and the Serbewel region of Cameroon, respectively. In addition, FAC is separately funding a tsetse fly eradication program in the same area which will be carried out in close cooperation with this project. In both cases, the cooperating countries are Chad and Cameroon as represented by the LCBC.

Project objectives are basically similar in the two project regions mentioned above. This document faithfully reflects the overall Assale-Serbewel project plan as agreed to by the Lake Chad Basin Commission and the UNDP (donor project coordinator) and as described in UN Project Proposal RAF/71/268/B/01/12, dated May 1971.

This document concentrates on the activities to be carried out in the Serbewel, Cameroon (AID) project area. Most AID inputs will be used in this project area. However, in order to use to best advantage the resources of each donor agency, AID and FAC have agreed to supply certain inputs to both project regions. In this regard, AID will finance wells for both regions while FAC will finance most project-related studies, district office construction and equipment, and the equipment for area livestock markets.

AID 1020-28 (7-71)
SUPPLEMENT I

II. LOGICAL FRAMEWORK

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:
From FY 71 to FY 77
Total U.S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
A- Program or Sector Goal: The broader objective to which this project contributes: The broader objective to which this project contributes: 1. Increase livestock production efficiency in the Lake Chad Bassin in an equitable manner.	Measures of Goal Achievement: 1. Increased annual off-take from 7% to 12%. 2. Reduced calf mortality rate from 40/50% to 25%. 3. Increased calving rate from 40% to 60/65% per year. 4. More rapid maturity 6 yrs.-3/4 years.	1. Co-op and village herd records	Assumptions for achieving goal targets: 1. Rules governing livestock and slaughtered carcass movement will be harmonized within LCBC member states in a manner advantageous to livestock production. 2. LCBC will continue dialogue for establishing intercountry protocols supporting project goals. 3. LCBC and other participating organizations will communicate project achievements to LCBC member countries.

AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 71 to FY 77
Total U. S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
B- Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
1. To demonstrate the potential for improved livestock production in the "traditional sector" through an integrated pilot program in Assale-Serbewel which will increase capabilities of livestock producers to deal with their own problems and will increase the effectiveness of the government livestock services.	1. Established animal health program which provides effective control over endemic diseases and parasites.	1. Data supplied by technical service and co-ops.	1. Benefits to livestock producers, selling livestock through the co-op, are at least as great as selling through other mechanisms.
	2. Local livestock producers organizations effectively organized and adequately functioning which assist livestock producers in obtaining necessary production-related commodities and in selling livestock.	2. Sociologist final report.	2. Working capital available for co-ops from development banks.
	3. Significant sustained improvement in the level of animal nutrition as demonstrated through increased percentage of annual calf-crop reaching one year of age, increased calving rate, accelerated rate of maturity; through the availability and effective use of the following resoures necessary to sustain an efficient livestock production: (a) grazing range; (b) protein supplements; (c) mineral supplements; (d) forage (hay, silage, green chop); (e) water.	3. Technical Service data; purchase records of co-ops.	
	4. Improved animal husbandry practices established among local livestock	4. Co-op herd records.	

AID 1020-28 (7-71)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 71 to FY 77
Total U. S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
	producers. Herd composition with sustained high-level of off-take.		
	5. Alternative marketing channels established to guarantee efficient movement of saleable animals.	5. Co-op marketing records.	
	a. Marketing channels to urban areas in Central and West Africa;		
	b. Marketing channels for local consomption.		

AID 1320-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 71 to FY 77
Total U.S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:	Magnitude of Outputs:		Assumptions for achieving outputs:
1.a. Regular vaccination and prophylactic treatment of animals by technical services for diseases endemic to the area or for sporadic outbreaks.	1.a. Annual vaccination of 113,500 cattle.	1.a. Technical Services records	1. LCBC/FAC tsetse fly eradication program will continue and be successful in project area.
			2. Tsetse program will eradicate in Taf-Taf reserve.
b. Systematic treatment by livestock producers of calves for external parasites and minor injuries.	b. Internal parasite treatment for 21,000 calves and external parasite control for 113,500 cattle.	b. Village herd records.	3. Socio-economic study will a) indicate that producers organizations can be formed within the traditional structure of local groups; b) provide valuable information indicating how these groups can best be formed and stimulated.
2.a. Office and storage facilities for co-op and technical services at Makari and four districts.	2.a. Three room office at Makari with hangar enclosed storage facility; four district posts with storage facilities and small wells.	2.a. Physical existance	4. co-op office managers can be found and trained for their positions.
b. Trained co-op management	b. Two trained managers; ten co-op members trained in co-op techniques for district office management.	b. Project training records.	5. Technical services will provide transport for co-op management and commodities within sector.
c. Local co-op groups organized.	c. Seven co-op groups operating.	c. Co-op records.	6. Co-op commodity transport from Ndjamena to sector is at expense of co-op.
d. Working capital and credit supplied.	d. $50,000 capital made available to co-op groups.	d. Co-op and banking records.	7. Cultural factors will not inhibit culling and marketing of undesirable animals.
3.a.(1) Tsetse eradication of Taf-Taf reserve (FAC) and program established for controlled grazing of reserve area established among livestock producers by producer organizations.	3.a.(1) Clearing of all infested areas which are located on the banks of the Chari and El Obeid Rivers.	3.a.(1) FAC project information and sociologist reports.	8. It will be possible to implement and enforce a controlled water use and grazing program.
(2) Reseeding of denuded range land or abandoned farm land with native perennial species; protection of same as part of above program.	(2) Two reseeded areas of ten hectares each.	(2) Project Manager reports.	
		b.	

AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____.
Total U.S. Funding _____.
Date Prepared: _____

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:	Magnitude of Outputs:		Assumptions for achieving outputs:
b. Introduction and demonstration of value of locally available protein supplements (cotton seed, peanut meal) for calves.	b. 1,650 calves receive supplemental feed at the rate of ½ kilo/day for 60 days.	b. Project Manager reports.	9. Alternative marketing mechanisms will be available for undesirable animals.
c. Introduction and demonstration of value of readily procurable mineral supplements for gestating/lactating cows (salt blocks with mineral supplements).	c. 10,000 cows receive mineral supplements for 4 months period.	c. Project Manager reports.	
d. Introduction of production methods, storage and feeding of hay, and production and feeding of green chop and pit silage.	d. Six hay storage and pit silage demonstration areas; three green chop demonstrations areas.	d. Project Manager reports.	
e. Increased quantity and distribution of water to better utilize range forage and eliminate herd concentration around water sources.	e. Number and kind of wells to be determined by range survey and grazing plan.	e. Project Manager reports	
4.a.(1) Producers trained in the selection and culling of non-producing breeding age animals. Established bull selection criteria.	4.a.(1) Four model herds.	4.a.(1) Project Manager reports	
(2) Producers trained in the selection of breeding bulls at young age and introduction of system to ensure that selected bulls remain in breeding herds in project; culling and castrating of non-desirables.	(2) Four model herds.	(2) Project Manager reports	
(3) Herd records by village established an maintained by the Service d'Elevage.	(3) 488 village records.	(3) Existence of records.	
5.a.(1) Collecting of market information by co-op and transmission to co-op members.	5.a.(1) Makari Market	5.a.(1) Project Manager reports.	

AID 1020-28 (7-71)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1971 to FY 1977
Total U.S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:	Magnitude of Outputs:		Assumptions for achieving outputs:
(2) Holding/feeding facilities at Fort Foureau prior to slaughter at Farcha.	(2) UNDP/FAC installation.	(2) UNDP/FAC reports.	
(3) Transportation of slaughtered animals to markets; Ndjamena or Fort Foureau, Maiduguri.	(3) FAC supplied transport. (Two trucks)	(3) Co-op marketing records.	
b. Physical structure for holding, sorting, treatment, local slaughter, and loading activities in Makari.	b. Wash and slaughter facilities, holding and sorting areas, loading ramp.	b. Physical existence	

AID 1020-2B (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1971 to FY 1977
Total U.S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
D-Inputs:	Implementation Target (Type and Quantity)		Assumptions for providing inputs:
1. a. Vaccine and vaccinating teams	*LCBC/Host countries 74, 75, 76, 77	1. a. Technical service records b. 1) Project manager report 2) AID procurement records	1. Co-op will gradually purchase and distribute veterinary commodities over course of project.
b. (1) Extension training programs for livestock producers teaching simple treatment of internal and external parasites and infectious injuries	LCBC/Host countries 74,75,76,77	2. a. Project Manager reports b. AID training records c. AID training records d. Contract	2. Cotton seed, peanut meal, and salt blocks locally available in sufficient quantities at reasonable cost.
(2) Commodities for treatment of b. $73,000		3. a. Sociologist report, grazing management plan, Project manager reports, AID procurement records	3. Following demonstration, co-ops will purchase protein and mineral supplements.
2. a. Construction of co-op headquarters and storage facilities, Makari Construction of district offices (1 built)	LCBC/USAID 74 LCBC/FAC 74	b. AID procurement records c. AID procurement records d. Project manager reports	
Equipping six offices	LCBC/USAID 74,75	e. Project manager reports	
b. Short-term training, co-op management in Yaounde (2 people)	LCBC/USAID 74,75,76,77	4. a. Project Manager reports b. Existence of records	
c. Local training, 1 course for 10 co-op members. 5 man-months consultation co-op expert	LCBC/USAID 74,75,76,77	5. a. Physical existence b. UNDP reports c. FAC Reports	
d. Sociologist (4 mm, follow-up of preparatory phase study)	LCBC/USAID 75,77	6. Contract	
3.a. (1) (a) Consultant service for development of water use and grazing control program (10 mm)	LCBC/USAID 74,75	7. AID training records	
3.a. (1) (b) Extension activities to establish controlled grazing program through co-op organizations	LCBC/Host countries 74,75,76,77		
(c) Collection and sowing of seed, preparation of land	LCBC/Host countries 74,75,76,77		
(d) Wheel tractor and disc, plow scraper, spare parts ($20,000)	LCBC/USAID 74,75		
Hand tools, herbicides, applicators	LCBC/USAID 74		
Gasoline	LCBC/USAID 75,76,77		
Steel fencing--10 hectares ($5,000)	LCBC/USAID 74		
b. Cotton seed, peanut meal (50 tons) ($2,500)	LCBC/USAID 74		
c. Salt blocks (40 tons) ($30,000)	LCBC/USAID 74		

*"LCBC/____" reflects inputs as approved by the LCBC.

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AID 1020-38 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1971 to FY 1977
Total U. S. Funding
Date Prepared:

Project Title & Number: Central Africa Livestock and Meat Production, 625-11-130-803

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Inputs:	Implementation Target (Type and Quantity)		Assumptions for providing inputs:
d. Labor for seed collection, planting, protection, harvesting, mud storage facilities, logistics	LCBC/Host countries 74,75,76		
Hand tools	LCBC/USAID 74		
Supervisory support	LCBC/Host countries 74-77		
e. Artesian and/or Shallow well construction ($430,000)	LCBC/USAID 75		
4. a.(1) Training of livestock producers in selecting and culling techniques; and establish model herds within co-op structure	LCBC/Host countries 74-77		
(2) Establishment of herd records	LCBC/Host countries 74,75		
5. a. Slaughter facilities including wash facilities, holding and sorting area, loading ramp at Makari $25,000)	LCBC/USAID 74		
b. Holding and feeding installation, Fort Foureau ($200,000)	LCBC/UNDP 76		
c. Two cattle trucks, spare parts (10 tons). (FAC)	LCBC/FAC 74		
6. Sector chief (long-term contract)	LCBC/USAID 74,75,76,77		
7. Participant training for eight Africans in veterinary sciences, animal housbandry and/or range management.	LCBC/USAID 73,74,75,76,77,78		

III. RATIONALE

A. Setting

Livestock production is the principal economic activity in most of the Sahelian Zone of Africa, that area lying roughly between the twelfth and fifteenth parallels, and is an important activity in most of the Sudan savannah, ranging between the eighth and twelfth parallels. Due to limited rainfall, alternative land uses are severely restricted and generally limited to subsistence cereal crops of sorghum and millet. Thus, livestock production provides an important means of subsistence, as well as virtually the only commercial possibility for much of this area. In addition, taxes on livestock constitute a significant source of government revenue, particularly in Chad.

Within the four member countries of the LCBC (Chad, Cameroon, Niger, and Nigeria), there are approximately 18,500,000 head of cattle, more than four-fifths of which are located in the sahel and savannah areas. Traditionally, surplus livestock production there has provided meat to the deficit southern coastal areas of Africa. This trade has been an important factor in helping ease the chronic protein deficiency in the diets of these forest-zone peoples. Yet, there are unmistakable indications that demand for meat in Africa is going to increase much more rapidly than supply in the coming year. This is due primarily to two factors. First, population is increasing at a rapid rate, over two per cent per year, which provides a constantly increasing demand for meat. At the same time, meat has a high income elasticity of demand, i.e., as economic growth increases per capita income, a disproportionate share of the additional income is spent on meat. This acts as an important further stimulus on the demand for meat.

On the production side, annual herd off-take averages only some seven per cent, as compared to an off-take of about fifteen per cent which could be expected from properly managed herds on tropical range. Present livestock off-take in Central Africa is low for a number of reasons. A high rate of disease, particularly parasitic infestations, kills off an estimated half of the young cattle before they reach three years of age. Poor animal nutrition is another basic cause of low productivity, limited cattle weight, and increased susceptibility to disease. This results in large measure from endemic overgrazing of rangelands combined with the lack of readily obtainable protein and mineral supplements. Inefficient marketing arrangements also contribute to reduced off-take. Present systems of cattle corridors often result in considerable weight loss, lower prices to cattle producers, exposure to disease, etc. Finally, and most importantly, livestock production is low because of the traditional approach to animal husbandry taken by the African herdsmen and because of the absence of improved livestock practices. In view of the fact that virtually all cattle production occurs in the traditional sector, this latter point is the most important and intractable single reason for presently low output.

Overgrazing has been characteristic throughout most of the Sahel. This poses a serious threat to the future bearing capacity of these rangelands. In its optimum ecological balance, the range is dominated by a perennial grass which, in normal growth, reaches six to eight feet in height with roots penetrating an equal distance to reach moisture - even in successive dry years. This grass cover can still be found in areas protected from excessive grazing by the tse-tse fly. However, an agrostological study in the Serbewel sector shows little except annual grasses in the rangelands. For root renewal, a root-rotation grazing system is required to allow the plant to assimilate

nutrients through leaf photosynthesis. When frequent and close grazing removes needed leaf surface, the plant responds by making successively shallower root penetration, leaving it increasingly vulnerable to protracted periods of abnormal dryness. The critical stage which this process has reached in the Sahel today has been amply demonstrated in the recent years of drought and below normal rainfall. The Sahelian range has shown that, in such periods, it is no longer able to support the human and animal populations which depend upon it. Unless the process can be arrested or reversed through a basic change in animal husbandry practices, the continued deterioration of rangelands will lead to an actual reduction in cattle production throughout the area. In fact, there is evidence that this is now taking place.

Earlier efforts to improve livestock production in traditional sectors of LDC's have not typically been marked by success. There are a number of explanations for this. The life of traditional nomadic herdsmen is extremely precarious and risky and tends to develop in the herdsmen a cautious attitude toward any departure from known, proven ways. Past efforts to improve livestock production have largely ignored this critical human factor and the ways in which improved animal husbandry practices can be introduced into a traditional society. Instead, past programs have concentrated largely on the animal itself and the objective measures necessary to improve its yield.

Previous attempts to increase animal output have usually suffered from too narrow a focus on a particular aspect of livestock production. Thus, there have been projects aimed specifically at improving livestock health, providing additional cattle watering points, improving range management, breed upgrading, etc. The basic weakness of such an approach, which concentrated on a particular aspect of the overall problem, is that improvement in one area is intimately

related to improvement in another, and unless changes are introduced simultaneously in all areas, no major improvement in production will likely result. Thus, improving animal health may only result in more losses from poor nutition unless additional water and feed are provided to the animals which are saved. Similarly, introducing new breeds of cattle or upgrading existing herds may not be effective unless combined with measures to improve health and nutrition. And providing additional watering points without control of grazing will likely result only in overgrazing of surrounding areas, ultimately decreasing cattle production.

Finally, the focus of past projects has been almost exclusively national in approach, whereas the actual economics of livestock production and marketing are pre-eminently regional. Efforts to improve health practices, establish improved cattle corridors, improve range management, control smuggling, etc., invariably involve more than one country and require a very considerable degree of cooperation between neighboring African states. This cooperation has been notably lacking between producing and consuming states in the fields of pricing and the control of animal and meat trade. The situation has provided only minimal earnings to the producer, thus precluding investments in improved practices and facilities which could raise production levels. The gradual change in the supply-demand picture, together with the growing awareness in all countries that Africa will soon no longer be able to satisfy its needs for meat, has created a new setting in which a concerted effort to harmonize the policies of consumer and producer states can be expected. As an example, a Bureau for Livestock and Meat has recently been created within the LCBC, charged with the drawing up of inter-member country protocols relating to pricing, health, and sanitation standards, and livestock and slaughtered carcass movement. There

are reasonable prospects that equitable arrangements can be negotiated by the LCBC which will provide a regional policy and regulatory structure more conducive to the development of livestock production.

B. Strategy

Basic AID strategy for increasing livestock production in Central Africa is to undertake a sizeable, comprehensive, and regional cattle improvement program. For reasons noted above, the program must be organized on a regional basis and be comprehensive in scope. Moreover, in order to make a meaningful impact on livestock production, such a program must also be large and involve the transfer of substantial resources. For this, as well as to avoid the duplication of efforts, the cooperation of donors is essential.

While AID's principal focus, therefore, is on this larger, comprehensive regional program, it is also necessary to recognize that any efforts to increase cattle production in the Sahel areas of Africa must eventually come face to face with the problem of increasing traditional livestock production by inducing livestock breeders to adopt improved range and animal management practices. It is to this problem that the Assale/Serbewel pilot project addresses itself. Thus, this pilot project will play an integral and important part of any larger regional effort.

Project Strategy Outline

In broad terms, the project strategy calls for: a) preliminary project planning through its various phases and steps to the desired results; b) stage implementation; c) periodic assessment of the validity and reliability of the approach; and d) exploitation of positive results to encourage participating countries and donor agencies to undertake efforts on a broader regional basis as rapidly as possible.

The primary thrusts of the project are:

1) The use of the existing communication channels and authority structures for directing technology to the livestockman, recognizing that the social system of the herdsmen is cohesive, well-disciplined, rational, and responsive. They will be expected to implement the program, including range and water control, herd management, and marketing.

2) Decreasing pressure on the range by: a) range allocation (the project area will be closed to outsiders as a necessary condition to get the present users to control grazing); b) clearing the tse-tse fly to open up new range (FAC-funded activity); c) developing water supplies to provide access to range presently under-utilized; and d) demonstrating improved herd management techniques.

3) Demonstrating the value of mineral nutrients, protein supplements, and vermicides, and making these items available through cooperative buying.

4) Providing for group (cooperative) marketing.

5) Encouraging participating governments, the LCBC, and the donor community to adopt a schedule for implementing similarly coordinated projects throughout the region.

Strategy Discussion

The basic objective of the Serbewel/Assale project is to increase livestock production efficiency by improving traditional African animal husbandry and range use practices. This is to be realized by an approach which places primary emphasis on organizing, educating, and convincing traditional breeders to adopt improved livestock practices. The program will be of an integrated nature, tying together all essential requirements for improving animal production. Those include the following essential elements:

1) Establishment of livestock producer co-ops. The success of the project will be determined by the ability of livestock producers: a) to accept the principle of paying for benefits received; b) to jointly agree upon and enforce programs for the conservation of limited grazing, water, and forage resources; and c) to efficiently deal with outside market forces (for buying inputs and selling livestock). While exceptional external financing and suasion may lead to temporary ameliorations, the most effective means of bringing about long-term progress on these matters is through the establishment of livestock producer organizations which can themselves administer conservation programs, assist individual livestock producers in dealing with the outside market and serve as a locus for the introduction of new animal husbandry techniques.

Two necessary steps have already been taken toward the establishment of viable co-ops in the Serbewel. Project personnel have made initial contacts with and gained the confidence of the livestock producers. Secondly, a sociological study of the area is now being completed which will describe for project personnel the customs of the local population and will suggest the best means of inducing change.

The base-line data gathered during the initial sociological study will be used as a basis for measuring change in livestockmen's attitudes and customs during the life of the project. These changes will be measured by the sociologist during return visits to the project site in FY 75 and FY 77, and by records kept by the project manager and host-country officials.

At an appropriate time, the project will provide funds for the construction of co-op offices and storage facilities, and will provide training in co-op administration for local leaders. Project personnel will

provide technical assistance to the co-ops for the duration of the project.

The success of the cooperative development phase of the project is predicated upon certain assumptions. Co-op operations, in initial years, will depend upon the availability of short-term working capital loans from national development banks. The LCBC has pledged to use its influence to obtain such relatively high-risk credit for the project, and with this backing, it seems reasonable to expect that needed capital will be forthcoming. Given the basically supportive policies of the national governments toward the cooperative movement, it is believed that such problems as may arise can be overcome. Finally, it is assumed that the co-ops will be sufficiently well-managed to offer the monetary and communal benefits to livestock producers needed to convince them to trade through the co-ops rather than as individuals. Project inputs have been designed to enhance the prospects for such efficient management, but it is recognized that this facet of the project will need to be closely followed.

2. Establishment of animal health programs for control of endemic diseases and parasites: Effective disease control in order to protect herds against epidemics and to decrease the debilitating effects of parasites and minor injuries is a necessary part of a comprehensive livestock improvement program.

The FAC-supported IEMVT tse-tse eradication project will complete spraying in the project area in CY 1974 and systematic follow-up surveys are planned. Vaccination and prophylactic treatment of animals for contagious bovine pleuropneumonia, blackleg, anthrax, and trypanosomiasis will be continued by the Cameroonian Service de l'Elevage. In addition, livestock producers will be taught simple methods of treatment for internal and external parasites and infectious injuries. Area co-ops will gradually assume the burden of purchasing of veterinary supplies for these treatments.

3. Improvements in the level of livestock nutrition are essential in order to sustain an efficient livestock production. The project will affect nutrition by simultaneous actions relating to the supply and efficient use of grazing range, water, forage and protein and mineral supplements.

Grazing range will be increased through tse-tse eradication from the existing Taf-Taf reserve and through reseeding of denuded range land or abandoned farm land with native periennial species which will result in less grazing pressure on presently available grasslands.

A range-water-animal balance will be determined and established through the following procedure:

a. Make a range site and condition survey, including present range use and present wet and dry season grazing patterns.

b. Based on the survey, make a long-term wet and dry season grazing plan, balancing the allowable animal units with the forage supply, assuming optimal water availability.

c. Obtain from the government, for the traditional users who shall have been identified and enumerated, the exclusive grazing rights on the land in exchange for their commitment to a technically balanced grazing scheme, and obtain from the traditional users their commitment to plan and adjust their herds and grazing patterns in compliance with the plan.

d. Demarcate the bounds of the project and its grazier subdivisions by seasonal and grazier designation.

e. Based on the long-term wet and dry season grazing plan, specify the location and quantities of additional water required for animals to properly utilize available forage.

While the effects of the current drought will make it necessary to proceed immediately with the rehabilitation or construction of water catchments or shallow wells for both human and animal consumption, the release of funds for the construction of artesian wells for animal watering will be conditioned on the development of the above grazing plan.

Project area livestockmen will be shown how area forage resources can be used to their best advantage. Improved forage production, storage and feeding methods will be introduced by project personnel.

Judicious use of protein and mineral supplements can significantly increase the efficiency of range output by increasing the calving rate and the annual net weight gain. In order to demonstrate the value of these

supplements, the project will purchase cotton seed, peanut meal and salt mixes for demonstration during the 1974 dry season. It is expected that the co-ops will then procure these supplements on a regular basis for resale to their members.

4. Improvements in animal husbandry practices among local producers: In order to protect limited natural resources and demonstrate the potential for increased livestock production in similar ecological conditions, the project will attempt to improve livestock productivity without increasing herd numbers. Herds productivity can be increased through a combination of measures which will result in a more efficient herd composition with a higher level of off-take (12% rather than 7%), an accelerated rate of maturity (6 years down to 4 years) and a decrease in calf mortality (45-50% down to 25%). Herd composition will be improved through culling and marketing of non-productive stock, proper selection and care of breeding bulls and the castration of market males. Improved dry-season nutrition practices will climinate costly retardations in the growth and maturity rates of females and when combined with systematic health treatment will reduce the area's high rate of calf mortality. Project personnel through the Service de l'Elevage will be responsible for introducing improved animal husbandry practices to livestock producers in part through the selection of model groups within area herds and through the establishment of herd records in the co-ops.

5. Establishment of alternative marketing channels to guarantee the efficient movement of saleable animals: The gains in livestock productivity attained through the foregoing will be sustained only if livestock can be marketed in a manner which brings an effective incremental return to the producer. Presently, livestock are sold by individual

producers in conditions scarcely favorable to him. While a persistently increasing demand for beef exists in urban centers in Cameroon and Nigeria, traditional methods of livestock marketing, transportation and taxing limit benefits to both producers and consumers. At the local Serbewel level, the project will assist in the construction and operation of a simple market complex in Makari. A simple marketing news service will be established by the central co-op for the benefit of co-op members and local producers will be taught sound marketing practices in relation to animal husbandry, price, and seasonal factors.

Two additional market-related actions are planned within the larger Assale/Serbewel project but are not directly related to A.I.D. inputs. First, the UNDP is planning to construct modern holding and feeding facilities at Fort Foureau prior to animal slaughter at Farcha. Carcasses will then be chilled and shipped by air to markets in Yaounde and other urban centers. Secondly, the LCBC will continue its attempts to harmonize livestock transport, and tax regulations among member countries in a manner which will ensure adequate supplies of beef to consumers while also providing a rewarding and equitable return to producers.

The area of Serbewel, Cameroon, and Assale, Chad was selected as the project site because it includes many of the conditions found in the principal livestock producing areas in the Lake Chad Basin and because it is easily accessible to slaughter facilities in Fort Lamy. The project zone is located on both sides of the Chari River, between the 12th and 13th parallels, just south of Lake Chad and north of Fort Lamy. It covers an area of approximately 530,000 hectares, includes a human population of 81,000, and a cattle population of 175,000. Within the project area, the

two national sectors are quite different. Serbewel is larger and richer than Assale. It covers 370,000 hectares as opposed to 160,000 in Assale, is populated by 70,000 inhabitants versus 11,000 and has 115,000 head of cattle as compared to 60,000. Serbewel is also better watered, supports an intensive agriculture, and enjoys a better infrastructure of roads, schools, dispensaries, veterinary posts, etc. Moreover, virtually all the livestock breeders of Serbewel are sedentary or semi-sedentary, while substantial numbers of nomadic herdsmen center the Assale area during the dry season. Within the relatively small project area, there is a considerable variety of conditions typical of those found in other livestock producing areas of the Lake Chad Basin.

The Assale-Serbewel Project is being carried out in the initial phases by a team of three highly qualified and experience expatriate experts (one project leader (UNDP/FAO) and two sector chiefs (USAID and FAC)) supported by African counterparts. The competence of this team is the factor most critical to the success of the project. The team is required to work closely and effectively with the African herdsmen in order to demonstrate better methods and convince them of the advantages of improved animal husbandry practices.

The above team is supplemented by special consultants and contract services to assist with particular problems. This has included a contract for undertaking a base-line survey and periodic follow-up studies of sociological conditions bearing on livestock production in the area. This also has included funding of an agrostological survey of the project area to be carried out by the Farcha Laboratory in Fort Lamy.

Project funds provide for the formal training of Africans, preferably in African educational institutions, who will later replace the expatriate technicians. One man will be trained in Veterinary Science in Nigeria and three will be trained at Dakar, while two Range/Livestock Management experts will be trained in the U.S. Funds are also available to construct and equip facilities in the area and purchase required project commodities, including vehicles.

UNDP/FAO provides necessary funds for the project coordinator, and his staff, training for eight participants, certain operating expense and facilities at Fort Lamy. The LCBC furnishes project counterparts at the Ndjamena Headquarters, and the Servewel and Assale districts, and necessary auxiliary personnel such as typists, drivers, etc.

The project has been planned to last for ten or more years (sufficient to encompass three generations of cattle) divided into two phases of at least five years each. The first is a phase of implementation, with the second providing for the continuation and maintenance of practices initiated in the first phase. Only in the first phase it is planned to provide extensive external technical and financial assistance; the second phase will be carried out by the host country experts trained during phase one. No significant improvement in livestock production should be expected until late in phase one. It is important that there be no illusions as to the inherent difficulties of succeeding in this undertaking. Even with the most careful planning and competent implementation, efforts to organize African livestockmen and to change their traditional practices could very well fail. Nevertheless, the potential benefits are high and believed worth the risks.

The project has been conceived as a multi-donor project, as well as, a regional one. This has the immediate advantage of reducing the number of experienced French-speaking livestock experts which would have been required of A.I.D., as a sole donor. It is unlikely that A.I.D. could provide the three well-qualified experts required for this project; it has been able to provide one. Having several donors also permits each donor to make those contributions for which it is best suited, thereby allowing a more efficient utilization of donor resources. It also tends to keep the project focused on development goals and discourage donors from pursuing more parochial, short-term political ends. At the same time, the approach to livestock production and eduction taken by U.S. experts is generally quite different from that of Europeans. The interplay and discussion between experts from the two systems working in close contact should stimulate more imaginative responses to problems. It also seems reasonable to expect that successful cooperation on this project would, by establishing working

relations between donors, tend to spill over into other program areas and that multi-donor undertaking should offer better project continuity in that unforeseen budgetary or other difficulties on the part of one donor could be covered by the other donor. Finally the multi-donor framework, despite certain short-run difficulties, should result in the effective long-run use of insights gained through this "demonstration" project in future projects carried out individually or jointly by host countries, the LCBC, and the region's major donor organizations.

Effects of the Sahelian Drought

The Assale-Serbewel project area consists of soils and climate approaching the ideal for range forage and livestock production. Its strategic nearness to Ndjamena makes it enormously important to the region. While it has been largely settled by sedentary people, it still attracts large numbers of nomadic herds and at a greatly intensified rate with the progression of the drought. This is particularly true in the Assale sector in Chad which traditionally has been more subject to these livestock movements and where Government controls have been less effective. The drought has caused a significant reduction in surface water availability, the premature drying of shallow wells, and a recession of the Lake shoreline by several kilometers with consequent implications for the normal patterns of animal migration within the area. Still, the superiority of the resource base is such that it continues to draw increasingly large numbers of cattle from less advantaged regions. This additional pressure presents a serious threat to the natural perennial grasses which still exist in the Assale sector and have led the LCBC and A.I.D. to consider supplemental project inputs to preserve this range.

One of the primary objectives of the project is to develop a pilot

area which can serve as a model for duplication in future development programs. The area, therefore, should serve as a training ground for host government officials to demonstrate what can be done to overcome the present menance to the range resources and the future livestock production potential. Every effort should be made to develop and establish a sound production system and identify those governmental policies and procedures required to support such a system. By assisting the local governments to establish a base in policy and law for rational range administration within the pilot zone, future range/livestock development programs can be launched on a sounder footing.

IV. Course of Action

Summary -- Preparatory Phase FY 71 - FY 73 (October, 1972 to March 1974)

The preparatory phase of the project was delayed due to the tragic death of the newly-appointed UNDP project coordinator. After the arrival of a new coordinator, nine months later discussions between LCBC/donor agencies and officials of Chad and Cameroon clarified the structure and goals of the project. The Serbewel sector chief arrived in 1972 and has established close working relationships with LCBC and host country livestock service personnel. A national coordinating committee comprised of regional administrators and technical service chiefs has been organized in the Servewel region in order to harmonize project and national activities.

With the arrival of the Assale sector chief in 1973, all expatriate project personnel are now in place. In the Servewel region, a full staff of eleven Cameroonian technicians are now working full time on project activities under the guidance of the sector chief.

All preliminary studies (agrostological, socio-economic, parasite control) will be completed in FY 74.

Sites have been selected for veterinary posts and other project installations. Most project construction will be carried out in FY 74 and commodities and supplies should start arriving during this period.

Actions -- Preparatory Phase FY 71 - FY 73

1. Concurrence of donors (LCBC, FAC, UNDP and USAID) on financing of preparatory phase of 18 months.

2. Grant agreements signed by USAID and LCBC.

3. Recruitment of three expatriate technicians to be assigned to LCBC, one as Project Coordinator in Ndjamena (UNDP), and one Sector Chief for each of the two sectors (A.I.D. and FAC).

4. Contacts established with government officials and national technical service personnel responsible in each respective sector.

5. Organization of National Coordinating Committee in Sector Serbwel, three meetings held during FY 73/74.

6. Establishment of a working relationship with the livestock community.

7. Infrastructure of local national livestock service reorganized into four sub-sectors and local staffing completed in Serbewel sector.

8. Farcha Laboratory completed initial agrostological studies in four selected sites for artesian wells in Serbewel, and a similar area in Assale.

9. Farcha Laboratory completed treatment and two weigh-ins of calves to determine feasibility study for systematically treating calves for internal parasites.

10. Farcha Laboratory began implementation of the tse-tse fly eradication program in project area. This project is to continue through FY 75.

11. Commodity lists were prepared for preparatory phase procurement and submitted to RDO Yaounde.

12. Sector Chief Serbewel established residence in project area (Makary) February 1973.

13. Steps taken to establish an extension education program within the livestock communities.

14. Preparation of long-range project plans including suggestions for financial support.

(FY 1974) Beginnings of Principal Phase of Project (Apr. 74 to Sept. 77)

Activities Planned for FY 74

*1. Intensive, systematic, vaccination campaign against endemic diseases.

*2. Start campaign to control ticks and other external parasites.

*3. Systematic treatment of calves for internal parasites.

*4. Development of supplemental green feed sources in waterways (Serbewel River, Chari River, and Lake Tchad).

*5. Demonstration using protein feed supplements for limited number (1,650) of calves giving $\frac{1}{2}$ kilo per day for 60 days; May-June.

*6. Installation and demonstration of green silage pits in four key white sorghum areas. Using indigenous green grass and not sorghum.

*7. Keep production herd records on village level.

*8. Construction of Sector Chief's residence, and livestock service/project office/garage complex at Makary (budget FY 73).

*9. Organize framework of livestock co-op.

10. Completion of sociological study (LCBC/A.I.D.).

11. Construction of co-op office and co-op storage facilities (actual construction probably FY 75).

12. Construction of three veterinary posts and four vaccinating/ treatment parks (LCBC/FAC).

13. Equip office furniture and hard veterinary supplies, and water source for each veterinary post and/or park.

14. Order 35 mm slide projector, 35 mm SLR camera, and portable generator.

15. Order transievers (3) for inter project/sector communications.

16. Participant training for four veterinary science trainees (veterinary doctors) at University of Dakar and U. of Nigeria (FY 74, 75, 76 and 77 or 144mms).

17. Order extensive durable veterinary supplies, medicines (all vaccines to be furnished by LCBC/host countries), and insecticides to fully equip veterinary posts.

18. Arrival of first commodity order (FY 73); limited veterinary supplies, vehicle (1), and hand tools.

*Extension Education Demonstration Programs (Carried out by Livestock Service/project in close collaboration with Livestockmen groups and co-op.

Activities Planned for FY 1975

1. Extensive veterinary services offered to livestock co-op.

2. Recruitment, late in FY 1974 of Co-op Manager for Serbewel Sector (1) salary paid by co-op, and transport and co-op training by project. Co-op manager must have Economics, Office Mgt., and Typing Training.

3. Provisions for annual training of co-op managers (2).

4. Consultant in cooperatives and office management conducts course for two project office managers in sector.

5. Participant training for a two Range Management/Livestock Management Trainees in a Master Program for 18 months each (Begins FY 75 ending mid FY 76.).

6. Participant training continues for four veterinary science trainees at University of Dakar and Nigeria.

7. Co-op organization assumes responsibility for commodity supply and future orders for members: insecticides, medicines, protein and salt/mineral supplements.

8. Working capital loan is made available to co-op by Development Bank.

9. Demonstration extension education programs continue as illustrated in FY 74; numbers 3, 4, 5, 6, and 12.

Also, demonstrate usefulness and effectiveness of mineral supplements in maintaining health and condition of gestating and lactating cows, and the use of supplemental protein in maintaining calves (dry season programs).

10. Continued purchase of hard veterinary equipment to equip veterinary posts and to assist co-op with practical field instruments.

11. Veterinary posts well equipped to carry out extensive services.

12. Formulation of sound and practical range management and water use programs with stockmen and co-operatives (4) with assistance range management consultants.

13. Establish reseeding areas (2) with assistance of co-op members in each area using indigenous grass species. Each area will be roughly 10 hectares and will be closed to grazing through two rainy seasons.

14. Purchase of one light duty 4x4 pick-up truck.

15. Consult in cooperatives and ice management conducts course for two project office managers in sector (2 mm).

16. Initiate water development program.

Activities Planned for FY 1976

1. Participant training continues for four veterinary science trainees (third year).

2. One month of training for co-op manager (2) in cooperative management and economic course.

3. One month of training in project areas for key co-op participants (10) and co-op managers (2). Co-op expert comes from Yaounde.

4. Livestock co-op functions independently in obtaining commodities and supplemental feeds and minerals. Co-op manager assumes responsibility for odering and receiving commodities, and distribution.

Commodities supplied through co-op:

a. disinfectants and wound dressing material

b. insecticides for control of flies and ticks

c. salt block/mineral supplements

d. prophylactics

e. spray (portable) parts

f. protein feed supplements

5. Service de l'Elevage (Livestock Service) continues role in disease control, animal movement control, slaughter control, extension education and technical assistance to co-op as needed.

6. Transport of co-op manager and co-op commodities within area by project transport.

7. Seed-bed preparation adjoining reseeded areas (see FY 75, item 12) September 1975).

8. An additional marketing alternative is offered co-op members through holding/finishing complex at Fort Foureau (LCBC, UNDP FY 75). Wheel transport of young stock to Fort Foureau area.

9. Purchase of vehicles (2) all-wheel drive as replacements for existing project vehicles.

10. Completion of training of 2 Range Management/Livestock Management Trainees in Masters Degree Program and Assignment to Project Areas.

11. Begin training for two participants in agriculture degree program in African institution.

Activities Planned for FY 1977

1. Continuation of two participants in agriculture (second year).

2. Continuation of four veterinary science trainee (fourth year).

3. Final commodity purchases for spare parts, motors, and tools needed by livestock service and co-operatives.

4. Participant training for co-op (2) and on-the-ground training and consultation by co-op expert for (10) key co-op personalities.

5. Continued technical assistance and extension education role by Livestock Service to co-op.

6. Review of project by donors UNDP, FAC, USAID, and LCBC/host countries.

Activities Planned for FY 1978

1. Final year for participant trainees in veterinary science and agriculture.

2. Assignment of graduated veterinarians with LCBC project areas to insure project Assale-Serbewel continues to function with qualified technical assistance.

3. Final commodity purchases arrive.

A.I.D. BUDGET FY 74-77

I. Personnel	Cum. to FY 74	FY 74	FY 75	FY 76	FY 77	Total
A. Sector Chief	115,000(33mm)	43,000 (10mm)	60,000 (12mm)	60,000 (12mm)	60,000 (12mm)	
B. Sociologist	20,000(8mm)	6,000 (2mm)	5,000 (1mm)		15,000 (3mm)	
C. Range Management Consultants			50,000 (10mm)			
D. Co-op Expert			3,500 (2mm)	1,750 (1mm)	3,500 (2mm)	
Totals	135,000	49,000	118,500	61,750	78,500	442,750
II, Participants						
A. Long Term Training--U.S.			26,900 (24mm)	9,500 (8mm)		
B. Long term Training--Africa		15,000 (48mm)	15,000 (48mm)	22,500 (60mm)	45,000 (120mm)	
C. Short Term Training--Africa(Co-op management)			10,000 (6mm)	3,500 (2mm)	3,500 (2mm)	
Totals		15,000	51,900	35,500	48,500	150,900
III. Commodities						
A. Veterinary Supplies		41,000	21,000	11,000	4,000	
B. Tractor, Disc plow, scraper, parts		12,000	8,000	1,000(parts)		
C. Fencing		5,000				
D. Vehicles			5,000	10,000		
E. Mineral Supplements		30,000				
F. Audio-Visual Equip.		1,000	1,000		500	
G. Radio Equip.		2,000				
H. Electric Generators		3,225	500			
I. Vehicle Spare Parts		2,500	2,500	2,500	2,500	

A.I.D. BUDGET FY 74-77

	Cum. to FY 74	FY 74	FY 75	FY 76	FY 77	Total
J. Office Furnishings and Equip.		6,000	1,500			
K. Field Equip. (pumps, portable generator, scales)		5,000				
L. Protein Supplements		2,500				
M. Kerosene Freezer		1,300				
Totals	56,000	112,525	39,000	24,500	7,000	239,525
IV. Other Costs						
A. Well Construction		100,000	200,000			
B. Vehicle Maintenance		10,000	10,000	10,000	10,000	
C. Livestock Market Facilities Construction		25,000				
D. Co-op Office Construction		25,000				
E. Water Towers		10,000				
F. Well Construction for Co-op Centers (open, cemented)		15,500				
G. Office Operating Expenses		1,475	1,300	1,300	1,300	
Totals	149,000	187,475	211,300	11,300	11,300	570,375
GRAND TOTAL	340,000	364,000	421,200	133,050	145,300	1,403,550