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**Report No. PA-136a**

**APPRAISAL OF  
SECOND LIVESTOCK DEVELOPMENT PROJECT  
ETHIOPIA**

**December 4, 1972**

**Agriculture Division,  
Projects Department,  
Eastern Africa**

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#### CURRENCY EQUIVALENTS

|                  |   |                                 |
|------------------|---|---------------------------------|
| US\$1.00         | = | 2.30 Ethiopian Dollars (Eth.\$) |
| Eth.\$ 1.00      | = | US\$0.43                        |
| Eth.\$ 1 million | = | US\$434,285                     |

#### WEIGHTS AND MEASURES

##### Metric System

|                                       |   |                                    |
|---------------------------------------|---|------------------------------------|
| 1 hectare (ha)                        | = | 10,000 m <sup>2</sup> = 2.47 acres |
| 1 kilometer (km)                      | = | 0.62 miles                         |
| 1 square kilometer (km <sup>2</sup> ) | = | 0.39 sq. miles = 100 ha            |
| 1 kilogram (kg)                       | = | 2.20 pounds                        |
| 1 liter (l)                           | = | 0.26 gallons                       |
| 1,000 kg = 1 metric ton               | = | 0.98 long ton                      |

#### ABBREVIATIONS

|      |   |                                              |
|------|---|----------------------------------------------|
| AIDB | = | Agricultural and Industrial Development Bank |
| ALMO | = | Assistant Livestock Marketing Officer        |
| CBE  | = | Commercial Bank of Ethiopia                  |
| DBE  | = | Development Bank of Ethiopia                 |
| EIC  | = | Ethiopian Investment Corporation             |
| LMB  | = | Livestock and Meat Board                     |
| LMO  | = | Livestock Marketing Officer                  |

#### LMB Fiscal Year

July 8 - July 7

## ETHIOPIA

### SECOND LIVESTOCK DEVELOPMENT PROJECT

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All mission members, Messrs. M. J. McGarry, and F. M. Crowe (IDA), T. L. Martin (ADS), and E. W. Root (Consultant), contributed to this report.

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## ETHIOPIA

### APPRAISAL OF A SECOND LIVESTOCK DEVELOPMENT PROJECT

#### SUMMARY AND CONCLUSIONS

i. This report appraises a project to improve livestock movement, marketing, and slaughter facilities in Ethiopia and to increase the quantities and value of hides for export and local processing. Besides, provisions are made for the preparation of future livestock projects. Ethiopia's livestock population, possibly the largest of any country in Africa, makes a disproportionately small contribution to an economy with very low per capita income and whose exports urgently need to be diversified and expanded.

ii. This would be the sixth IDA Credit for agricultural development in Ethiopia. The Wolamo Agricultural Development Project (169-ET) was signed in November 1969; the Humera Agricultural Development Project (188-ET) in May 1970; the Addis Ababa Dairy Development Project (269-ET) in August 1971; the Coffee Processing Project (290-ET) in March 1972; and the Agricultural and Industrial Development Bank (AIDB) Project (304-ET) in May 1972. Performance to-date under these projects has been reasonably satisfactory.

iii. The country lacks an organized stockroute and marketing system. As a result there are serious weight losses when cattle are moved; disease control is handicapped; and incentives to producers are inadequate. Ethiopian hides have a poor reputation on the world market and only half the potential supply reaches the market. Simple improvements in the techniques of preparation could double the value of individual hides and, moreover, provide an incentive to bring many more hides into the trade stream. Since there is virtually no commercial ranching in Ethiopia, practical experience of its feasibility, on a small scale, is needed to show the potential and the direction for further development.

iv. The proposed Project would provide: (a) 2,500 km of stockroutes, 48 primary and 6 terminal markets, with limited trucking services connecting the three main cattle producing areas of the country with the principal centers of consumption; (b) 159 slaughter facilities (mostly simple concrete slabs) with associated hide sheds situated throughout the country; (c) funds for the preparation of future livestock projects; and (d) cost of ranching specialist and technical assistance. Parallel to the project, it is expected that financing for about 5 fattening ranches and purchases of 5 cattle trucks by private parties would become available through AIDB, either from its own funds or from the proceeds of the IDA Credit extended to AIDB in 1972.

v. Total project cost would be of the order of US\$6.4 million equivalent excluding private ranching and trucking, while the foreign exchange component would be about 35%. The IDA Credit of US\$4.5 million would finance foreign exchange costs of US\$2.2 million, and US\$2.3 million equivalent of local costs. The Livestock and Meat Board (LMB) would be the executing agency for all aspects of the Project except future project preparation, which would be the responsibility of the Government. The latter may, however, designate LMB as the agency responsible for project preparation.

On-lending to LMB would be at 3/4 of 1% for the first 5 years and 8% thereafter for a term of 20 years, with Government contribution to an amount of about US\$1.4 million on terms not less favorable than the above. Credit for the fattening ranches and privately operated cattle trucks may become available through the Agricultural and Industrial Development Bank (AIDB). Since AIDB would be able to finance such development under the IDA assisted Agricultural and Industrial Development Bank Project, no funds are provided here for such purposes.

vi. The Project is not expected to give rise to undue technical difficulties as, for the most part, only simple structures and facilities are involved. The geographical spread and number of locations and the need to collect fees would, however, call for sound organization and administration.

vii. The LMB is a relatively small organization, employing about 100 and having total assets of about US\$1 million. The Project would increase staffing to over 1,200 and net assets to about US\$5 million. Building up LMB's management capability would probably be the most difficult part of the Project and would require international recruitment. Outside professional assistance in establishing a sound accounting system - presently one of the weakest areas of LMB - would be essential.

viii. LMB's revenues come from levies on exports of livestock products and have been quite stable in recent years. Its present financial position is sound, with ample liquidity for immediate needs. As its activities have increased, however, its annual expenses have risen almost to the level of its revenues. The Project would greatly increase LMB's assets, revenues and expenditures and would call for careful financial management.

ix. Since LMB would execute the main components of the Project, bulking of some items would be feasible. Purchase of LMB vehicles and equipment under the Project would be subject to international competitive bidding. The construction of markets, stockroutes, and slaughter facilities would also be subject to international competitive bidding, but advertising would be limited to local papers as well as those in neighboring countries. Borehole drilling, test pumping, and equipping would be carried out by the Ministry of Mines or the National Water Resources Commission.

x. The Project would greatly increase the value of hide production for export and local consumption, as well as increase the production of beef and improve the efficiency of the marketing system. Since nearly all rural families own cattle, the Project benefits would be widely dispersed. The rate of return to the Ethiopian economy is estimated at about 22%, while financial rates of return to LMB, private truckers, and private ranchers are estimated at 9%, 43%, and 13%, respectively.

xi. The Project would be suitable for an IDA Credit of US\$4.5 million.

## ETHIOPIA

### SECOND LIVESTOCK DEVELOPMENT PROJECT

#### I. INTRODUCTION

1.01 The Imperial Ethiopian Government has requested an IDA Credit to assist the financing of a livestock development program whose main emphasis would be on improving conditions for livestock movement, marketing, and slaughtering, and on improving the preparation facilities for hides and skins. The proposed Second Livestock Development Project would provide simple slaughter facilities, with associated hide and skin sheds; a field service to improve hide and skin preparation; stockroutes; markets; trucking facilities; and financing for a ranching specialist and some technical assistance. It would also provide funds for further livestock project preparation. An independent body, the Livestock and Meat Board (LMB), would be the main executing agency.

1.02 This would be the sixth IDA Credit for agricultural development in Ethiopia. Previous Credits were: the Wolamo Agricultural Development Project (169-ET), November 1969; the Humera Agricultural Development Project (188-ET), May 1970; the Addis Ababa Dairy Development Project (269-ET), August 1971; the Coffee Processing Project (290-ET), March 1972; and the Agricultural and Industrial Development Bank Project (304-ET), May 1972.

1.03 The Addis Ababa Dairy Development Project, appraised in April/May 1970, was the first livestock project in Ethiopia. Negotiations, however, were not completed until May 1971 principally because of the inherent problems in establishing a new autonomous Government-owned agency, the Dairy Development Agency (DDA), to execute the Project. Thereafter, signing was delayed until August 30, 1971 because of a shortage of IDA funds. Effectiveness was delayed from December 15, 1971 to May 1, 1972 because of problems in recruiting personnel to key posts, the filling of which was a condition of effectiveness.

1.04 The Project was prepared by the LMB with assistance from the staff of the Permanent Mission for Eastern Africa. This report was based on the findings of an appraisal mission, composed of Messrs. M. J. McGarry and F. M. Crowe (IDA), T. L. Martin (ADS), and E. W. Root (Consultant), that visited Ethiopia in November/December 1971.

#### II. BACKGROUND

##### A. General

2.01 Ethiopia, with an area of about 1.2 million km<sup>2</sup>, lies between latitude 3° and 18° north in East Africa on an elevated plateau broken by the Rift Valley and extends from the Red Sea southwest to Lake Rudolph.

### Climate

2.02 Ethiopia has a wide range of ecological and climatic conditions because of the different altitudes involved. Generally, rainfall increases from north to south, from a minimum of 250 mm in the northeast region near the Red Sea to over 1,000 mm in the mountainous plateau region of the southwest.

### Population and Gross Domestic Product

2.03 The population is about 25 million and increasing at about 2.5% per year. Over 90% of the people live in rural areas but urban population is climbing rapidly - about 7% a year. Some 85% of the population live in the highlands, which include Addis Ababa (population 850,000) and Asmara (230,000). In recent years, Gross Domestic Product (GDP) has been growing at about 4.5% a year and, in 1969, totaled US\$1.5 billion. Per capita income in 1970 was about US\$73, one of the lowest in the world.

### Exports and Imports

2.04 In 1970, total exports were valued at about US\$118 million. Of this, agriculture accounted for about 97%, including coffee, about 60%; oilseeds, about 9%; and hides and skins, about 8%. Ethiopia was, until the late 1950's, self-sufficient in staple foods but it now imports wheat. Although the trade deficit has averaged about US\$45 million in recent years, capital inflows have, in most years, enabled the country to avoid serious balance of payments difficulties. However, prospects for export growth of Ethiopia's main export commodity, coffee, are limited due to slow growth in world demand. Ethiopia must, therefore, place high priority on diversification of exports in order to avoid potentially severe long-term balance of payments problems.

## B. The Agricultural Sector

### Contribution of Agriculture to the Economy

2.05 The economy of Ethiopia is based largely on subsistence agriculture. Agriculture provides 90% of employment but only about 55% of GDP and agricultural production has increased over the past decade at a rate barely sufficient to keep pace with population growth.

### Land Use

2.06 Only 10% of the total land area of Ethiopia is under crop cultivation, while the remainder is taken up by grazing grounds (28%), open

brush and scrub (25%), open woodland (3%), and area not suitable for plant or livestock production (34%). The average farm size is small, estimated at about three ha.

#### Land Tenure

2.07 Historic factors have led to an exceptionally wide variety of land tenure systems in Ethiopia, which for simplicity, however, may be grouped into four main classes:

- (a) Communal, mainly practiced in the north where families and other groups own and farm the land. Periodic redistributions of the lands have led to fragmented holdings;
- (b) Leasehold, from individuals, the Government and the Church. In many cases, this system is complicated by sub-leases and grazing agreements which exploit the ultimate user, and is typified by a reluctance of landlords to develop their properties;
- (c) Individual owner occupancy over a relatively small part of the total area; and
- (d) Traditional rights over Government land.

2.08 It has been estimated that more than half of the cultivated area is farmed by tenants. Nearly all landlord-tenant agreements are oral, security is inadequate, and generally no compensation is paid for improvements made by the tenant. In addition, with increasing population pressure, landlords are able to extract a level of rent from tenants which reduces them to bare subsistence as they compete with each other for scarce land.

2.09 Government land is estimated to cover over 40% of Ethiopia. Over three-quarters of this area is rangeland occupied by pastoralists with their herds and flocks. On this land where about 40% of Ethiopia's cattle are found, pasture management is generally poor and overstocking is common. Since enclosure is virtually impossible, an individual has little incentive to invest in improvements. Furthermore, without effective control over prescribed areas -- either by group leaders, tribal chiefs or village heads -- overgrazing is an inevitable result. The land tenure system is, by far, the greatest disincentive to improving livestock production in Ethiopia.

#### Livestock

2.10 With about 26 million cattle and 24 to 27 million sheep and goats and about 56% of the total land surface suitable for grazing, livestock represents a major national resource to Ethiopia (Annex 1). However, the population, the largest of any African country, makes a disproportionately small contribution to the national economy and export earnings. Apart from the land tenure system, the greatest obstacles to increased production and productivity are:

- (a) livestock diseases;
- (b) lack of an organized stockroute and marketing system; and

- (c) inadequate facilities for slaughter and hide and skin preparation.

2.11 The indigenous cattle belong to the Zebu type. Out of the 26 million total, it is estimated that about six million are work oxen. Sample surveys conducted by the LMB indicate that, with variations between regions, 27% to 35% of the cattle are breeding cows. A survey in Southern Ethiopia shows that about 67% of the calves born survived one year and that about 60% survived two years. Thus, with a calving interval of approximately 18 months, the number of offspring that lived to an age of two years was about 40 per 100 cows, which is low by African standards. Information gathered by the survey is generally true of the whole country.

2.12 Grazing in the pastoral areas of the lowlands is mostly communal. In agricultural regions, it is largely on an individual basis, with a typical herd having from five to 10 animals. Some farmers have no cattle at all, and up to 80% have only enough to provide draught power and milk for home consumption. Herds are larger in the pastoral southern provinces but, even there, the majority contain less than 20 animals. There are no private commercially operated ranches in Ethiopia.

2.13 The fodder resources are natural grassland, supplemented by crop residue and stubbles in the cultivated regions. Because most of the rainfall occurs over a relatively short period, there are long periods of malnutrition since fodder preservation for beef cattle is unknown.

#### Hides and Skins

2.14 Hide production for 1970 has been estimated at 2.7 million, of which 1.2 million are exported, 0.2 million are used by domestic commercial tanneries, and 1.3 million are not accounted for. More than 75% of the hides exported come from rural areas. The cattle are slaughtered under primitive conditions, usually in an open field, and are flayed without skill or suitable tools. The hides are sun-dried and, individually, have a low value in the export market. The LMB has demonstrated that, with correct methods of flaying and improved drying techniques, the value of the hides can be more than doubled (Annex 2).

#### Animal Health

2.15 The major epidemic diseases of cattle -- rinderpest, foot-and-mouth disease (types A, O and C), and contagious bovine pleuropneumonia (CBPP) -- occur in Ethiopia but effective vaccinations are available to control them as well as blackleg, and haemorrhagic septicaemia which make sporadic appearances. The tick-borne diseases -- heartwater, anaplasmosis, piroplasmosis, and babesiosis -- also occur and, while East Coast Fever has not been identified in Ethiopia, the vector responsible for transmitting the disease is present. Internal parasites, particularly liver fluke, are a serious problem in cattle, especially in the highland areas. Diseases, combined with uneven and sometimes low levels of nutrition, lead to extremely heavy mortalities and slow growth rates, and exclude unprocessed meat products from many export markets, particularly in Europe.

### C. Marketing

2.16 The marketing system for live cattle and sheep is poorly developed. Existing primary markets have virtually no facilities or organization. They are small, have almost daily sales, and fail in their basic function of supplying competition in the sale of cattle since they are frequented by only a small number of buyers who can easily control prices.

2.17 The absence of any improved stock routes with disease control or grazing/resting areas suitably spaced, results in tremendous losses in cattle as they move the long distances from production areas to main consumer centers at Addis Ababa and Asmara. Such losses are estimated at up to 20% of initial body liveweight on a 20-day trek. To date, virtually no cattle are transported by truck although a small quantity are carried on the Addis Ababa-Dire Dawa-Djibouti Railroad, especially en route to export markets in the Gulf states.

2.18 In marketing hides and skins, there is adequate competition between local tanners and exporting firms, particularly for improved hides. However, due to the low quality of most of the hides (para 2.14), buyers and sellers have little incentive to trade. This is amply evidenced by the fact that almost half of the potential supply of hides is never marketed. The adoption of improved techniques of hide preparation should, therefore, have a dramatic effect on hide production: not only would the value of individual hides increase, but the increased value would bring many hides presently produced but not traded into the trade stream.

### D. Government Services

2.19 The livestock sub-sector, indeed the whole agricultural sector, is characterized by a dearth of Government services. The Veterinary Department of the Ministry of Agriculture has five divisions comprising field services, laboratories, disease diagnosis and survey, meat inspection and quarantine, and animal health education, but staff currently comprises only 58 qualified veterinarians, 36 of whom are foreign; 200 animal health assistants with two-year diploma qualifications; and some 450 vaccinators. The veterinary service in the field is seriously understaffed, and its effectiveness is reduced by budgetary limitations affecting transportation, allowances, and materials. There are no private veterinary practitioners in the country. During negotiations, the adequacy and effectiveness of the existing services were discussed. The Ethiopian Delegation pointed out that priority was being given by the Government to veterinary services. It was agreed that this would remain the case in the future and that, within the Government's budgetary constraints, the necessary funds would be allocated to enable the Department of Veterinary Services to effectively carry out its duties and responsibilities. The Animal Production Department, also within the Ministry of Agriculture, has little impact on stock owners due to lack of funds, trained personnel, and leadership. There is no livestock extension service in Ethiopia.

#### E. Government Policy

2.20 The predominant goal of the Third Five-Year Plan (1968-1973) is to increase the total volume of the nation's output of goods and services by about one-third, and of the planned increase in production of US\$520 million, agriculture is expected to account for US\$142 million (27%). Emphasis has been placed on increased exports of livestock and livestock products. The plan recognizes the need for a carefully conceived and realistic livestock development policy including improvements in the marketing and processing of livestock and livestock products.

2.21 Though the potential to expand livestock production is great, the obstacles are many and progress is likely to be slow. Lack of trained personnel and a chronic and severe shortage of funds are the main obstacles to the development of a planning capability. But even assuming that suitable production oriented projects were prepared the problems of implementation are also likely to be serious. Credit institutions in Ethiopia have little, if any, experience of lending for ranch development. Furthermore, even the technical coefficients of ranching are not known with any certainty, let alone the solutions to the land tenure (paras 2.07 - 2.09) and sociological problems.

#### F. Livestock and Meat Board

2.22 The Livestock and Meat Board (LMB) is an independent public body, created in 1964 to handle matters relating to livestock, poultry, meat, eggs, and by-products, including hides and skins (Annex 3). Its objectives and purposes are to:

- (a) encourage production and marketing;
- (b) collect and disseminate information and stimulate research relating to production, processing and marketing;
- (c) promote the establishment and supervision of improved stockroutes, watering points, and marketing facilities;
- (d) assist the veterinary services of the Government; and
- (e) promote sales by advertising at home and abroad and by participating in international trade fairs.

To accomplish these purposes, LMB has been given broad controlling and regulatory powers, including, inter alia, the power to:

- (a) construct, own, lease, and operate farms, warehouses, markets, market processes, compounds, and stock ponds;

- (b) demarcate and establish livestock routes and watering points and reserved grazing areas;
- (c) draw up and establish reliable weighing procedures and specifications and enforce the same;
- (d) fix, impose, and collect fees on all livestock, meat, poultry, eggs, and by-products processed in, or exported from, Ethiopia; and
- (e) fix, impose, and collect fees on all livestock and poultry, using facilities provided by the Board.

LMB's Board of Directors is under the Chairmanship of the Minister of Agriculture or his duly authorized representative. Its members comprise representatives of various Ministries designated by them and representatives of traders, producers, and processors designated by the Minister of Agriculture.

2.23 LMB employs a staff of about 100, working under a General Manager appointed by the Board of Directors. It has the following main departments: Production and Processing; Marketing, Planning, Research and Information; Projects Office; and Administrative Services. Its activities have, hitherto, covered regulatory functions, including the inspection of hygiene standards at export processing plants and the issue of export permits; operations such as the implementation of a successful hides and skins improvement program; studies and surveys dealing with all aspects of livestock production, processing, and marketing; and preparation of projects.

#### G. Agricultural Credit

2.24 Non-institutional lenders charging high interest rates at present constitute the main source of agricultural credit in Ethiopia. Prior to 1971, a major obstacle to expansion of institutional credit was the absence of a suitable, efficient organization to handle such credits. In an effort to improve the situation, the Government merged the former Development Bank of Ethiopia (DBE) and the Ethiopia Investment Corporation (EIC) into one new credit institution, the Agricultural and Industrial Development Bank (AIDB). Government or its nominees are AIDB's sole shareholders.

2.25 AIDB has adopted a fairly conservative approach to the financing of projects in an effort to avoid the errors of its predecessors. Its management is determined to run the bank in a businesslike manner and, given its performance to date and continued Government support, the future looks promising. However, like other banking institutions in Ethiopia it has little or no experience in financing ranch development.

2.26 The IDA recently signed the Credit Agreements for the Agricultural and Industrial Development Bank Project. <sup>1/</sup> The Project is part of Ethiopia's program for encouraging the development of industrial and agricultural

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<sup>1/</sup> The Appraisal Report (PA-123a) of the Agricultural and Industrial Development Bank Project treats AIDB in detail.

production by providing financing for industrial and agricultural investment projects and includes an agricultural credit program to help finance AIDB's medium-and long-term commitments over a period of approximately one and one-half years for investment projects for commercial farming, cooperatives and agri-business undertakings such as tea production and processing, banana cultivation and packing, dairy farming and milk processing, and alfalfa production.

2.27 The only other bank that deals with agriculture on a substantial scale is the state-owned Commercial Bank of Ethiopia (CBE), but it deals almost exclusively in short-term credit and mainly to large scale farmers.

### III. THE PROJECT

#### A. General Description

3.01 The main objective of the Project is the provision of an integrated market and stockroute system and a complementary LMB operated cattle trucking service in three important cattle and/or sheep producing areas, and slaughter facilities in 159 towns and villages throughout Ethiopia. Transportation of cattle by privately owned trucks, and private ranching, although not financed through the proceeds of the credit, would be pioneered by the Project. Funds for project preparation would also be included.

3.02 The proposed Project would provide:

- (a) 48 primary and six terminal markets;
- (b) about 2,500 km of stockroutes;
- (c) five cattle trucks, operated by LMB, to move cattle from the end of the stockroutes to consumer centers;
- (d) 159 slaughter facilities with associated hide sheds;
- (e) technical assistance, including the cost of a ranching specialist; and
- (f) funds for the preparation of future livestock projects.

Parallel to the project, it is proposed that development of five fattening ranches and purchase of five cattle trucks, all by private individuals, would be financed by AIDB either from its own funds or by using funds from the Agricultural and Industrial Development Bank Project (para 2.26).

3.03 The stockroutes, with associated primary markets, would be developed in the southern provinces of Arussi, Bale, and Sidamo, to facilitate sales activities and the moving of cattle from producing areas to the main consumer centers, where terminal markets would be constructed as required. Similar developments would be undertaken in the Jijiga area, mainly to expedite the export of sheep and goats to Somalia and the movement of cattle

to Dire Dawa, a key cattle marketing town in eastern Ethiopia. A single stockroute, with associated markets, would be developed in the north for livestock moving from the Danakil plains toward the consumer center at Asmara and the meat plants at Kembolcha and Mekele. Trucking services would generally be developed to move cattle on the last stages of their journey to consumer centers, especially where intensive cropping and traffic make movement on foot undesirable (Map No. IBRD 3865). Slaughtering facilities with associated hide and skin sheds would be distributed throughout the country in selected towns and villages (Map No. IBRD 3866). The fattening ranches would be situated in areas where interested private ranchers, with suitable pasture land and good access to a supply of feeder steers and consumer markets, could be found.

3.04 LMB would execute all aspects of the Project except project preparation, which would be the direct responsibility of Government. Loans made for fattening ranches and cattle trucks to private individuals would be the responsibility of AIDB.

#### B. Detailed Features

##### Markets and Stockroutes

3.05 Markets. In 1971, an FAO expert, under UNDP technical assistance, carried out a fairly detailed analysis of the Ethiopian market and stockroute system. This greatly assisted Project preparation and appraisal. The Project would develop market places (suited in size and facilities to the livestock throughput) in which properly organized auction sales would be conducted at regular intervals by trained marketing teams, under the direction of trained livestock marketing officers (LMO). A veterinary inspection service would also be provided. The development program would be phased over four years and, in total, 48 primary markets and six terminal markets would be constructed. The main criterion that would be used in selecting market sites would be that each proposed market would have to form a part of the integrated market and stockroute system under construction by the Project. Assurances were obtained during negotiations that the LMB would obtain the approval of the IDA before building a Project market in a place substantially different in location than those indicated on Map No. IBRD 3865.

3.06 Basic inputs for primary markets would be yards, pens, simple livestock handling facilities, a sale ring, office building, fodder store, watering facilities, livestock weighing scales, and handling equipment. Basic inputs for the bigger terminal markets in consumer centers would also include perimeter fencing and electric lighting connections (Annex 4, Tables 1 and 3).

3.07 The Project would establish about 16 marketing teams (para 3.34). The veterinary staff of the market teams would ensure, by inspection, that no clinically diseased animals were offered for sale, and would also provide a veterinary extension service in Project markets, including the sale of veterinary requisites.

3.08 Basic inputs for the marketing teams would be vehicles, tents, office equipment, radio telephones, diagnostic and other veterinary equipment, portable spraying equipment, and, for the Jijiga area, an office and staff housing (Annex 4, Table 8).

3.09 Stockroutes. The Project would develop fenced and watered resting points at intervals of about 25 km along well-defined traditional routes. The majority would enclose adequate grazing for the livestock passing through, but those in areas of dense cultivation, where the traders would have to provide feed, would be smaller. Assurances were obtained during negotiations that the LMB would obtain the approval of the IDA before developing a Project stockroute over any route substantially different from those indicated on Map No. IBRD 3865.

3.10 Basic inputs for the stockroutes at grazing/resting areas would be bush clearing, fencing, staff housing, shelters and fodder stores, spray races, boreholes, wells, stock ponds, water pumping and supply equipment, mobile spraying equipment, and start-up stocks of spraying fluid (Annex 4, Table 5).

3.11 The Project would establish a set of marshalling yards on the railway at Dire Dawa to be used to hold livestock for export by sea from Djibouti. The yards, which would have a maximum capacity of 4,000 sheep and 600 head of cattle, would provide holding pens, shade, water, fodder storage, and veterinary facilities and would be administered by a qualified LMO. The yards would be available to traders on a fee paying basis and would provide the necessary opportunity for inoculations and inspections before export by the Department of Veterinary Services of the Ministry of Agriculture.

3.12 Basic inputs in the marshalling yards would be a stone perimeter wall, gates, offices, veterinary and laboratory equipment, stores, spraying and dipping facilities, an equipped borehole and water distribution system, electric security lighting, radio telephone, weighing scales, office furniture, and equipment.

3.13 To ensure that the widespread assets in the markets, stockroutes and marshalling yards would be properly maintained, the Project would set up five mobile maintenance units (para 3.36) to operate in specific areas under the direction of the appropriate field LMO. The main inputs would be diesel engines and pumps, small tools and equipment (Annex 4, Table 8).

#### Cattle Trucks

3.14 Under the Project, LMB would purchase, over three years, five cattle trucks, each consisting of a lorry and trailer, capable of carrying some 55 animals weighing about 250 kg each (Annex 5, Table 1). LMB would operate them initially on the roads leading to Addis Ababa from the ends of the Project stockroutes in the southern provinces to accumulate data on operating techniques and costs, and hopefully to demonstrate the financial advantages to truck and cattle owners (para 2.17). If the operation was financially successful, private operators would purchase new cattle trucks using credit which would be made available through the AIDB (Annex 5, Table 2), and replace LMB trucks over these routes. LMB would then move its trucks to other routes and again attempt to entice private operators into the business. During negotiations assurances were obtained that LMB would actively encourage private trucking operators and that once the latter would adequately service a particular route LMB trucks would no longer service that route.

### Slaughter Facilities and Hide Sheds

3.15 The Project, over four years, would construct 159 slaughter facilities at selected municipal centers throughout the country. Three basic types are planned, varying from a simple roof-covered concrete slab, equipped with a hoist and meat hooks, to a slaughterhouse, complete with a modest plant for processing offal. In each instance, the municipality would provide land, and, if available, water and electricity. Responsibility for design, construction and operation would rest with the LMB (para 3.04). During negotiations assurances were obtained that LMB would obtain the approval of IDA before building a Project slaughter facility in a place substantially different in location than those indicated on Map No. IBRD 3866.

3.16 The throughput of cattle at the slaughter facilities would vary from 400 a year in the smallest (Model I) to over 5,200 a year in the largest (Model III) (Annex 6). In the smaller facilities (Models I and II), the slaughtering would be carried out by the butchers themselves, while the largest would provide a complete service, including delivery of meat to town butchers. Attached to each slaughter facility would be a hide shed, complete with frames for suspension drying.

3.17 Basic inputs would be fencing, gates, buildings, simple slaughter equipment, water installation, cattle pens, and hide sheds and frames. In Model III slaughterhouses, a vehicle for meat delivery would also be provided (Annex 6, Tables 1, 3 and 5).

3.18 Day-to-day operations at the slaughter facilities would be directed by small LMB staffs attached to individual facilities. Where necessary, they would be assisted, especially in maintenance and repair and in financial matters, by one of the slaughter facilities and hide shed teams (para 3.38). The most important input for the teams would be vehicles and training (Annex 6, Table 7). During negotiations, it was agreed that arrangements satisfactory to the Association for such training would be concluded as a condition of effectiveness.

### Fattening Ranches

3.19 It is expected that credit would be provided through AIDB to landowners holding large tracts of potentially good grazing land for development of five grass-fed fattening ranches as a pilot scheme. Projections for such ranches have been prepared for a model ranch of 3,500 ha, carrying some 1,180 steers and purchasing 800 unfinished animals for fattening annually (Annex 7). The data generated by these relatively large ranches would be most useful as a guide to future development which would probably be based on large units owned by tribes or groups.

3.20 Basic on-ranch inputs, which would be restricted to a minimum for a daily cattle herding routine, comprise a boundary fence, night paddock fencing, firebreaks for fire control and grazing area demarcation, access road, a store, staff housing, cattle handling facilities, an equipped borehole with reservoir, pipe and troughs, a dam, vehicles, and cattle

handling equipment. Working capital would also be provided for initial purchase of 1,100 immature steers for fattening and, because the ranch would show no revenue until the third year of operation, for incremental operating costs for the first two years. A Ranching Specialist would help ranchers in this new endeavor (para 3.44).

### Project Preparation

3.21 The Bank Group Livestock Review and Identification Mission which visited Ethiopia in April/May 1970, and the recent Agricultural Sector Review Mission identified many promising livestock sub-projects, which could possibly be incorporated into one or more comprehensive development projects. A final selection has not yet been made of the particular project to be prepared. A selection will be necessary because Ethiopia does not have personnel to develop all these promising livestock projects simultaneously. An amount of US\$400,000 equivalent would be included in this Project to finance preparation of a future project. Assurances were obtained during negotiations that the Government would: (i) consult with the Association with regard to the livestock development project or projects to be prepared, the plan of operations, the estimated costs and proposed financing plan for each study or studies, and the organization (if other than LMB or the Ministry of Agriculture) that would carry out the required study or studies; and (ii) employ personnel and/or consultants acceptable to the Association on terms and conditions satisfactory to the Association.

### LMB Headquarters Technical and Administrative Assistance

3.22 In addition to the inputs for the marketing teams (para 3.08), the mobile maintenance units (para 3.13), and the slaughter facilities and hide shed teams (para 3.18), the Project would finance additional technical and administrative assistance. This would consist of the following: (a) the Head of the Market and Stockroute Department (Annex 4, Table 8); (b) the Head of the Slaughter Facilities and Hide Shed Department (Annex 6, Table 7); (c) the Administrative Manager and his Deputy, Chief Accountant and his Deputy, Marketing Specialist, Construction Officer and Draftsman, and accounting consultant services for LMB (Annex 9); and (d) the Ranching Specialist to be seconded to the LMB. The cost of this technical and administrative assistance (including the cost of accounting consultant services of US\$165,000) would amount to US\$1.21 million.

## C. Cost Estimates

3.23 The total cost of the Project is estimated at US\$6.43 million, of which US\$2.22 million, or 35%, represents foreign exchange requirements. Besides, on-ranch investments and private cattle trucks (expected to be financed through AIDB) would cost about US\$0.54 million and US\$0.16 million, respectively. Estimated Project costs are summarized as follows:

|                             | Total Project Cost |             |              |               |             |             | %          | %         |
|-----------------------------|--------------------|-------------|--------------|---------------|-------------|-------------|------------|-----------|
|                             | Eth\$ millions     |             |              | US\$ millions |             |             | Total      | Foreign   |
|                             | Local              | Foreign     | Total        | Local         | Foreign     | Total       | Project    | Exchange  |
|                             |                    |             |              |               |             |             | Cost       | Cost      |
| <u>Markets and Stock-</u>   |                    |             |              |               |             |             |            |           |
| <u>  routes</u>             |                    |             |              |               |             |             |            |           |
| Water Facilities            | 1.43               | 0.25        | 1.68         | 0.62          | 0.11        | 0.73        | 11         | 15        |
| Fencing, Yards, and         |                    |             |              |               |             |             |            |           |
| Buildings                   | 1.14               | 0.29        | 1.43         | 0.49          | 0.13        | 0.62        | 10         | 20        |
| Labor                       | 0.93               | -           | 0.93         | 0.41          | -           | 0.41        | 7          | 0         |
| Equipment and               |                    |             |              |               |             |             |            |           |
| Supplies                    | 0.46               | 0.16        | 0.62         | 0.20          | 0.07        | 0.27        | 4          | 25        |
| Sub-total                   | 3.96               | 0.70        | 4.66         | 1.72          | 0.31        | 2.03        | 32         | 18        |
| <u>Slaughter Facilities</u> |                    |             |              |               |             |             |            |           |
| <u>Buildings and</u>        |                    |             |              |               |             |             |            |           |
| Equipment                   | 1.89               | 0.33        | 2.22         | 0.82          | 0.14        | 0.96        | 15         | 15        |
| Miscellaneous               | 0.01               | 0.01        | 0.02         | 0.01          | 0.00        | 0.01        | -          | 25        |
| Sub-total                   | 1.90               | 0.34        | 2.24         | 0.83          | 0.14        | 0.97        | 15         | 15        |
| <u>Vehicles</u>             | 0.39               | 0.91        | 1.30         | 0.17          | 0.39        | 0.56        | 9          | 70        |
| <u>Training Fees</u>        | 0.22               | -           | 0.22         | 0.10          | -           | 0.10        | 1          | 0         |
| <u>Technical and</u>        |                    |             |              |               |             |             |            |           |
| <u>  Administrative</u>     |                    |             |              |               |             |             |            |           |
| <u>  Assistance</u>         | 0.84               | 1.95        | 2.79         | 0.36          | 0.85        | 1.21        | 19         | 70        |
| <u>LMB Incremental</u>      |                    |             |              |               |             |             |            |           |
| <u>  Working Capital</u>    | 0.98               | -           | 0.98         | 0.43          | -           | 0.43        | 7          | 0         |
| <u>Project Preparation</u>  | 0.28               | 0.64        | 0.92         | 0.12          | 0.28        | 0.40        | 6          | 70        |
| <u>Contingencies</u>        |                    |             |              |               |             |             |            |           |
| Physical                    | 0.73               | 0.39        | 1.12         | 0.32          | 0.17        | 0.49        | 7          | 35        |
| Price                       | 0.37               | 0.19        | 0.56         | 0.16          | 0.08        | 0.24        | 4          | 35        |
| Sub-total                   | 1.10               | 0.58        | 1.68         | 0.48          | 0.25        | 0.73        | 11         | 35        |
| <u>Total Project Cost</u>   | <u>9.67</u>        | <u>5.12</u> | <u>14.79</u> | <u>4.21</u>   | <u>2.22</u> | <u>6.43</u> | <u>100</u> | <u>35</u> |
| <u>On-Ranch Investments</u> |                    |             |              |               |             |             |            |           |
| Fixed Investments           | 0.45               | 0.11        | 0.56         | 0.19          | 0.05        | 0.24        |            | 20        |
| Incremental Working         |                    |             |              |               |             |             |            |           |
| Capital                     | 0.66               | 0.02        | 0.68         | 0.29          | 0.01        | 0.30        |            | 3         |
| Sub-total                   | 1.11               | 0.13        | 1.24         | 0.48          | 0.06        | 0.54        |            | 10        |
| <u>Private Cattle</u>       |                    |             |              |               |             |             |            |           |
| <u>  Transporters</u>       | 0.11               | 0.25        | 0.36         | 0.05          | 0.11        | 0.16        |            | 70        |

Costs have been estimated at prices current during Project appraisal and, except for project preparation, and LMB incremental working capital a physical contingency of 10% and a price contingency of 5% of base-line cost have been included.

# D. Financing

3.24 Financing would be shared in the following amounts (US\$ millions) and proportions:

|                              | <u>Government</u> |           | <u>IDA</u>    |           | <u>LMB</u>    |          | <u>Total</u>  |            |
|------------------------------|-------------------|-----------|---------------|-----------|---------------|----------|---------------|------------|
|                              | <u>Amount</u>     | <u>%</u>  | <u>Amount</u> | <u>%</u>  | <u>Amount</u> | <u>%</u> | <u>Amount</u> | <u>%</u>   |
| <u>LMB Operations</u>        |                   |           |               |           |               |          |               |            |
| Investments                  | 1.36              | 25        | 4.09          | 75        | -             | -        | 5.45          | 85         |
| Incremental Working Capital  | -                 | -         | -             | -         | 0.43          | 100      | 0.43          | 7          |
| Subtotal                     | 1.36              | 23        | 4.09          | 70        | 0.43          | 7        | 5.88          | 92         |
| <u>Government Operations</u> |                   |           |               |           |               |          |               |            |
| Project Preparation          | 0.10              | 25        | 0.30          | 75        | -             | -        | 0.40          | 6          |
| Ranching Specialist          | 0.04              | 25        | 0.11          | 75        | -             | -        | 0.15          | 2          |
| <u>Share in Total</u>        |                   |           |               |           |               |          |               |            |
| <u>Project Cost</u>          | <u>1.50</u>       | <u>23</u> | <u>4.50</u>   | <u>70</u> | <u>0.43</u>   | <u>7</u> | <u>6.43</u>   | <u>100</u> |

In addition to financing shown above, there would be financial requirements for private fattening ranches and privately operated cattle trucks. It is expected, however, that these would be financed by AIDB, either from its own funds or by using funds from the Agricultural and Industrial Development Bank Project (para 2.26).

3.25 LMB would not be able to contribute to the costs of financing Project facilities which would be financed by Government (25%) and by the IDA Credit (75%). LMB would, however, make a substantial contribution by financing cumulative operating deficits in the early years of about US\$0.6 million from its current cash resources (Appendix 3-5). The IDA Credit would also finance 75% of the cost of preparing a future livestock project, and the Ranching Specialist; the Government would finance the remaining 25%. The inclusion of US\$2.28 million for local currency financing is justified on country grounds and would be necessary to bring about the improvements in LMB's organization and management required under the Project.

3.26 The IDA Credit would be made to Government on the usual terms with Government assuming the foreign exchange risk. Except for funds for future project preparation and grant financing (paras 3.33 and 3.45), IDA funds would be on-lent to LMB for a term of 20 years at 3/4 of 1% for the first five years and 8% thereafter. The financial contribution of the Government would be made available to LMB on terms and conditions not less favorable than the above. These terms are based on LMB's ability to service the debt from Project income (Appendices 3-4 and 3-5). It would be a condition of effectiveness that a Project Financing Agreement, acceptable to IDA, covering the terms and conditions of on-lending and grant financing had been signed between Government and LMB.

#### E. Procurement

3.27 Since LMB would execute the main components of the Project, bulking of most items would be feasible. Purchase under the Project of LMB vehicles and equipment under contracts estimated at US\$20,000 or more would be subject to international competitive bidding. The construction of markets, stockroutes, and slaughter facilities would also be subject to international competitive bidding, but advertising would be limited to local papers and papers in neighboring countries because the size of individual contracts would be small. For instance, in year-1 it is planned to construct eight markets at a total cost of about US\$50,000, and 23 slaughter facilities widely dispersed at a total cost of about US\$150,000. Borehole drilling, test pumping, and equipping would be carried out by the Ministry of Mines or the National Water Resources Commission. If any procurement were made over the IDA's reasonable objection, no expenditure thereunder would be financed out of the proceeds of the credit. Assurances were obtained during negotiations that procurement would be carried out in accordance with the above.

#### F. Disbursements

3.28 Disbursements are expected to extend over four years which is also the length of the development period (Annex 10). The proceeds of the Credit would be disbursed to cover 100% of foreign or 75% of total expenditures for vehicles and technical assistance. No disbursements would be made for LMB incremental working capital. Seventy-five percent of expenditures for other Project costs would be disbursed against certified statements of expenditure. The records and documentation justifying expenditures for "other Project costs" claimed against certified statements of expenditure should be kept by LMB and available to IDA representatives for inspection. The estimated schedule of quarterly IDA disbursements is given in Annex 11. Surplus Credit amounts would be subject to cancellation since their use to cover similar expenditures would require a new project preparation and appraisal.

#### G. Organization and Management

3.29 Proclamation No. 212, 1964 gives adequate legal powers to LMB, which was originally established to undertake precisely the type of development now proposed. The staffing and organization required for Project implementation would become an integral part of LMB and there would be no need for special handing-over arrangements at the end of the Project period.

3.30 Project Organization Within LMB. Project organization within LMB would be centered around six senior posts, which would be newly created:

- (a) Project Manager, who would be responsible to the General Manager for overall coordination;
- (b) Head of the Market and Stockroute Department, who would be responsible for on-the-job training of the marketing teams and operation of the livestock markets, stockroutes and marshalling yards; the mobile maintenance units; and the LMB-operated cattle trucks;
- (c) Head of Slaughter Facilities and Hide Shed Department, who would be responsible for the operation of the slaughter facilities and hide sheds, and the slaughter facilities and hide shed teams who would also concentrate on the hide and skin improvement countrywide;
- (d) Construction Officer, who would be responsible for the planning and phasing of construction works including the preparation of detailed drawings, bills of quantities, arrangements with contractors and the supervision of work;
- (e) Export Marketing Specialist, who would investigate ways of increasing the export value of Ethiopian livestock products, with particular reference to hides and skins, and recommend suitable market arrangements, considering particularly whether LMB should itself undertake export business; and
- (f) Financial Officer, who would be responsible to the General Manager for the design and operation of an effective accounting system for the Project and for LMB as a whole.

3.31 All these positions, except that of the Export Marketing Specialist, would be executive posts. In view of the shortage of suitably trained and experienced managers in Ethiopia, it may be necessary to recruit internationally for persons to fill the above posts. The Export Marketing Specialist would be appointed for a three-year term while the others would remain for four years. For those posts filled by non-Ethiopians, Ethiopians would be recruited to serve as deputies and to eventually take over all posts except that of the Construction Officer. This position would cease to exist when the Project is completed. Retroactive financing from the credit has been proposed for expenditures incurred after July 15, 1972 in an amount not exceeding \$30,000 toward employment of the six senior project officials, the Ranching Specialist, and the Accounting Consultant for LMB.

3.32 The appointment of a suitably qualified and experienced Project Manager, Head of the Market and Stockroute Department, Head of the Slaughter Facilities and Hide Shed Department, Construction Officer, and Financial Officer acceptable to IDA and on terms and conditions acceptable to IDA, would be a condition of Credit effectiveness. It was assured during negotiations that prior to filling the post of Export Marketing Specialist, IDA would be consulted and given time to comment on the qualifications, terms of reference, and terms and conditions of employment of the person proposed to fill the position, and that such a person would be hired within eighteen months of the date of the Legal Agreements.

3.33 In those cases where non-Ethiopians were appointed to any of the positions mentioned above, LMB would be required to meet only the local cost and the remaining cost would be met by Government as a grant to LMB from the proceeds of the Credit (para 3.26).

3.34 Markets would be operated by teams from regional headquarters under five LMOs and eight assistant livestock marketing officers (ALMOs). Fifty-two of the markets would be operated by 13 mobile teams, each comprising one market master/auctioneer, one driver, one cash guard, one animal health assistant, one vaccinator, and sorters, clerks and watchmen as required. Each team would be responsible for a group of markets that formed a convenient circuit from the regional headquarters. The remaining two markets in Nazret and Mekele would be operated by resident teams similarly staffed. In addition, the Addis Ababa market, though not built by the Project, would be operated by an LMB resident marketing team.

3.35 The stockroutes would also be the responsibility of LMOs and ALMOs, who would ensure that stockroute permits and veterinary movement permits were issued at Project markets by the marketing teams, on payment of the appropriate fees, for all cattle intending to use the stockroutes. The LMOs and ALMOs would also ensure that permits would be checked along the stockroutes so that grazing and other facilities would be reserved for the exclusive use of fee-paying trade stock and that the assets would be properly maintained.

3.36 The maintenance of the market and stockroute facilities would be carried out under the LMOs by five mobile maintenance teams. Each team would comprise three tradesmen and four laborers with tools and equipment, including a replacement borehole pump and engine.

3.37 The LMB cattle trucking operations, which would involve five trucks acquired over the first three years of the Project, would be the direct responsibility of the Head of the Market and Stockroute Department.

3.38 The Head of the Slaughter Facilities and Hide Shed Department would control the 159 slaughter facilities and hide sheds through teams to be established in 14 principal towns. Each team would consist of a superintendent, a driver/mechanic, and six technicians trained in slaughterhouse operations, but especially in correct flaying and hide preparation methods (para 3.18). A team would be responsible for the proper operation of all the slaughter facilities within its area and it would also license and collect fees from butchers for the use of the centers. The mechanic would be responsible for the maintenance of slaughterhouse equipment. The area office would maintain a small stock of spares and consumable stores for the slaughter facilities, while large items would be carried in store at Addis Ababa.

3.39 The slaughter facilities and hide shed teams would demonstrate improved flaying and hide preparation techniques, not only at the LMB slaughter facilities and hide sheds, but in other parts of their regions where such methods were unknown. This extension function would be their primary task.

3.40 Implementation of the Project would require close coordination between LMB and the various ministries and government departments concerned, and, where Project facilities were located within municipal boundaries, the municipalities. To a large extent, this would be achieved by day-to-day contact maintained by LMB's management. Arrangements are required for veterinary services and for the construction and operation of slaughterhouses and market facilities. LMB has entered into an agreement with the Veterinary Department of the Ministry of Agriculture providing for meat inspection services and all veterinary services connected with markets, stockroutes, and any other Project facilities to remain the responsibility of the Department, which would provide the necessary staff. In the particular case of the animal health assistants and vaccinators attached to marketing teams (para 3.34), even though they would be paid by LMB and be part of the marketing teams, they would be under the direction of, and be responsible to, the Veterinary Department for all matters of a veterinary nature. Assurances have been obtained that the Government would ensure that satisfactory arrangements would be made with each municipality in which Project facilities would be located, providing for, inter alia:

- (i) LMB to undertake, within its boundaries, the design, construction by contract, operation, maintenance, supervision and control of Project installations such as slaughter facilities, hides and skins sheds, and livestock markets; and to fix and collect all charges and fees in connection with these installations;
- (ii) the enforcement by the municipality of the proper utilization of these installations.

3.41 The individual stockroutes would be gazetted as rights-of-way and LMB would also obtain title to them. It was assured during negotiations that as a condition of disbursement under the IDA Credit for investments on a stockroute: (a) LMB would have title to the stockroute; and (b) the stockroute would be gazetted as a right-of-way.

3.42 Annually, at the time of budget preparation, LMB would review, inter alia:

- (a) the level of fees charged for the use of markets, stockroutes, slaughter facilities and trucks;
- (b) staffing level at the various facilities; and
- (c) adequacy of maintenance.

It was agreed with the Government that LMB would submit to the Association upon request the financial projections covering its entire operations and that an opportunity would be given to the Association to propose some changes if judged appropriate. It was assured during negotiations that LMB would take all steps necessary or desirable to obtain and maintain such fees as would provide revenues sufficient: (a) to cover operating expenses, adequate maintenance and depreciation, and interest; (b) to meet repayment on long-term indebtedness to the extent that such repayments exceed provision for depreciation; and (c) to provide a reasonable surplus.

3.43 The future role of LMB outside the Project and Government's policy towards it are not entirely clear. Although, to date, LMB has done a satisfactory job preparing livestock projects, it seems possible that the work of Project preparation may be transferred by Government to the planning unit of the Ministry of Agriculture. It seems probable that LMB's other activities will continue more or less as at present without rapid expansion, as implementation of the Project would lead to a rapid growth of its staffing (from about 100 at present to about 1,200 in year-4 of the Project), and operations and would keep its management resources fully extended. There are no plans for it to engage in livestock trading or in price support activities.

#### H. Lending Operations

##### Agricultural and Industrial Development Bank

3.44 Any subloans to private ranchers and truckers would be financed by AIDB either from its own funds or by using funds from the Agricultural and Industrial Development Bank Project (para 2.26). A Ranching Specialist, acceptable to IDA and on terms and conditions acceptable to IDA, would be appointed to help prepare plans for the fattening ranches and supervise their implementation. At present there is little experience in commercial ranching in Ethiopia and such a man would be required to gain the confidence of potential investors and to train AIDB's staff.

3.45 Since the entire cost of the Ranching Specialist would be regarded as a development expense, it would be met by Government as a grant. The Specialist would, at least initially, be attached to LMB.

#### I. Accounts and Audit

3.46 The accounts staff and procedures of LMB are barely adequate for its present level of activities and both would have to be greatly strengthened for the purposes of the Project.

3.47 There are, at present, no professionally qualified people on the accounting staff. A set of double entry books is maintained and trial balances are extracted monthly and annual accounts are prepared by the auditors; but accounts for the year ending July 7, 1971 and the auditors' report thereon had been prepared only in draft by December 1971, while trial balances had been prepared for July and August. An annual budget is prepared for expenditure but not for revenue.

3.48 There appeared to be weaknesses in internal control. First, receipts from Customs for hide and skin export duties are deposited in a lump sum in LMB's account with no accompanying statement or routine, methodical checks to ensure that all revenue due has been received. Second, the operation of a revolving fund for the purchase of hides and skins was unfavorably commented on by the auditors, who made recommendations for an improved procedure that LMB proposes to implement.

3.49 The Project accounts would be fully integrated with, and form a part of, an improved and strengthened system of accounts for LMB as a whole. The accounting system would, of course, be required to show, in accordance with sound consistently applied principles, the application of Credit funds and the revenues and expenditures of the various components of the Project so that the financial results of the operation could be fairly assessed. While the system of accounting could be relatively simple, the collection of cash at numerous, geographically scattered locations and the related expenditures would require a carefully designed system of internal control and that staff at all levels be properly trained.

3.50 For this purpose, it would be necessary to appoint a Financial Officer with suitable professional qualifications and experience (paras 3.22, 3.30 and 3.32). In addition, LMB would be required to engage within 90 days of Credit effectiveness a firm of accountants acceptable to IDA and on terms and conditions acceptable to IDA to assist in the design and introduction of the new system. Assurances were obtained during negotiations that LMB would engage such a firm within 90 days of Credit effectiveness.

3.51 LMB's accounts are audited by the Ethiopian firm of Mann Judd and Co., who are associated with the London firm of the same name. The firm also acts as auditors for AIDB and other large organizations in Ethiopia and would be acceptable to IDA as independent auditors. During negotiations, assurances were obtained that LMB's accounts would continue to be audited by independent auditors acceptable to IDA and that LMB would submit to IDA audited annual accounts and the auditor's report within six months of the end of its financial year.

#### IV. PROJECT FINANCIAL RESULTS

##### Government Cash Flow From Project

4.01 The demands of the Project on Government finances are detailed in Annex 12. By year-4, Government would have made a net Project contribution of US\$1.50 million. The cumulative negative balance would decline thereafter and become positive by year-8.

##### Financial Rates of Return

4.02 Annex 13 gives the financial rates of return of all Project components, including private ranches and trucking. LMB would obtain a financial rate of return of 9%. The five private fattening ranches would have financial rates of return of about 13%. While this also is modest, several landowners expressed an interest in participating in and pioneering this type of development in Ethiopia if specialist advice was provided. The financial rates of return to private truckers are estimated at about 43%. If this type of development proceeds as expected, there should be ample demand for the trucking loans after LMB has demonstrated the profitability of different routes. It is estimated that, after paying market and stockroute fees, the cattle owner would save about US\$1.00 per head by using Project markets and stockroutes. This would be equivalent to about a 2% increase in the sale price of an animal. By using correct flaying methods, the value of hides would be doubled with little expense to the butcher.

##### Project Impact

4.03 LMB's Project accounts would provide a continuing source of data from which to measure Project impact. For instance, the revenues would reveal the extent to which Project facilities were used. In addition, during negotiations assurances were obtained that LMB would record the weight losses on the Project stockroutes using a sampling technique and compare these with the losses now known to take place (para 2.17); and also record the number of improved hides exported annually as the Project proceeds.

#### V. ECONOMIC BENEFITS AND JUSTIFICATION

5.01 The economic rate of return is estimated at about 22% (Annex 14). About 50% of the benefits would be derived from meat saved on livestock using the improved markets and stockroute system; about 30% from hide improvements; and the rest from beef production on ranches, and services from trucking and slaughtering. About 60% of the benefits from improved hides are expected to come from improvements in hide preparation outside the slaughter facilities constructed by the Project. These improvements, would result from the demonstration effect of the Project hide sheds, and the extension efforts of the slaughter facilities and hide shed teams.

On balance, the Project carries a low risk that the economic benefits would not be fully realized. Should no improvement in hide quality materialize except in the Project hide sheds, then the economic rate of return would drop to about 15%. The organizational problems LMB might be confronted with in connection with the Project may lead to some delays in project implementation, thus possibly introducing some slippage in the schedule presented in Annex 10. The abilities of LMB in this respect are difficult to judge at this stage.

5.02 The infrastructure created by the Project would be the first step in developing the beef cattle industry of Ethiopia. The improvements in the markets and stockroute system should lower marketing costs and enable more large buyers to regularly buy cattle in the primary markets. This should improve competition, raise producer prices, and improve the general functioning and confidence of producers in the marketing system. These developments would be important in setting the groundwork for later production oriented projects. The five private fattening ranches that would be developed would generate much needed data on the technical, financial and economic coefficients required for planning future large scale production oriented projects.

5.03 The Project would generate additional foreign exchange earnings from expanded exports. The following table shows the foreign exchange costs and benefits for investments, the development period which is through year-4 and at full development in year-10:

|                           | <u>Investments</u>     | <u>Development Period<br/>Through Year-4</u> | <u>Full Development<br/>or Year-10</u> |
|---------------------------|------------------------|----------------------------------------------|----------------------------------------|
|                           | -----US\$ million----- |                                              |                                        |
| Foreign Exchange Benefits | --                     | 0.8                                          | 1.3                                    |
| Foreign Exchange Costs    | <u>2.4</u>             | <u>0.7</u>                                   | <u>0.3</u>                             |
| Balance                   | (2.4)                  | 0.1                                          | 1.0                                    |

These figures are calculated without taking account of the capital inflow from, or cost of servicing the IDA Credit. The foreign exchange benefit is expected to result from the increased value of hide exports. All incremental meat production is expected to be consumed locally.

5.04 Since Project benefits would be directly proportional to cattle marketed, moved along a stockroute or slaughtered in an improved slaughter facility and since nearly every family in rural Ethiopia own some cattle, benefits should be well dispersed throughout the countryside. Employment effects would be substantial. The permanent increase in LMB staff as a result of the Project would be about 1,100, mostly semi-skilled. In addition, during the construction period about 3,000 man-years would be required to build Project facilities.

VI. AGREEMENTS REACHED AND RECOMMENDATION

6.01 During Credit negotiations, the following main assurances were obtained:

- (a) the Government would obtain IDA approval on the livestock projects to be prepared, and on the organizations and/or consulting firms and the individuals to be engaged for the preparation, and on the terms and conditions of their engagement (para 3.21);
- (b) the LMB would, within 90 days of Credit effectiveness, engage a firm of accountants acceptable to IDA and on terms and conditions acceptable to IDA to assist in the design and introduction of an accounting system for the LMB (para 3.50).

6.02 Conditions of Credit effectiveness would be that:

- (a) LMB had hired a Project Manager, Head of the Marketing and Stockroute Department, Head of the Slaughter Facilities and Hide Shed Department, Construction Officer, and Financial Officer acceptable to IDA and on terms and conditions acceptable to IDA (para 3.32);
- (b) the Government and LMB had signed a Project Financing Agreement, acceptable to IDA, covering the terms and conditions of on-lending and grant financing (para 3.26);
- (c) arrangements satisfactory to IDA had been made for the training of the teams responsible for operating and maintaining the slaughter facilities and hide sheds (para 3.18).

6.03 With the foregoing assurances, the Project is suitable for an IDA credit of US\$4.5 million.

October 17, 1972



ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Livestock Production and Marketing

A. Introduction

1. Ethiopia has a total area of some 1.2 million km<sup>2</sup>. Much of this is either mountainous or desert, but some 0.7 million km<sup>2</sup> are estimated to be suitable for economic livestock development. The livestock population which is the largest of any country in Africa, is currently estimated to comprise 26 million cattle, 24-27 million sheep and goats, 6.6 million equines, and 1 million camels, and, although there are no reliable statistics, it is believed that numbers have not changed significantly over the past 10 years.

2. The arable areas with better rainfall are typically farmed by smallholders on a subsistence economy, each keeping small numbers of cattle, sheep and goats for milk and meat and relying on oxen for draft power. The drier areas -- below 700 mm rainfall per annum -- are mainly occupied by nomadic and semi-nomadic people with larger herds of cattle and sheep which provide surpluses for sale.

B. Background

Land Tenure

3. There are four main classes of land tenure:

- (a) Communal, mainly practiced in the north where families and other groups own and farm the land. Periodic redistributions of the lands have led to fragmented holdings;
- (b) Leasehold, from individuals, the Government and the Church. In many cases, this system is complicated by sub-leases and grazing agreements which exploit the ultimate user, and is typified by a reluctance of landlords to develop their properties;
- (c) Individual owner occupancy over a relatively small part of the total area; and
- (d) Traditional rights over Government land. Some 75% of land classified as "Government Land" is occupied by nomadic pastoralists who have developed social systems for its use and water control.

A Ministry of Land Reform and Administration has been established to improve the leasehold system, and legislation drafted by this Ministry is currently being examined by Government.

#### Transport

4. The country is served by paved or all weather dirt roads radiating from Addis Ababa to the main towns but the system of secondary/feeder roads is poor, and there are no stockroutes with grazing and watering facilities. Addis Ababa is connected to the port of Djibouti in French Somaliland by rail, but cattle carrying capacity is limited to 44 wagons. There is also a railway connecting Asmara with the port of Massawa on the Red Sea.

#### Contribution to the Economy

5. Although productivity is low, livestock still makes a substantial contribution to the Gross Domestic Product. In 1970, the value of agricultural production was as follows:

| <u>Eth\$ million at 1967 prices</u> |            |
|-------------------------------------|------------|
| Meat                                | 285        |
| Milk                                | 148        |
| Hides and Skins                     | 21         |
| Eggs                                | 40         |
| Other                               | 60         |
| Farm Processing                     | <u>97</u>  |
| Total                               | <u>651</u> |

This compares with the estimated 1970 GDP for the agricultural sector of Eth\$ 2,200 million and the total GDP of Eth\$ 3,800 million. On this basis, livestock contributes 24% to the agricultural sector GDP and 15% to the national GDP.

6. Following coffee and oilseeds which are Ethiopia's largest exports and earners of foreign exchange, hides and skins are the most important export item and in 1970 accounted for Eth\$ 25.0 million or about 8% of total exports. Meat exports, mainly in canned form, are comparatively small.

7. The predominant goal of the Third Five Year Plan is to increase the total volume of the nation's output of goods and services by about one-third, and of the planned increase in production of Eth\$ 1,200 million, agriculture would account for Eth\$ 327 million (27%). Emphasis has been placed on increased exports of livestock and livestock products. The plan recognizes the need for a carefully conceived and realistic livestock development policy including improvements in the marketing and processing of livestock and livestock products.

### C. Livestock Species

#### Cattle

8. These are mainly of Zebu type (*Bos Indicus*) and range from small short-horned black cattle resistant to the wet cold highland areas to the superior beef types of the low, warmer arid areas.
9. Sixty percent of all cattle in Ethiopia are owned by some 20 million sedentary farmers in the highlands whose herds include about 28% adult females and 40% work oxen. The remaining 40% are owned by 2.5 million nomadic pastoralists whose herds include about 50% adult female cattle.
10. The small cattle owners in the highlands use the cattle in arable farming on the plateau, and it is estimated that some 6 million head of cattle are used for draft purposes. When worn out and no longer capable of work the oxen are mainly consumed by the farming community. Some 1 million per year are culled from the herd of draft cattle, but only about 100,000 of these come into the market stream and provide the main cattle supply for the export canning plants.
11. Milk, rather than meat, is another reason for owning cattle especially in the nomadic areas of the lowlands where the herds consist mainly of cows and stock with a few bulls. The lowlands is the real cattle country and from the more settled herds come the bulk of the better type slaughter stock for the major centers, such as Dilla, a large consuming area, and Addis Ababa where local consumption calls for about 80,000 head/year.
12. Cattle management is generally of a low standard typified by overgrazing, night paddocking without food, ineffective culling, and ignorance of disease control resulting in low production: 40% to 50% weaning rates, high adult mortality, and a total offtake of around 6%. The situation is exacerbated in many areas by poorly distributed and inadequate water supplies.
13. A further factor influencing the cattle industry is the steady increase in the acreage of cultivated land resulting from rising grain prices and population growth. This is causing further overgrazing and the necessity to destock; if the trend continues, moreover, it would become harder to find suitable areas which can be set aside for grazing reserves along stockroutes.
14. The major diseases affecting cattle are:
  - (a) Rinderpest. In recent years, some 2.5% of the national herd has been affected annually by this disease. The Africa-wide JP-15 Joint Campaign for the eradication of rinderpest by a series of compulsory but free vaccinations is progressing and can be expected to cause a reduction in mortality rates. The program will, however, aggravate the problem of overgrazing unless offtake is increased;

- (b) Contagious Bovine Pleuro-Pneumonia (CBPP) is widespread and continues to be spread by the movement of livestock without veterinary control. To the extent that vaccine is available, vaccinations against CBPP are being given with those for rinderpest during the JP-15 program, and this will help control the disease;
- (c) Foot and Mouth Disease is endemic to Ethiopia and types A, O and C have been identified. Vaccination is not widely practiced in the ranching areas but are administered in association with quarantine inspections to cattle entering certain meat factories;
- (d) Brucellosis is common in herds and probably contributes to low calving rates in the national herd;
- (e) Trypanosomiasis is confined to parts of the western and southwestern areas of the country;
- (f) Tick-born Diseases. A variety of ticks occur and act as vectors for a group of livestock diseases - anaplasmosis, prioplasmosis, etc. - but although the vector - *ripecephalus appendiculatus* - responsible for transmitting East Coast Fever is present, the disease has not been identified in Ethiopia;
- (g) Anthrax, Blackquarter, Haemorrhagic Septicaemia are present and sporadically cause locally severe losses;
- (h) Internal parasites are a major cause of poor productivity throughout the country. Eighty to ninety percent of all livers at slaughterhouses are contaminated, probably 25% of the national herd carries beef measles with some 2% of commercial slaughterings being totally condemned, and the incidence of round worms is widespread. Campaigns by the Veterinary Department to encourage farmers to treat their cattle with available low cost drugs are unsuccessful because of the limited field service and inadequate distribution outlets for the drugs; and
- (i) Skin Diseases. There are a variety of the common skin diseases in Ethiopia contributing to reductions in the value of hides.

#### Sheeps and Goats

15. About 75% of the national flock is located in the highland areas and comprises lightweight - mature ewes 28-30 kg liveweight -- fat-tailed hair sheep of poor conformation. Sheep mainly comprise indigenous mutton types of which the blackhead, fat-tailed Persian breed found in the dry western lowlands (Ogaden, Jijiga) is of great economic importance and is in demand by Arabian importing countries.

16. There is a substantial difference in management techniques and production patterns between the highlands and the lowlands. The former area is characterized by close cultivation and heavy human population densities where small flocks of sheep and goats receive little attention and are left to forage on the poorer lands with resultant overgrazing and poor growth weights. The flocks are mainly used for local and subsistence consumption and in some cases also have social prestige values.

17. Lowland sheep production - where flocks are larger - is characterized in the Ogaden/Jijiga area by seasonal lambing, castration, culling for age; ewe hoggets and wethers are normally grazed separately from lambs and rams. Weaning percentages are probably around 65-70% per annum and adult mortality 7-8%. Total offtake including home consumption is believed to be about 25%.

18. Goats, which are typically small indigenous types, are an important component of subsistence and cash income in the lowland areas where some 75% of the national flock is distributed.

19. From the limited data available it would seem that the following diseases are important in sheep and goats:

- (a) Pneumonia. Infectious and with a high incidence during rainy seasons is probably a major contributor to lamb mortality;
- (b) Haemorrhagic Enteritis (possibly caused by Nairobi sheep disease) causing locally severe mortality has been noted;
- (c) Tick-born Diseases. A variety of ticks occur and act as vectors including Amblyomma variegatum, the vector responsible for transmitting heartwater, but a full evaluation of the importance of these diseases to the indigenous sheep and goats of Ethiopia has not been made;
- (d) Internal Parasites are a major contributor to poor production levels with liver fluke being particularly serious in certain areas (not including the Jijiga area). Nasal worms are also a problem in some areas;
- (e) Lameness. Continuous night paddocking in contaminated ground perpetuates foot-rot and contributes to poor weight gains; and
- (f) Predators. Jackals and hyenas are serious problems in many areas.

A general characteristic of Ethiopian farmers is their receptiveness to livestock extension advice. This is particularly true of the predominantly sheep and goat graziers of the Jijiga area who have developed grazing and management systems but lack veterinary advice and opportunities for the purchase of veterinary requisites.

### Camels

20. These are of the heavy pack type as opposed to the lighter riding type and are used for the transport of goods and for their milk and meat. They are of great importance for subsistence for the nomadic pastoralists living in the drier lowlands and also contribute to the cash economy of the Ogaden area as an export to Somalia.

## D. Government Services to the Livestock Industry

### Veterinary Services Department

21. This department, which is in the Ministry of Agriculture, has five divisions comprising: field services, laboratories, disease diagnosis and survey, meat inspection and quarantine, and animal health education. Staff currently comprises 58 qualified veterinarians of whom 36 are foreign, 200 animal health assistants with two-year diploma qualifications, and some 450 vaccinators. There are no private veterinary practitioners in the country. The Animal Health School at Debre Zeit, with an annual throughput of 35 students (shortly to be increased to 50), provides some 25 new animal health assistants a year and vaccinators are being recruited at a rate of about 50 a year. The veterinary service in the field is, nevertheless, seriously understaffed and its effectiveness is reduced by budgetary limitations affecting transportation, allowances and materials. Lack of continuous professional direction in the field is also a serious constraint. It is possible that the service to stock owners will improve in 1973 when more veterinary staff are released from their present duties with the JP-15 program.

22. Meat inspectors are selected from in-service animal health assistants and are now given a five-month course at Asmara where there are currently ten in training. They were formerly trained in Kenya. The number available for duty in Ethiopia is inadequate.

23. The Research Laboratory at Debre Zeit undertakes the regular production of vaccines against rinderpest, CBPP, blackquarter and anthrax combined and haemorrhagic septicaemia, and no charge is made for their use. Imported vaccines are charged out to users at cost.

### Animal Production Department

24. The staff are mainly employed in running 16 Government farms and stations, and this department has little impact on stock owners.

## E. Stockroutes and Marketing

### Tradestock Movement Flows

25. The country can roughly be divided into consumption and production areas, and these set the pattern for the flow of trade stock.

In the south, the three main consumption centers are Addis Ababa, with its satellite market at Nazret, the Melgue Wondo Meat Packing Plant and the densely-populated coffee growing area around Dilla. The main production areas in this part of the country with surpluses for export are the southern rangelands and the area to the east of the Rift Valley, thus the main flows of trade stock are from these producing areas to Dilla, the Melgue Wondo Meat Plant and northwards to Addis Ababa.

26. In the north, surpluses are available in general throughout the whole area, and there are four main consumer centers: the meat factories at Gonder, Kembolcha and Mekele, and the Asmara meat factories and town. The trade stock pattern is:

- (a) from the western parts of Tigre Province to Gondar and direct to Asmara;
- (b) from the remaining highland areas to whichever of the two meat plants is the closer; and
- (c) from the eastern lowlands (Danakil area) mainly to Kembolcha but with some slaughter stock moving northward to Mekele.

27. In the east, the main producing area is the Ogaden between the Wabi Shebelli River and the Somalia border. The focal point for cattle consumption is Dire Dawa, with its meat factory and its rail outlet to Addis Ababa and Djibouti. For sheep and goats, however, the trade stock movement is across the border at various points east and southeast of Dire Dawa to traders in Somalia who re-export the stock to Arabian countries through the Somalia port of Berbera.

28. In addition to the above trade stock movements there is a constant flow of immature male cattle from the main producing areas for resale as work oxen in the more heavily cultivated highland areas throughout the country.

29. The number of animals currently supplied to the final consumer centers from the stockroutes under review is estimated as follows:

|                                             | <u>Cattle</u> | <u>Sheep<br/>and Goats</u> | <u>Camels</u> |
|---------------------------------------------|---------------|----------------------------|---------------|
|                                             | -----         | -----head-----             | -----         |
| Addis Ababa (and Nazret)                    | 67,000        | 400,000                    | -             |
| Melgue Wondo Meat Factory (60,000 capacity) | 30,000        | -                          | -             |
| Dilla Coffee Area                           | 33,000        | 18,000                     | -             |
| Kembolcha Meat Factory (45,000 Capacity)    | 15,000        | -                          | -             |
| Mekele Meat Factory (50,000 Capacity)       | 22,000        | -                          | -             |
| Mekele Market                               | -             | 90,000                     | -             |
| Dire Dawa Meat Factory (60,000 Capacity)    | 16,000        | -                          | -             |
| Somalia                                     | 23,000        | 780,000                    | 16,000        |

The above numbers which do not show immature work oxen and local movements of slaughter and breeding stock give an indication of the importance of the stockroutes serving these consumer centers.

30. Trade stock including immature work oxen are normally moved on the hoof without veterinary restriction along traditional routes to the consumer areas. These traditional routes, which often pass along the side of an existing road, do not constitute legal rights of way and have no fenced and controlled grazing and watering facilities, nor fenced night resting paddocks. Journeys between watering points are, therefore, often much longer than desirable, and animals are only able to graze sporadically as they move along the route. This unsatisfactory situation results in heavy weight losses during movement, excessive feed costs - particularly in closely farmed areas - and in fines for trespass and damage to crops.

31. Surveys carried out by the Livestock and Meat Board during Project preparation indicate a mean weight loss of 1-1.5% liveweight per head per day of movement, which amounts to some Eth\$ 13.80 per head per trip for the stockroutes included in the proposed Project if valued at the market price paid per kg at the terminal market. The value of theft and mortality is indicated as Eth\$ 1.80 per head per trip.

#### Present Markets and Marketing Systems

32. With few exceptions, a livestock market in Ethiopia comprises an open place with no facilities, situated in or close to a town or village to which livestock are brought in small lots at frequent intervals - often daily - for sale. Animals are normally traded by direct and time-consuming bargaining with limited public awareness of actual price levels. In the smaller markets the buyers, apart from a few local butchers, are usually small livestock traders sometimes purchasing on behalf of bigger traders and sometimes purchasing with the sole objective of re-trading the stock in another market further down the stockroute. In a few markets, auctioneers have established themselves and operate on a tribal basis, but this method of selling is not widely practiced. Direct bargaining is also the rule in the bigger markets at or near consumer centers where the buyers are predominantly butchers and butchers' agents. Municipalities throughout the country charge a fee for the use of the "market", commonly Eth\$ 2.00 per head for cattle and camels and Eth\$ 0.30 for sheep and goats but only a proportion of the fees are actually collected.

33. Sales of slaughter stock to the meat factories are sometimes made direct by the producer, but the more usual system is for the factory to support a few major traders who themselves buy at the bigger markets and have arrangements with smaller traders and agents at smaller markets.

34. There is an urgent need to stimulate the offtake from the national herd and channel it into the market stream. This will be determined by how far into the producing areas, and the rate at which organized marketing facilities will be introduced. The small producer, presently a reluctant seller, may change his cultural outlook towards cattle if given greater financial incentives.

## ETHIOPIA

### SECOND LIVESTOCK DEVELOPMENT PROJECT

#### Slaughter Facilities, Hides and Skins Preparation and Marketing

##### A. Introduction

1. After coffee and oilseeds, hides and skins are Ethiopia's most important export item, with foreign exchange earnings of Eth\$ 24.3 million in 1970, or about 8% of total exports. Meat exports, mainly in canned form, are comparatively small.
2. More than 75% of the 1.2 million hides exported come from the rural areas. The cattle are slaughtered under primitive conditions, usually in an open field, and are flayed without skill using unsuitable tools. The hides are mainly sun-dried "caravan" hides with a very low value on the export market. By adopting improved flaying and drying techniques, the present value of the hides could be more than doubled. The municipal abattoirs at Addis Ababa and Asmara and the meat processing plants account for the remaining 25% of hide exports.
3. Export figures for sheep and goat skins average just over seven million annually and account for about 70% of the total value of hide and skin exports. As in the case of hides, the treatment and quality is poor. The slaughter of sheep and goats, however, takes place for the most part in homesteads for family consumption, so that it would be difficult to disseminate improved methods of preparing the skins.
4. The successful further development of the meat processing and hide industry presupposes the introduction of an organized, effective cattle marketing system, improved and additional stockroutes provided with water facilities and enclosed night stops. In addition, the rural butcher and producer require hygienic slaughter facilities together with hide-drying sheds and suitable tools.

##### B. Slaughter Facilities

###### Rural Slaughter Facilities

5. Except in a few large towns which possess a building and the basic equipment usually found in a small abattoir, the general practice throughout the country is to slaughter cattle in an open field and to cut up the carcass on the ground. A survey of 164 municipal slaughter facilities showed that

only 20 possessed a building in which slaughtering took place and seven worked from a cement slab in the open. Only 14 of the facilities employed a carcass hoist and 18 had electric light; 36 had piped water and most of the other centers had access to well or spring water, though 15 appeared to be without any source of water supply. One hundred and two of the facilities surveyed were without any veterinary or health inspection services. Since the 164 facilities covered by the survey, which had a total annual throughput of about 240,000 head of cattle, are located near main roads and points of communications, it can be assumed that even larger numbers of cattle are slaughtered in the remote areas without any facilities whatever.

### Meat Processing Plants

6. A significant feature of the meat processing industry of Ethiopia is the geographical maldistribution of plants in relation to supplies of slaughter cattle. Most of the plants are located in Northern Ethiopia although, since commencing operations in Asmara, two organizations have found it necessary to open abattoirs in Gonder, Mekele and Kembolcha to obtain supplies of beef for their processing plants. The Shashamane plant, the only one serving the southern region, which is potentially the most important cattle producing area, has had a varied career since beginning operations in 1963. After becoming insolvent, it closed in 1967 and reopened in 1970 under new ownership with Government participation through the Livestock and Meat Board (LMB).

7. In all, there are eight export meat plants in Ethiopia. Many are equipped for freezing but, because of veterinary restrictions imposed by the principal importing countries, do not have access to a market for frozen beef which would permit them to pay a higher price for cattle. For many years the meat plants have been operating well below capacity. They are marginal buyers of the lowest quality cattle, mainly worn out draught animals and do not compete at the markets for better quality cattle.

8. The export processing plants are, therefore, engaged essentially in canning. Because of the steady and substantial increase in the price of corned beef over the past few years and with a more recent marked increase in the price of meat extract, a by-product of corned beef, the canning plants are extending their operations. One new venture is nearing completion and the plant at Shashamane is planning large-scale canning operations.

## C. Hides and Skins

### Marketing of Hides and Skins

9. The international hides and skins market is sensitive to tariff levels and to changing fashions in footwear and clothing, as well as to the overall balance of supply and demand.

10. Ten firms with offices in Addis Ababa and Asmara were responsible for Eth\$ 22 million of the total Eth\$ 25.0 million exports in 1970.

Competition exists between local tanners and exporting firms, particularly for improved hides, but the exporting firms invariably outbid the tanners. Both tanners and exporting firms are making new investments for the production of pickled sheep skins destined for the export market.

11. Although little information is generally available on the invoice prices obtained overseas by the exporters, it is estimated that up to 90% of the 1.2 million hides exported annually are low grade "caravan" hides and bring a return to the producer of no more than Eth\$ 3 per hide. This is less than 50% of the price obtained for East African sun-dried hides from roughly equivalent animals.

12. The exceptionally low grading is the result of poor flaying and improper drying; dirt, blood, and insect infestation are also common. Faulty preparation very often results in damage which does not show up until the hide is in the process of being tanned. By experience, however, the tanning firms know the countries which produce low quality hides and offer low prices to cover against possible losses.

#### Supply and Preparation of Hides

13. The Ethiopian national cattle herd is estimated to be about 26 million; hide production for 1970 has been put at 2.7 million. Of this latter figure, 1.2 million were exported and a little more than 0.2 million used by the larger domestic tanneries. The remaining 1.3 million hides are not accounted for, but may be assumed to have been taken up by rural tanners or retained on farms. The prices paid for low quality hides offer little encouragement to sell and, in many areas, there is also a lack of suitable marketing channels.

14. There is, therefore, great potential for increasing both the quantity and quality of exports. Some preliminary steps have already been taken to improve the situation. At 22 municipal centers, suspension drying has been introduced and the improved hides have brought an average return to the producer of about Eth\$ 6.00. Those hides prepared at the LMB's demonstration centers bring an even better return. Certain of the processing plants are using a dry salting process for hides, but these are too few to have any impact on the market.

15. Though the LMB possesses a nucleus of skilled staff operating from their demonstration and instruction centers at Shashamane and Gonder, there is still a lack of trained and technical personnel at all levels in the hide industry. The training of more people in all aspects of flaying and hide improvement is an indispensable component of any project to improve hide quality in Ethiopia.

#### Supply and Preparation of Skins

16. Census estimates of sheep and goats are generally combined. The estimates vary considerably but the numbers are generally accepted as being between 24 and 27 million. Production is limited to the sale of mature animals although lambs are sold in limited numbers during major feasts.

17. Apart from exports, most of the sheep and goats are slaughtered and consumed within family groups. Those for Moslem consumption are, of course, required to be slaughtered in Halal-approved establishments. The numbers going through municipal abattoirs, even in the large towns, are small.

18. The skins are air-dried, mainly by pegging, and are collected from sub-agents in the rural areas by the dealers. Through lack of knowledge, slaughtering facilities and suitable equipment, skins suffer the same poor treatment as hides but since slaughtering for the great part takes place in homesteads, the faults will be difficult to eradicate.

19. Export figures for sheep and goat skins average just over 7,000,000 per annum and comprise about 70% of the total value of hide and skin exports. The overseas demand for the skins in pickled state is keen and new ventures into the business are being set up while existing firms are expanding their activities in this direction.

20. The larger local tanneries take some 1.3 million skins annually and this demand is expected to double in the near future (para 25).

#### D. Tanning

##### Rural Tanneries

21. There is little reliable information regarding the number of people engaged in rural tanning, the number of hides processed or the leather goods manufactured in the villages.

22. Undoubtedly, the main sources of supply for the rural tanners are "fallen hides" and cattle slaughtered outside the jurisdiction of municipal authorities. In addition, a survey of the returns from rural slaughter facilities indicates that rural tanners took rather more than 10% of the hides of the animals slaughtered there. The hides purchased by the village tanners are, with very few exceptions, ground-dried, that is "caravan" hides. Where facilities exist for suspension drying, the hides are sold for the export trade and are not taken up by village tanners.

23. It is to be expected that as the proposed greatly enlarged and specially trained staff of LMB field technicians, operating on a nationwide scale from the new slaughter facilities, teach correct methods of flaying and drying of hides, their endeavors will so substantially increase the value of the hides that they will be sold for the export market or to the large tanneries. This is the pattern where hide improvement facilities presently exist.

24. The rural tanner will, therefore, continue to process a diminishing supply of hides of poor quality. The outlet for his finished leather can only be for local, traditional, but diminishing domestic use or for the production of bags, belts and leather novelties for a limited tourist trade. This is best left as a village handicraft rather than be supplemented by the addition of rural tanneries. Nonetheless, it is desirable that village craftsmen be given an opportunity to improve upon their existing methods. The skills of these men will be in demand when the time comes to establish tanneries in the provinces for processing semi-finished leather.

#### Mechanized Tanneries

25. There are two major tanneries in Addis Ababa which have a combined annual throughput of about 200,000 hides and 800,000 skins. A third tannery in Asmara has a throughput of about 100,000 hides and 500,000 skins. In addition, the new INVESTA Tannery will have capacity for an annual throughput of 350,000 hides and 1,350,000 skins. It is being constructed south of Addis Ababa and is expected to come into production in 1973. Government has a major share in the venture.

26. The manager of the largest of the existing tanneries admitted to working at only 40% of capacity, partly because of the inadequate supply of good quality hides. The mechanized tanneries should, therefore, be a useful outlet for the improved hides becoming available as a result of the Project. This is particularly important as the poor reputation of Ethiopian hides in the export markets will take some time to overcome.

#### Proposed Regional Tanneries

27. The Project as proposed by the LTB included the establishment of four regional tanneries producing semi-processed leather, with a combined throughput of some 150,000 hides a year.

28. This proposal is, for the longer term, well conceived and sound in principle. The demand for semi-processed leather is growing as industrialized countries face increasing problems, particularly with labor costs and the disposal of effluent, in the preliminary stages of processing hides. These problems are usually less severe in the developing countries. The semi-processing to the "wet blue" stage adds some 30% to the value of the hides. Ideally, the export of "caravan" hides should eventually be eliminated and replaced by the export of semi-processed leather rather than by improved suspension dried hides.

29. Nevertheless, the proposal to establish regional tanneries within the same period as the development of the hides improvement scheme is premature.

30. Firstly, the time required for the implementation of the hides improvement scheme, together with the likely demands of the larger tanneries, make it doubtful that the required supply of improved hides would be immediately available.

31. Secondly, and in the long-run more importantly, the establishment of regional tanneries before an adequate supply of good, sound hides were available for semi-processing could cause lasting damage to the new industry. To follow the poor image of Ethiopian "caravan" hides on the export market with the possible offering of sub-standard semi-processed leather would, in the long-term be disastrous.

32. The regional tannery component of the Project proposal needs to be reviewed at a later date and might well form part of a future project. In the meantime, any improved hides surplus to the requirements of the existing tanneries, and later those of the new INVESTA Tannery, should be placed on the export market with a view to building up a better image for Ethiopian hides.

ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Livestock and Meat Board

Objectives and Powers

1. The Livestock and Meat Board (LMB) is an independent body which was created in 1964. Copies of the Order establishing LMB and the Proclamation conferring its powers are attached as Appendices 3-1 and 3-2 respectively.
2. The activities of LMB relate to livestock, poultry, meat, eggs and by-products (including hides and skins). Its objectives and purposes are to:
  - (a) encourage production and marketing;
  - (b) collect and disseminate information and stimulate research relating to production, processing and marketing;
  - (c) promote the establishment and supervision of improved stockroutes, watering points and marketing facilities;
  - (d) assist the veterinary services of the Government; and
  - (e) promote sales by advertising at home and abroad and by participating in international trade fairs.
3. For these purposes, the LMB has been given broad controlling and regulatory powers including, inter alia, the power to:
  - (a) construct, own, lease and operate farms, warehouses, markets, market processes, compounds and stock ponds;
  - (b) demarcate and establish stockroutes and watering points and reserved grazing areas;
  - (c) draw up and establish reliable weighing procedures and create specifications and enforce the same;
  - (d) fix, impose and collect fees on all livestock, meat, poultry, eggs and by-products processed in, or exported from, Ethiopia; and
  - (e) fix, impose and collect fees on all livestock and poultry using facilities of any sort provided by the Board.

4. The components of the proposed Second Livestock Development Project that would be implemented by LMB typify the sort of development which it was created to undertake.

Present Organization and Staffing

5. The LMB's Board of Directors is under the Chairmanship of the Minister of Agriculture, or his duly authorized representative; its members comprise representatives of various ministries designated by the respective ministries, representatives of the traders, producers and processors designated by the Minister of Agriculture.

6. The present organization of the LMB and its main departments may be summarized as follows:

(a) Management

- (i) Board;
- (ii) General Manager;
- (iii) Internal Auditor; and
- (iv) Secretarial;

(b) Administration Department

- (i) Finance;
- (ii) Property and Communications;
- (iii) Secretarial Services; and
- (iv) Branch Administration, Dire Dawa - Asmara;

(c) Production and Processing Department

- (i) Beef Cattle;
- (ii) Mutton and Sheep;
- (iii) Poultry and Eggs;
- (iv) Meat Industry; and
- (v) Hides and Skins;

(d) Planning, Research and Information Department

- (i) Planning and Research; and
- (ii) Publication and Public Relations;

(e) Marketing Department

- (i) Internal Marketing;
- (ii) External Marketing; and

(f) Projects Office

7. The LMB is not a large organization - its present staff number rather more than 100. The General Manager gives an impression of competence and shows a good understanding of the tasks which would confront LMB in the

execution of the Project. In particular, he is aware that the management resources at his disposal would have to be greatly strengthened in order to cope with the very rapid expansion of staffing and activities which the Project would entail. The organization and staffing which would be required for the Project is discussed in further detail in paragraphs 17 to 22.

#### Present Activities

8. The activities of LMB fall into five main classes:
- (a) regulatory, including the inspection of hygiene standards at export processing plants and the issue of export permits;
  - (b) operational and training, including
    - (i) the initial stages of hides and skins improvement program, introducing the suspension drying of cattle hides in order to raise the quality and price obtained. Complementing this program, LMB has established a warehouse in Addis Ababa and buys from producers on a graded basis and sells to export dealers;
    - (ii) the construction of two staging points on a stock route; and
    - (iii) construction of a demonstration slaughterslab;
  - (c) studies and surveys covering, for example, ways of increasing the export of live sheep; rural slaughter facilities; poultry consumption and production in the Addis Ababa area; Addis Ababa livestock and meat market; liveweight, carcass yields and prices paid in slaughter facilities; local tax rates in the Asmara area and their effect on livestock exporters and meat processing plants;
  - (d) project preparation - a Projects Office was established in 1970 to prepare for presentation to IBRD a number of projects tentatively identified by the livestock sub-sector review mission which visited Ethiopia in May 1970; the Project presently under consideration is the first to be prepared by this Office; and
  - (e) equity investments in the Melgue Wondo slaughterhouse and the Ethiopian Meat Concentrate Company. The former is in partnership with foreign interests who have contracted to purchase all exportable production; LMB holds 40% of the shares and is represented on the Board.
9. None of the previous, or current activities of LMB have been on a scale comparable to the country-wide operations envisaged under the Project.

Audit and Accounts

10. The accounts staff and procedures of LMB are barely adequate for its present level of activities and would require to be greatly strengthened for the purposes of the Project.
11. At present, LMB does not have a professionally qualified accounting staff. A set of double entry books is maintained and trial balances are extracted monthly. The annual accounts are prepared by the auditors. At the time of the mission's visit in December, accounts for the year ended July 7, 1971 and the auditors' report thereon had been prepared in draft: trial balances had been prepared for July and August. An annual budget is prepared for expenditure, but not for revenue.
12. There are weaknesses in internal control. Firstly, receipts from Customs in respect of hides and skins export duties are deposited in lump sums in LMB's account without any accompanying statement. No routine, methodical checks are made by LMB to ensure that all due revenue from this source has been received. The mission made, however, a very rough check with the Custom's published statistics for the year ending June 1971; this showed that LMB had received broadly what would have been expected. Secondly, the operation of a revolving fund for the purchase of hides and skins was the subject of unfavorable comment by the auditors, who made recommendations for an improved procedure which LMB proposes to implement.
14. The Project accounts would be fully integrated with, and form a part of, an improved and strengthened accounting system for LMB as a whole. The system would, of course, be required to show, in accordance with sound consistently applied principles, the application of credit funds and the revenues and expenditures of the various components of the Project, so that the financial results of the operations could be fairly assessed. While the system of accounting could, in keeping with the operations themselves, be relatively simple, the collection of cash at numerous, geographically scattered locations and the related expenditures would call for a carefully designed system of internal control and properly trained staff at all levels.
15. For this purpose, it would be necessary to appoint a Financial Officer with suitable professional qualifications and experience. It is unlikely that such a man could be recruited in Ethiopia. In addition, LMB should be encouraged to engage a firm of accountants to assist in the design and introduction of an accounting system and the training of staff.
16. LMB's accounts are audited by the Ethiopian firm of Mann Judd & Co., who are associated with the London firm of the same name. The Addis Ababa office of Mann Judd & Co. comprises two resident expatriate partners, three qualified accountants and ten trainees including three graduates. The firm also act as auditors of the Agricultural and Industrial Development Bank (AIDB) and other substantial organizations in Ethiopia. They would be acceptable to IDA as independent auditors.

### Organization and Staffing for the Project

17. The organization of the Project within LMB would be based on the following senior posts, which would be newly created:

- (a) Project Manager, who would be responsible to the General Manager for overall coordination;
- (b) Head of the Market and Stockroute Department, who would be responsible for the training of the marketing teams on-the-job, and the operation of the livestock markets; the stock-routes and marshalling yards; the mobile maintenance units; and the cattle trucking units;
- (c) Head of the Slaughter Facilities and Hide Shed Department, who would be responsible for the operation of the slaughter facilities and the hides and skins improvement program;
- (d) Construction Officer, who would be responsible for the planning and follow-up of construction works including the preparation of detailed drawings, bills of quantities, arrangements with contractors and the supervision of work;
- (e) Export Marketing Specialist, who would investigate ways of improving the export earnings from Ethiopian livestock products, with particular reference to hides and skins, and would prepare recommendations for suitable market arrangements and, in particular, whether the LMB should itself enter the domestic or export trade; and
- (f) Financial Officer, who would be responsible to the General Manager for the design and operation of an effective accounting system for the Project and for LMB as a whole.

A summary chart of the departmental organization is attached to this Annex (Appendix 3-6).

18. In view of the shortage of suitably trained and experienced managers in Ethiopia, it would probably be necessary to recruit non-Ethiopian for the above posts. The appointment of the Export Marketing Specialist would be for three years and the other appointments for four years. Ethiopian Deputies would be recruited with a view to eventually taking over these posts, except in the case of the Construction Officer, whose post would cease to exist when the non-Ethiopian left.

### Markets and Stockroutes

19. The markets would be operated by marketing teams from regional headquarters under five Livestock Marketing Officers (LMOs) and eight Assistant Livestock Marketing Officers (ALMOs). Fifty-two of the markets would be operated by 13 mobile teams, each comprising: one market master/auctioneer; one driver; one cash guard; one animal health assistant; one

vaccinator; and sorters, clerks and watchmen as required. Each team would be responsible for a group of markets forming a convenient circuit from the regional headquarters. The remaining three markets (Addis Ababa, Nazret and Mekale) would be operated by resident teams similarly staffed.

20. The stockroutes would also be the responsibility of LMOs and ALMOs who would ensure that stockroute permits and veterinary movement permits were issued by the marketing teams to all cattle using the stockroutes, on payment of the appropriate fee. The LMOs and ALMOs would also ensure that permits were checked along the stockroutes so that grazing and other facilities would be reserved for the exclusive use of fee-paying trade stock, and that the assets would be properly maintained.

21. The maintenance of the market and stockroute facilities would be carried out under the LMOs by five mobile maintenance teams, based on the regional headquarters. Each team would comprise three tradesmen and four laborers with tools and equipment including a replacement borehole pump and engines.

22. The cattle trucking operations, which would involve five trucks acquired over the first three years of the Project, would be the direct responsibility of the Head of the Market and Stockroute Department.

#### Slaughter Facilities and Hides and Skins Improvement

23. The Head of the Slaughter Facilities and Hide Shed Department would control the 159 slaughter facilities and hide sheds through area centers to be established in 14 principal towns.

24. Each center would have a slaughter facility and hide shed team which would comprise a superintendent, six technicians and a driver/mechanic. The functions of the team and the responsibilities of the area superintendent would be:

- (a) the direction and supervision of all LMB staff of the Slaughterhouse Facilities and Hide Shed Department in their area, including the maintenance of plant and equipment (this would involve holding a small stock of consumable stores); and
- (b) demonstrating improved hide and skin preparation techniques in the area.

25. The slaughter facilities and hide sheds under the slaughter facilities and hide shed teams would be manned as follows:

- (a) Model 1: One hide shed worker who would flesh, and suspension dry the hides flayed by the butchers;

- (b) Model 2: One technician responsible for day to day running and insuring that sanitary conditions would be maintained; two hide sheds workers would flesh and suspension dry the hides flayed by the butchers; two guards for the property and hides; and
- (c) Model 3: Provides a full abattoir service including flaying and butchering, the staff, under a senior technician, would comprise: two slaughterers, four flayers, one eviscerator, three butchers, three hide workers, one offal worker, two property guards, and one driver for meat delivery service in the town.

#### Administrative Coordination

26. Implementation of the Project would require close coordination between LMB and the various Ministries and Government departments concerned. To a large extent, this would be achieved by the day to day contacts maintained by LMB's management. More formal arrangements would be required in the case of the municipalities and the provision of veterinary services. Therefore, the LMB would enter into agreements with:

- (a) each municipality providing for, inter alia:
  - (i) LMB to be responsible for: the design, construction by contract, operation, maintenance, supervision and control of Project installations within municipal boundaries, such a slaughter facilities, hides and skins sheds, and livestock markets; and for the fixing and collection of all charges and fees in connection with these installations; and
  - (ii) the enforcement by the Municipalities, under their existing legal authority, of the proper utilization of these installations; and
- (b) the Veterinary Department of the Ministry of Agriculture, providing for meat inspection services and all veterinary services connected with markets, stockroutes and any other Project facilities to remain the responsibility of the Department, which would provide the necessary staff.

#### Future Role Outside the Project

27. Government's policy regarding the future of LMB, and the role it will play outside the Project, has not yet been defined.

28. Although, to date, LMB has done a satisfactory job preparing livestock project, it is presently being considered by Government whether the work of project preparation, that is now carried out within LMB, should be transferred to the Planning Unit of the Ministry of Agriculture.

29. The LMB's activities with regard to marketing may also develop. This, however, will depend on the marketing arrangements recommended by the proposed Export Marketing Specialist.

30. LMB's regulatory functions would continue as at present. The extent of other activities would, however, be governed by two factors:

- (a) the very rapid growth which would result from implementation of the Project would extent LMB's management resources and make other developments difficult and risky; and
- (b) LMB's revenues leave little if any margin for further expansion, unless this were to be financed directly by Government.

ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Livestock and Meat Board Order, 1964

ORDER No. 34 of 1964

AN ORDER TO PROVIDE FOR THE ESTABLISH-  
MENT OF THE LIVESTOCK AND MEAT BOARD  
CONQUERING LION OF THE TRIBE OF JUDAH

HAILE SELASSIE I

ELECT OF GOD, EMPEROR OF ETHIOPIA

WHEREAS, it is known that the large livestock population of Our Empire forms a valuable national resource; and

WHEREAS, in the interest of the economy of Our Empire, the quality of livestock, livestock products and hides should be improved and their production increased; and

WHEREAS, it is necessary for these purposes to provide guidance and assistance to producers, traders and processors, to facilitate and encourage the establishment of requisite facilities and to provide regulations for their efficient operation; and

WHEREAS, it is deemed that these purposes can best be achieved by the creation of an organization possessed of such powers as shall be conferred by law;

NOW, THEREFORE, in accordance with Article 27 of Our Revised Constitution, and on the advice of the Council of Ministers, We hereby order as follows:

1. Short Title:

This Order may be cited as the "Livestock and Meat Board Order, 1964".

2. Establishment of the Board:

There is hereby created an independent body, to be known as the "Livestock and Meat Board" (hereinafter referred to as the "Board") which shall act through the Board of Directors and General Manager as provided herein and in other relevant laws.

3. Definitions:

When used in this Order, unless the context shall require otherwise:

- (1) "by-product" shall mean everything of value produced from the slaughter of livestock other than the meat, but shall not include milk;
- (2) "hide" shall mean the outer covering of bovine and camels;
- (3) "livestock" shall mean bovine, sheep, goats, camels, horses, donkeys, mules and similar animals;
- (4) "meat" shall mean the flesh of bovine, sheep, goats, camels, poultry and similar animals produced for food;
- (5) "poultry" shall mean domestic birds which serve as a source of food;
- (6) "processor" shall mean any person involved in the operation of converting livestock, poultry and eggs, meat and by-products into a saleable form;
- (7) "producer" shall mean a farmer of livestock and poultry;
- (8) "skin" shall mean the outer covering of a sheep or goat; and
- (9) "trader" shall mean a merchant in livestock, poultry, meat, eggs and by-products.

4. Objects and Purposes of the Board:

The Board shall have the following objectives and purposes:

- (1) to encourage the production and marketing of healthy and high quality livestock, poultry, meat, eggs and by-products;
- (2) to collect and disseminate information relating to the production, processing, transporting and marketing of livestock, poultry, meat, eggs and by-products;
- (3) to promote the establishment and supervision of improved stockroutes, watering points and marketing facilities;

- (4) to stimulate research on any aspect of livestock and poultry production, transporting, processing and marketing;
- (5) when requested, and in accordance with such request, to assist in and facilitate the carrying out by the Veterinary Services of the Government of their vaccination and related services and to cooperate in the expansion and application of veterinary standards and requirements; and
- (6) to promote the sale of livestock, meat, poultry, eggs and by-products by advertising at home and abroad and by participating in international trade fairs.

5. Responsibilities:

The Board shall, in accordance with relevant laws, be responsible for:

- (1) the establishment and enforcement of such policies and programmes as are necessary for the attainment of the objects and purposes stated hereunder;
- (2) the establishment of such administrative organization as is necessary and conducive to the proper execution and administration of its policies and programmes;
- (3) the preparation of its budget; and
- (4) the discharging of such additional functions as may be vested in it by law.

6. Organization:

The Board shall be comprised of:

(1) Board of Directors:

- (a) all of the powers of the Board shall be vested in a Board of Directors;
- (b) the Board shall be composed as follows:

A Chairman, the Minister of Agriculture or his duly authorized representative.

Members: one representative of each of the Ministries of Public Health, Commerce and Industry, Finance and National Community Development, designated by the respective Ministers.

One representative of each of the traders, processors and producers, designated by the Minister of Agriculture after consultation with representative bodies of these sections of the industry.

The representatives of the traders, processors and producers shall serve for two (2) years and shall be eligible for designation again.

- (c) The Board shall make its own rules of procedure;
- (2) General Manager: There shall be a General Manager appointed by Us upon the recommendation of the Board of Directors for such period as We shall determine. He shall be the Head Executive of the Board and, subject to the general direction of the Board of Directors, he shall direct the management and operations of the Board. The General Manager may delegate such of his functions, duties and authority to such persons employed by the Board as he may deem appropriate for the efficient management of the business of the Board; and
- (3) Staff: The Board may employ officers and staff necessary for the carrying out of its operation, subject to the Central Personnel Agency Public Service Order (Order No. 23 of 1961, as amended) and regulations issued thereunder.

7. Annual Report:

The Board shall publish an Annual Report of its activities and the progress that it has made in achieving the objectives and purposes of this Order within three (3) months after the end of each year, and shall submit a programme of work for the coming year within three (3) months before the end of the year to the Ministry of Agriculture.

8. Regulations:

Our Minister of Agriculture may upon the recommendation of the Board, issue Regulations for the better carrying out of the provisions hereof.

9. Repeal:

Unless otherwise expressly provided in this Order, all Orders or Regulations previously in force concerning matters provided for in this Order, whether written or customary are hereby repealed.

10. Effective Date:

This Order shall enter into force on the date of its publication in the Negarit Gazeta.

Done at Addis Ababa this 14th day of March 1964.

TSEHAFFE TAEZAZ AKLILU HABTE WOLD

Prime Minister and Minister of Pen



ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Livestock and Meat Board Proclamation, 1964

PROCLAMATION No. 212 of 1964

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LIVESTOCK AND MEAT BOARD

PROCLAMATION

CONQUERING LION OF THE TRIBE OF JUDAH

HAILE SELASSIE I

ELECT OF GOD, EMPEROR OF ETHIOPIA

WHEREAS, We have ordered the establishment of the Livestock and Meat Board; and

WHEREAS, it is necessary that the said Board be conferred with such powers as are necessary for the attainment of its object and purposes;

NOW, THEREFORE, in accordance with Article 34 and 88 of Our Revised Constitution, We approve the resolutions of Our Senate and Chamber of Deputies and We hereby proclaim as follows:

1. Short Title:

This Proclamation may be cited as the "Livestock and Meat Board Proclamation, 1964".

2. Definitions:

Where used in this Proclamation, unless the context shall require otherwise:

(1) "Board" shall mean the Livestock and Meat Board;

(2) "by-product" shall mean everything of value produced from the slaughter of livestock other than the meat, but shall not include milk;

- (3) "fee" shall mean a charge fixed in accordance with the provisions of the present Proclamation;
- (4) "hide" shall mean the outer covering of Bovine and Camels;
- (5) "livestock" shall mean bovine, sheep, goats, camels, horses, donkeys, mules and similar animals;
- (6) "meat" shall mean the flesh of bovine, sheep, goats, camels, poultry and similar animals produced for food;
- (7) "poultry" shall mean domestic birds which serve as sources of food;
- (8) "processor" shall mean any person involved in the operation of converting livestock, poultry and eggs, meat and by-products into a saleable form;
- (9) "producer" shall mean a farmer of livestock and poultry;
- (10) "skin" shall mean the outer covering of a sheep or goat;
- (11) "trader" shall mean a merchant in livestock, poultry, meat, eggs and by-products.

3. Power of the Board:

The Board shall have and exercise such power to control and regulate the production, use, possession, movement, sale, import and export of all livestock, poultry, meat, eggs and by-products as may be necessary to carry out its objective and purposes, including and without limitation the power:

- (1) to construct, own, lease and operate farms, warehouses, markets, market places, compounds and stock ponds, in places where such facilities are required but have not been provided through initiative of private enterprise and to encourage the establishment in such places of adequate processing facilities;
- (2) to borrow, lend, mortgage, pledge and dispose of moveable and immoveable property;
- (3) to designate and direct livestock and poultry markets;
- (4) when requested and in accordance with such request by the Veterinary Services, to organize and operate the quarantine stations for use in the export and import of livestock, poultry, meat, eggs and by-products;

- (5) to demarcate and establish livestock routes with watering points and reserved grazing area to enable livestock to be moved from primary markets to processing facilities and central transportation points, in the best possible condition;
- (6) to introduce measures designed to expand and improve the livestock, poultry, meat, and egg industries generally, and in particular, but without limitation, to recommend to the Government to protect producers and processors from excessive taxation or other impositions which tend to stifle and impede the expansion of trade in these commodities;
- (7) to propose to the Government to fix livestock, poultry, meat, eggs and by-product floor prices when considered necessary for the national economy;
- (8) to draw up and establish reliable weighing procedures and grade specifications for livestock, poultry, meat, eggs and by-products and enforce the same;
- (9) to fix, impose and collect fees on all livestock, meat, poultry, eggs and by-products processed in or exported from Ethiopia; provided, however that in no event shall such fees exceed the following rates;

|           |              |                 |
|-----------|--------------|-----------------|
|           | Hides        | \$0.20 per hide |
|           | Skins        | 0.08 per skin   |
| Cattle    | (Live        | 1.50 per head   |
| Cattle    | (Slaughtered | 1.50 " "        |
| Sheep and | (Live        | 0.40 " "        |
| Goats     | (Slaughtered | 0.40 " "        |
| Camels    | (            | 1.50 " "        |
| Horses    | (            | 0.40 " "        |
| Mules     | (            |                 |
| Donkeys   | (            |                 |
| Poultry   | (Live        | 0.02 " "        |
|           | (Slaughtered | 0.02 " "        |
| Eggs      |              | 0.01 per dozen  |

- (10) to fix, impose and collect fees on all livestock and poultry using facilities of any sort provided by the Board, whether livestock and poultry markets, water supply centers, stock-routes and ponds, quarantine station, slaughterhouses and other processing facilities; provided, however, that such fees shall be fixed upon a uniform basis and shall reflect as nearly as possible, the cost and value of the services and the facilities being provided to the users thereof, having due regard to the need to expand and finance the expansion, maintenance and improvement of such services and facilities; and

- (11) generally take such measures and recommend such regulations as shall seem appropriate to realize the purposes of the present Proclamation.

4. Fund:

- (1) There shall be established a fund which shall consist of:
  - (a) all monies collected from fees charged on all livestock, poultry, meat, eggs and by-products;
  - (b) contributions or donations as may from time to time be made to the fund; and
  - (c) any subsidy provided by the Government.
- (2) Such fund shall be lodged with the National Bank of Ethiopia in a separate deposit account in the name of the Board, which shall be responsible for the expenditure of the fund to effect the objects and purposes of this Proclamation in accordance with an Annual Budget.
- (3) The Board shall keep an account of receipt and disbursement; and shall render such statements of revenue and expenditure as Our Auditor General may require.
- (4) Within three (3) months after the expiration of each year, the Board shall prepare a statement of receipts and disbursements during the previous year. Every such statement shall be subject to audit and shall be published in the Negarit Gazeta.

5. Regulations:

Our Minister of Agriculture may, upon the recommendation of the Board, issue Regulations for the better carrying out of the provisions hereof.

6. Penalty:

Any person who violates the provisions of this Proclamation or of any Regulations issued in accordance with it, shall be punished in accordance with the provisions of the Ethiopian Penal Code of 1957.

7. Repeal:

Unless otherwise expressly provided in this Proclamation, all Proclamations, Decrees or Regulations previously in force concerning matters provided for in this Proclamation, whether written or customary, are hereby repealed.

8. Effective Date:

This Proclamation shall enter into force on the date of its publication in the Negarit Gazeta.

Done at Addis Ababa this 14th day of March, 1964.

TSEHAFFE TAEZAZ AKLILU HABTE WOLD  
Prime Minister and Minister of Pen



ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Livestock and Meat Board

Actual and Projected Balance Sheets as of July 7, 1971-1983  
(Eth\$'000)

| <u>Category</u>                              | <u>Actual</u><br><u>1971</u> | <u>1972</u>  | <u>1973</u>  | <u>1974</u>  | <u>1975</u>  | <u>1976</u>  | <u>Projected</u><br><u>1977</u> | <u>1978</u>   | <u>1979</u>   | <u>1980</u>   | <u>1981</u>   | <u>1982</u>   | <u>1983</u>   |
|----------------------------------------------|------------------------------|--------------|--------------|--------------|--------------|--------------|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                                              |                              |              |              |              |              |              |                                 | -year-        |               |               |               |               |               |
| <u>ASSETS</u>                                |                              |              |              |              |              |              |                                 |               |               |               |               |               |               |
| Fixed Assets at Cost                         |                              |              |              |              |              |              |                                 |               |               |               |               |               |               |
| IDA Project - Land, Buildings and Equipment. | -                            | -            | -            | 1,325        | 3,469        | 6,159        | 7,891                           | 7,891         | 7,891         | 7,891         | 7,891         | 7,891         | 7,891         |
| - Motor Vehicles .....                       | -                            | -            | -            | 491          | 954          | 1,379        | 1,550                           | 1,550         | 1,405         | 1,260         | 1,187         | 1,187         | 1,187         |
| Other - Land, Buildings and Equipment .....  | 307                          | 550          | 800          | 850          | 900          | 950          | 1,000                           | 1,050         | 1,100         | 1,150         | 1,200         | 1,250         | 1,300         |
| - Motor Vehicles.....                        | 218                          | 200          | 200          | 200          | 200          | 200          | 200                             | 200           | 200           | 200           | 200           | 200           | 200           |
| Total Fixed Assets at Cost.....              | <u>525</u>                   | <u>750</u>   | <u>1,000</u> | <u>2,866</u> | <u>5,523</u> | <u>8,688</u> | <u>10,641</u>                   | <u>10,691</u> | <u>10,596</u> | <u>10,501</u> | <u>10,478</u> | <u>10,528</u> | <u>10,578</u> |
| Less: Depreciation - IDA Project .....       | -                            | -            | -            | 164          | 478          | 962          | 1,497                           | 1,952         | 2,233         | 2,485         | 2,794         | 3,176         | 3,558         |
| - Other .....                                | <u>112</u>                   | <u>145</u>   | <u>173</u>   | <u>213</u>   | <u>255</u>   | <u>300</u>   | <u>348</u>                      | <u>398</u>    | <u>450</u>    | <u>500</u>    | <u>550</u>    | <u>600</u>    | <u>650</u>    |
| Total Net Fixed Assets .....                 | <u>413</u>                   | <u>605</u>   | <u>827</u>   | <u>2,489</u> | <u>4,790</u> | <u>7,426</u> | <u>8,796</u>                    | <u>8,341</u>  | <u>7,913</u>  | <u>7,516</u>  | <u>7,134</u>  | <u>6,752</u>  | <u>6,370</u>  |
| Loan to Ministry of Interior.....            | 20                           | 16           | 12           | 8            | 4            | -            | -                               | -             | -             | -             | -             | -             | -             |
| Investments.....                             | 253                          | 253          | 253          | 253          | 253          | 253          | 253                             | 253           | 253           | 253           | 253           | 253           | 253           |
| Current Assets                               |                              |              |              |              |              |              |                                 |               |               |               |               |               |               |
| Inventories .....                            | 4                            | 10           | 10           | 100          | 100          | 100          | 100                             | 100           | 100           | 100           | 100           | 100           | 100           |
| Debtors and Prepayments .....                | 60                           | 64           | 68           | 72           | 76           | 80           | 80                              | 80            | 80            | 80            | 80            | 80            | 80            |
| Treasury Bills .....                         | 500                          | 500          | 500          | 500          | 500          | 500          | 500                             | 500           | 500           | 500           | 500           | 500           | 500           |
| Cash .....                                   | <u>1,221</u>                 | <u>1,072</u> | <u>900</u>   | <u>459</u>   | <u>80</u>    | <u>(130)</u> | <u>165</u>                      | <u>1,188</u>  | <u>1,325</u>  | <u>1,524</u>  | <u>1,985</u>  | <u>2,519</u>  | <u>3,054</u>  |
| Total Current Assets .....                   | <u>1,785</u>                 | <u>1,646</u> | <u>1,478</u> | <u>1,131</u> | <u>756</u>   | <u>550</u>   | <u>845</u>                      | <u>1,868</u>  | <u>2,005</u>  | <u>2,204</u>  | <u>2,665</u>  | <u>3,199</u>  | <u>3,734</u>  |
| Total Assets .....                           | <u>2,471</u>                 | <u>2,520</u> | <u>2,570</u> | <u>3,881</u> | <u>5,803</u> | <u>8,229</u> | <u>9,894</u>                    | <u>10,462</u> | <u>10,171</u> | <u>9,973</u>  | <u>10,052</u> | <u>10,204</u> | <u>10,357</u> |
| <u>LIABILITIES AND EQUITY</u>                |                              |              |              |              |              |              |                                 |               |               |               |               |               |               |
| Development Loan 1974-1994 <sup>1/</sup>     |                              |              |              |              |              |              |                                 |               |               |               |               |               |               |
| Principal .....                              | -                            | -            | -            | 2,077        | 5,002        | 8,409        | 10,544                          | 10,544        | 10,155        | 9,735         | 9,282         | 8,793         | 8,264         |
| Current Liabilities .....                    | 20                           | 20           | 20           | 20           | 20           | 20           | 20                              | 20            | 20            | 20            | 20            | 20            | 20            |
| Income and Expenditure Account               |                              |              |              |              |              |              |                                 |               |               |               |               |               |               |
| IDA Project.....                             | -                            | -            | -            | (816)        | (1,869)      | (2,900)      | (3,420)                         | (2,902)       | (2,954)       | (2,782)       | (2,300)       | (1,709)       | (1,077)       |
| Other .....                                  | <u>2,451</u>                 | <u>2,500</u> | <u>2,550</u> | <u>2,600</u> | <u>2,650</u> | <u>2,700</u> | <u>2,750</u>                    | <u>2,800</u>  | <u>2,950</u>  | <u>3,000</u>  | <u>3,050</u>  | <u>3,100</u>  | <u>3,150</u>  |
| Total Liabilities and Equity .....           | <u>2,471</u>                 | <u>2,520</u> | <u>2,570</u> | <u>3,881</u> | <u>5,803</u> | <u>8,229</u> | <u>9,894</u>                    | <u>10,462</u> | <u>10,171</u> | <u>9,973</u>  | <u>10,052</u> | <u>10,204</u> | <u>10,357</u> |

<sup>1/</sup> Interest of 3/4 of 1% for the first five years and 8% thereafter.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Livestock and Meat Board

Projected Profit and Loss Accounts 1974 - 1983  
(Eth\$'000)

|                                                | 1974  | 1975    | 1976    | 1977    | 1978    | 1979    | 1980    | 1981    | 1982    | 1983    |
|------------------------------------------------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <u>REVENUES</u>                                |       |         |         |         |         |         |         |         |         |         |
| Market and Stockroute Component                |       |         |         |         |         |         |         |         |         |         |
| Stockroutes .....                              | 49    | 190     | 433     | 767     | 998     | 1,084   | 1,168   | 1,201   | 1,217   | 1,217   |
| Trucking .....                                 | 47    | 160     | 251     | 284     | 284     | 170     | 57      | -       | -       | -       |
| Markets .....                                  | 221   | 752     | 1,486   | 2,236   | 2,781   | 2,905   | 3,012   | 3,093   | 3,135   | 3,135   |
| Sub-total .....                                | 317   | 1,102   | 2,170   | 3,287   | 4,063   | 4,159   | 4,237   | 4,294   | 4,352   | 4,352   |
| Slaughter Facilities and Hide Sheds .....      | 23    | 197     | 531     | 898     | 1,129   | 1,186   | 1,246   | 1,300   | 1,335   | 1,350   |
| Total Revenues .....                           | 340   | 1,299   | 2,701   | 4,185   | 5,192   | 5,345   | 5,483   | 5,594   | 5,687   | 5,702   |
| <u>DIRECT COSTS</u>                            |       |         |         |         |         |         |         |         |         |         |
| Market and Stockroute Component                |       |         |         |         |         |         |         |         |         |         |
| Stockroutes .....                              | 46    | 152     | 304     | 428     | 465     | 468     | 470     | 473     | 473     | 473     |
| Trucking .....                                 | 31    | 92      | 138     | 153     | 153     | 92      | 31      | -       | -       | -       |
| Markets .....                                  | 66    | 186     | 324     | 464     | 471     | 471     | 471     | 471     | 471     | 471     |
| Technical and Administrative Services 2/ ..... | 413   | 767     | 1,231   | 1,539   | 1,522   | 1,522   | 1,522   | 1,522   | 1,522   | 1,522   |
| 25% of Expatriate Salaries .....               | 26    | 26      | 26      | 26      | -       | -       | -       | -       | -       | -       |
| Depreciation: Motor Vehicles (20%) .....       | 64    | 122     | 180     | 195     | 195     | 166     | 137     | 122     | 122     | 122     |
| Buildings and Equipment (5%) ...               | 48    | 118     | 209     | 268     | 268     | 268     | 268     | 268     | 268     | 268     |
| Sub-total .....                                | 694   | 1,461   | 2,412   | 3,073   | 3,074   | 2,987   | 2,899   | 2,856   | 2,856   | 2,856   |
| Slaughter and Hide Shed Component              |       |         |         |         |         |         |         |         |         |         |
| Slaughter Facilities and Hide Sheds 2/ .....   | 12    | 118     | 327     | 566     | 715     | 749     | 779     | 805     | 825     | 839     |
| Technical and Administrative Services 2/ ..... | 181   | 387     | 526     | 554     | 514     | 526     | 529     | 380     | 380     | 380     |
| 25% of Expatriate Salaries .....               | 26    | 26      | 26      | 26      | -       | -       | -       | -       | -       | -       |
| Depreciation: Motor Vehicles (20%) .....       | 27    | 62      | 89      | 108     | 108     | 108     | 108     | 108     | 108     | 108     |
| Buildings and Equipment (5%) ...               | 18    | 55      | 99      | 127     | 127     | 127     | 127     | 127     | 127     | 127     |
| Sub-total .....                                | 264   | 648     | 1,067   | 1,381   | 1,464   | 1,510   | 1,543   | 1,420   | 1,440   | 1,434   |
| Total Direct Costs .....                       | 958   | 2,109   | 3,479   | 4,454   | 4,538   | 4,497   | 4,442   | 4,276   | 4,296   | 4,310   |
| <u>GROSS MARGIN</u>                            |       |         |         |         |         |         |         |         |         |         |
| Markets and Stockroutes .....                  | (377) | (359)   | (242)   | 214     | 989     | 1,172   | 1,338   | 1,438   | 1,496   | 1,496   |
| Slaughter Facilities and Hide Sheds .....      | (241) | (451)   | (536)   | (483)   | (335)   | (324)   | (297)   | (120)   | (105)   | (104)   |
| Total Gross Margin .....                       | (618) | (810)   | (778)   | (269)   | 654     | 848     | 1,041   | 1,318   | 1,391   | 1,392   |
| <u>HEADQUARTERS COSTS</u>                      |       |         |         |         |         |         |         |         |         |         |
| 25% of Expatriate Salaries .....               | 108   | 134     | 121     | 98      | -       | -       | -       | -       | -       | -       |
| Depreciation: Motor Vehicles (20%) .....       | 7     | 7       | 7       | 7       | 7       | 7       | 7       | 7       | 7       | 7       |
| Other Salaries, Operating Costs .....          | 75    | 75      | 75      | 75      | 50      | 50      | 50      | 50      | 50      | 50      |
| Interest on Development Loan .....             | 8     | 27      | 50      | 71      | 79      | 863     | 812     | 779     | 743     | 703     |
| Total Headquarters Costs .....                 | 198   | 243     | 253     | 251     | 136     | 900     | 869     | 836     | 800     | 760     |
| PROJECT OPERATING PROFIT (LOSS) .....          | (816) | (1,053) | (1,031) | (520)   | 518     | (52)    | 172     | 482     | 591     | 632     |
| CUMULATIVE PROFIT (LOSS) .....                 |       | (1,869) | (2,900) | (3,420) | (2,902) | (2,954) | (2,782) | (2,300) | (1,709) | (1,077) |

1/ The profits from LMB's other operations are relatively small. The results are taken into account in the balance sheets but not set out in detail here. They will, of course, be shown in LMB's actual profit and loss accounts along with the above.

2/ The incremental operating costs shown at Annex 13 include provisions for the replacement of motor vehicles. These amounts, together with contingency allowances, have been excluded from the operating costs charged above.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

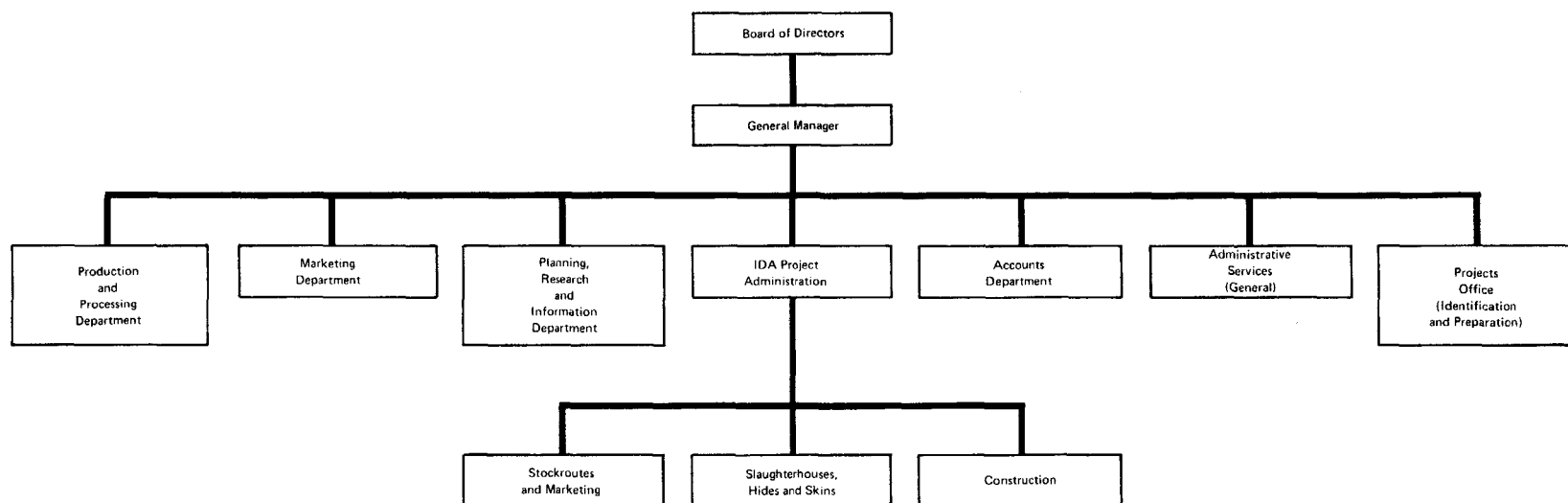
Livestock and Meat Board

Sources and Applications of Funds 1972 - 1983  
(Eth\$'000)

|                                                   | -----year----- |            |              |              |              |              |              |              |              |              |              |              |
|---------------------------------------------------|----------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                   | 1972           | 1973       | 1974         | 1975         | 1976         | 1977         | 1978         | 1979         | 1980         | 1981         | 1982         | 1983         |
| <u>SOURCES OF FUNDS</u>                           |                |            |              |              |              |              |              |              |              |              |              |              |
| Operating Profits (Losses) - IDA Project .....    | -              | -          | (816)        | (1,053)      | (1,031)      | (520)        | 518          | (52)         | 172          | 482          | 591          | 632          |
| - Other .....                                     | 49             | 50         | 50           | 50           | 50           | 50           | 50           | 50           | 50           | 50           | 50           | 50           |
| Add:Depreciation - IDA Project .....              | -              | -          | 164          | 364          | 584          | 705          | 705          | 676          | 647          | 632          | 632          | 632          |
| - Other .....                                     | <u>33</u>      | <u>28</u>  | 40           | 42           | 45           | 48           | 50           | 52           | 50           | 50           | 50           | 50           |
| Internal Cash Generation - Project .....          | -              | -          | (652)        | (689)        | (447)        | 185          | 1,223        | 624          | 819          | 1,114        | 1,223        | 1,264        |
| - Other .....                                     | 82             | 78         | 90           | 92           | 95           | 98           | 100          | 202          | 100          | 100          | 100          | 100          |
| Development Loan                                  |                |            |              |              |              |              |              |              |              |              |              |              |
| - for Fixed Assets .....                          | -              | -          | 1,816        | 2,607        | 3,115        | 1,903        | -            | -            | -            | -            | -            | -            |
| - for Other Development Costs .....               | -              | -          | 261          | 318          | 292          | 232          | -            | -            | -            | -            | -            | -            |
| Government Grant - 75% of Expatriate Salaries ... | -              | -          | 479          | 557          | 518          | 449          | -            | -            | -            | -            | -            | -            |
| Reduction of Cash Balance .....                   | <u>149</u>     | <u>172</u> | <u>441</u>   | <u>379</u>   | <u>210</u>   | <u>-</u>     | <u>-</u>     | <u>-</u>     | <u>-</u>     | <u>-</u>     | <u>-</u>     | <u>-</u>     |
| Total Sources of Funds .....                      | <u>231</u>     | <u>250</u> | <u>2,435</u> | <u>3,264</u> | <u>3,783</u> | <u>2,867</u> | <u>1,323</u> | <u>826</u>   | <u>919</u>   | <u>1,214</u> | <u>1,323</u> | <u>1,364</u> |
| <u>APPLICATIONS OF FUNDS</u>                      |                |            |              |              |              |              |              |              |              |              |              |              |
| Fixed Assets - IDA Project .....                  | -              | -          | 1,816        | 2,607        | 3,115        | 1,903        | -            | -            | -            | -            | -            | -            |
| - Other .....                                     | 225            | 250        | 50           | 50           | 50           | 50           | 50           | 50           | 50           | 50           | 50           | 50           |
| - Replacements .....                              | -              | -          | -            | 50           | 100          | 170          | 250          | 250          | 250          | 250          | 250          | 250          |
| Loan - Repayment of Principal .....               | -              | -          | -            | -            | -            | -            | -            | 389          | 420          | 453          | 489          | 529          |
| 75% of Expatriate Salaries .....                  | -              | -          | 479          | 557          | 518          | 449          | -            | -            | -            | -            | -            | -            |
| Increase in Inventories .....                     | 6              | -          | 90           | -            | -            | -            | -            | -            | -            | -            | -            | -            |
| Increase in Cash Balance .....                    | <u>-</u>       | <u>-</u>   | <u>-</u>     | <u>-</u>     | <u>-</u>     | <u>295</u>   | <u>1,023</u> | <u>137</u>   | <u>199</u>   | <u>461</u>   | <u>534</u>   | <u>535</u>   |
| Total Applications of Funds .....                 | <u>231</u>     | <u>250</u> | <u>2,435</u> | <u>3,264</u> | <u>3,783</u> | <u>2,867</u> | <u>1,323</u> | <u>826</u>   | <u>919</u>   | <u>1,214</u> | <u>1,323</u> | <u>1,364</u> |
| CASH BALANCE (1971 = 1,221) .....                 | <u>1,072</u>   | <u>900</u> | <u>459</u>   | <u>80</u>    | <u>(130)</u> | <u>165</u>   | <u>1,188</u> | <u>1,325</u> | <u>1,524</u> | <u>1,985</u> | <u>2,519</u> | <u>3,054</u> |



# ETHIOPIA SECOND LIVESTOCK DEVELOPMENT PROJECT LMB ORGANIZATION CHART



Note: In addition to the Departments shown under the heading "IDA Project Administration", the Project would also provide for a Financial Officer and Accounting Consultant Services to the Accounts Department, and an Export Marketing Specialist in the Marketing Department.



ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model I - Primary Market

| <u>Investment Costs</u><br>(Eth\$)          |             |                         |                  |               |                   |
|---------------------------------------------|-------------|-------------------------|------------------|---------------|-------------------|
| <u>INVESTMENTS</u>                          | <u>Unit</u> | <u>No. of<br/>Units</u> | <u>Unit Cost</u> | <u>Year-1</u> | <u>Total Cost</u> |
| <u>Yards</u>                                |             |                         |                  |               |                   |
| Cattle Pens .....                           | set         | 1                       | 1,990            | 1,990         | 1,990             |
| Sheep and Goat Pens .....                   | set         | 1                       | 520              | 520           | 520               |
| Crush and Spray Race .....                  | set.        | 1                       | 1,300            | 1,300         | 1,300             |
| Loading Ramp .....                          | no          | 0.1                     | 300              | 30            | 30                |
| Sub-total .....                             |             |                         |                  | 3,840         | 3,840             |
| <u>Buildings</u>                            |             |                         |                  |               |                   |
| Sale Ring and Office .....                  | no          | 1                       | 1,960            | 1,960         | 1,960             |
| Watchman's House .....                      | no          | 1/2                     | 400              | 200           | 200               |
| Fodder Shed .....                           | no          | 1/2                     | 600              | 300           | 300               |
| Sub-total .....                             |             |                         |                  | 2,460         | 2,460             |
| <u>Water</u>                                |             |                         |                  |               |                   |
| Well (lined) 1/ .....                       | no          | 1/2                     | 300              | 150           | 150               |
| Pump and Engine .....                       | set         | 1/2                     | 4,000            | 2,000         | 2,000             |
| Piping .....                                | m           | 150                     | 5                | 750           | 750               |
| Storage Tanks (12,000<br>Gallons) .....     | no          | 1/2                     | 2,000            | 1,000         | 1,000             |
| Troughs .....                               | no          | 1/2                     | 700              | 350           | 350               |
| Sub-total .....                             |             |                         |                  | 4,250         | 4,250             |
| <u>Labor</u>                                |             |                         |                  |               |                   |
| For Construction 2/ .....                   |             |                         |                  | 3,160         | 3,160             |
| <u>Movable Assets</u>                       |             |                         |                  |               |                   |
| Cattle Scales .....                         | no          | 1                       | 1,100            | 1,100         | 1,100             |
| Equipment 3/ .....                          | set         | 1                       | 380              | 380           | 380               |
| Sub-total .....                             |             |                         |                  | 1,480         | 1,480             |
| <u>Veterinary Drugs - For<br/>Resale</u>    |             |                         |                  |               |                   |
| Start-up (3-month Inventory) 4/. herd ..... |             | 500                     | 3                | 1,500         | 1,500             |
| Total .....                                 |             |                         |                  | 16,690        | 16,690            |
| <u>Contingencies</u>                        |             |                         |                  |               |                   |
| Physical 10% .....                          |             |                         |                  | 1,670         | 1,670             |
| Price 5% .....                              |             |                         |                  | 830           | 830               |
| Total Investment Costs .....                |             |                         |                  | 19,190        | 19,190            |

- 1/ Includes labor at Eth\$10/m.  
 2/ Thirty per cent of fixed assets, not including well digging.  
 3/ Includes safe, cattle control equipment and furniture.  
 4/ Based on 2,000 doses sold per year per primary market.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model I - Primary Market

Revenue and Operating Costs  
(Eth\$)

| <u>Category</u>                          | <u>Year</u>   |               |               |               |               |               |
|------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                                          | <u>1</u>      | <u>2</u>      | <u>3</u>      | <u>4</u>      | <u>5</u>      | <u>6-20</u>   |
| <u>REVENUE</u>                           |               |               |               |               |               |               |
| <u>Throughputs</u> 1/                    |               |               |               |               |               |               |
| Cattle (No) .....                        | 5,100         | 10,300        | 10,860        | 11,340        | 11,900        | 12,480        |
| Sheep and Goats (No) .....               | 15,300        | 30,510        | 32,080        | 33,610        | 35,290        | 37,130        |
| Camels (No) 2/ .....                     | 300           | 600           | 630           | 670           | 700           | 730           |
| <u>Fees</u>                              |               |               |               |               |               |               |
| Cattle @ Eth\$2.00/Head .....            | 10,200        | 20,600        | 21,720        | 22,680        | 23,800        | 24,960        |
| Sheep and Goats @ Eth\$0.30/Head .....   | 4,600         | 9,150         | 9,620         | 10,080        | 10,590        | 11,140        |
| Camels @ Eth\$2.00/Head .....            | 600           | 1,200         | 1,260         | 1,340         | 1,400         | 1,460         |
| Sub-total .....                          | 15,400        | 30,950        | 32,600        | 34,100        | 35,790        | 37,560        |
| <u>Drugs</u> .....                       | 6,000         | 6,000         | 6,000         | 6,000         | 6,000         | 6,000         |
| Total Revenue .....                      | <u>21,400</u> | <u>36,950</u> | <u>38,600</u> | <u>40,100</u> | <u>41,790</u> | <u>43,560</u> |
| <u>OPERATING COSTS</u>                   |               |               |               |               |               |               |
| <u>Veterinary Drugs for Resale</u> ..... | 6,000         | 6,000         | 6,000         | 6,000         | 6,000         | 6,000         |
| <u>Replacements</u> .....                | -             | 350           | 350           | 350           | 350           | 350           |
| <u>Fuel and Maintenance</u> .....        | 610           | 610           | 610           | 610           | 610           | 610           |
| <u>Stationery</u> .....                  | 650           | 650           | 650           | 650           | 650           | 650           |
| <u>Labor</u> .....                       | 750           | 750           | 750           | 750           | 750           | 750           |
| Sub-total .....                          | 8,010         | 8,360         | 8,360         | 8,360         | 8,360         | 8,360         |
| <u>Contingencies: Physical 10%</u> ..... | 201           | 236           | 236           | 236           | 236           | 236           |
| Total Operating Costs .....              | <u>8,211</u>  | <u>8,596</u>  | <u>8,596</u>  | <u>8,596</u>  | <u>8,596</u>  | <u>8,596</u>  |

1/ Throughput increases by approximately 5% per year from year-3 to year-6.

2/ Jijiga area only, but spread over all markets for the purpose of constructing this model.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model II - Terminal Market

Investment Costs  
(Eth\$)

| <u>INVESTMENTS</u>                      | <u>Unit</u> | <u>No. of<br/>Units</u> | <u>Unit Cost</u> | <u>Year-1</u> | <u>Total Cost</u> |
|-----------------------------------------|-------------|-------------------------|------------------|---------------|-------------------|
| <u>Yards</u>                            |             |                         |                  |               |                   |
| Perimeter Fence .....                   | m           | 800                     | 1                | 800           | 800               |
| Perimeter Gates .....                   | no          | 2                       | 150              | 300           | 300               |
| Cattle Pens .....                       | set         | 1                       | 2,800            | 2,800         | 2,800             |
| Sheep & Goat Pens .....                 | set         | 1                       | 980              | 980           | 980               |
| Loading Ramp .....                      | no          | 1                       | 300              | 300           | 300               |
| Sub-total .....                         |             |                         |                  | <u>5,180</u>  | <u>5,180</u>      |
| <u>Buildings</u>                        |             |                         |                  |               |                   |
| Sale Ring & Office .....                | no          | 1                       | 2,870            | 2,870         | 2,870             |
| Watchman's House .....                  | no          | 1                       | 400              | 400           | 400               |
| Fodder Shed .....                       | no          | 1                       | 600              | 600           | 600               |
| Latrines .....                          | no          | 4                       | 150              | 600           | 600               |
| Sub-total .....                         |             |                         |                  | <u>4,470</u>  | <u>4,470</u>      |
| <u>Water</u>                            |             |                         |                  |               |                   |
| Piping (From Municipal<br>Supply) ..... | m           | 200                     | 5                | 1,000         | 1,000             |
| Electric Booster Pump .....             | no          | 1                       | 200              | 200           | 200               |
| Storage Tank .....                      | no          | 1                       | 2,000            | 2,000         | 2,000             |
| Troughs .....                           | no          | 2                       | 700              | <u>1,400</u>  | <u>1,400</u>      |
| Sub-total .....                         |             |                         |                  | <u>4,600</u>  | <u>4,600</u>      |
| <u>Services</u>                         |             |                         |                  |               |                   |
| Electric Security Lighting..            |             | 1                       | 600              | <u>600</u>    | <u>600</u>        |
| <u>Labor</u>                            |             |                         |                  |               |                   |
| For Construction .....                  |             |                         |                  | <u>4,360</u>  | <u>4,360</u>      |
| <u>Other Assets</u>                     |             |                         |                  |               |                   |
| Cattle Scales .....                     | no          | 1                       | 6,740            | 6,740         | 6,740             |
| Equipment 1/ .....                      | set         | 1                       | 950              | <u>950</u>    | <u>950</u>        |
| Sub-total .....                         |             |                         |                  | <u>7,690</u>  | <u>7,690</u>      |
| Total .....                             |             |                         |                  | <u>26,900</u> | <u>26,900</u>     |
| <u>Contingencies</u>                    |             |                         |                  |               |                   |
| Physical 10% .....                      |             |                         |                  | 2,690         | 2,690             |
| Price 5% .....                          |             |                         |                  | <u>1,350</u>  | <u>1,350</u>      |
| Total Investment Costs.                 |             |                         |                  | <u>30,940</u> | <u>30,940</u>     |

1/ Includes loud-hailer, safe, cattle control equipment and furniture.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model II - Terminal Market

Revenue and Operating Costs  
(Eth\$)

| <u>Category</u>                                  | <u>Year</u>   |                |                |                |                |                |
|--------------------------------------------------|---------------|----------------|----------------|----------------|----------------|----------------|
|                                                  | <u>1</u>      | <u>2</u>       | <u>3</u>       | <u>4</u>       | <u>5</u>       | <u>6-20</u>    |
| <u>REVENUE</u>                                   |               |                |                |                |                |                |
| <u>Throughputs</u> 1/                            |               |                |                |                |                |                |
| Cattle (No) .....                                | 23,600        | 47,290         | 49,630         | 52,140         | 54,760         | 57,470         |
| Sheep and Goats (No).....                        | 77,900        | 155,860        | 163,660        | 171,830        | 180,480        | 189,410        |
| Camel (No) 2/ .....                              | 400           | 790            | 830            | 870            | 910            | 960            |
| <u>Fees</u>                                      |               |                |                |                |                |                |
| Cattle @ Eth\$2.00/Head .....                    | 47,200        | 94,580         | 99,260         | 104,280        | 109,520        | 114,940        |
| Sheep and Goats @ Eth\$0.30/Head .....           | 23,400        | 46,760         | 49,100         | 51,550         | 54,140         | 56,820         |
| Camels @ Eth\$2.00/Head .....                    | 800           | 1,580          | 1,660          | 1,740          | 1,820          | 1,920          |
| <b>Total Revenue</b> .....                       | <u>71,400</u> | <u>142,920</u> | <u>150,020</u> | <u>157,570</u> | <u>165,480</u> | <u>173,680</u> |
| <u>OPERATING COSTS</u>                           |               |                |                |                |                |                |
| <u>Replacements</u> .....                        | -             | 850            | 850            | 850            | 850            | 850            |
| <u>Utilities and Maintenance</u> .....           | 5,200         | 5,200          | 5,200          | 5,200          | 5,200          | 5,200          |
| <u>Stationary</u> .....                          | 1,000         | 1,000          | 1,000          | 1,000          | 1,000          | 1,000          |
| <u>Labor</u> .....                               | <u>1,500</u>  | <u>1,500</u>   | <u>1,500</u>   | <u>1,500</u>   | <u>1,500</u>   | <u>1,500</u>   |
| Sub-total .....                                  | 7,700         | 8,550          | 8,550          | 8,550          | 8,550          | 8,550          |
| <u>Physical Contingencies: Physical 10% ....</u> | <u>770</u>    | <u>855</u>     | <u>855</u>     | <u>855</u>     | <u>855</u>     | <u>855</u>     |
| <b>Total Operating Costs</b> .....               | <u>8,470</u>  | <u>9,405</u>   | <u>9,405</u>   | <u>9,405</u>   | <u>9,405</u>   | <u>9,405</u>   |

1/ Throughput increases by approximately 5% per year from year-3 to year-6.

2/ Jijiga area only, but spread over all markets for the purpose of constructing this model.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

## Stockroutes and Marshalling Yards 1/

Investment Costs  
(EUS'000)

| INVESTMENTS                               | Unit      | No. of<br>Units | Unit Cost<br>(EUS) | Year  |       |         |       | Total Cost |
|-------------------------------------------|-----------|-----------------|--------------------|-------|-------|---------|-------|------------|
|                                           |           |                 |                    | 1     | 2     | 3       | 4     |            |
| Land Purchase 2/                          | 0.6 ha    | 28              | 1,400              | -     | 8.4   | 8.4     | 22.4  | 39.2       |
| Clearing on Routes                        | km        | 820             | 67                 | 3.7   | 32.9  | 7.0     | 11.3  | 54.9       |
| Yards and Fencing                         |           |                 |                    |       |       |         |       |            |
| Stone Walls                               | m         | 1,200           | 15                 | -     | -     | 18.0    | -     | 18.0       |
| Fencing (and Gates)                       | km        | 718             | 1,041              | 144.0 | 186.0 | 252.0   | 165.0 | 747.0      |
| Stalls and Yards (and Gates)              | sections  | 6               | 19,170             | -     | -     | 115.0   | -     | 115.0      |
| Sub-total                                 |           |                 |                    | 144.0 | 186.0 | 385.0   | 165.0 | 880.0      |
| Buildings                                 |           |                 |                    |       |       |         |       |            |
| Staff House, Latrine and Store            | sets      | 134             | 515                | 11.8  | 16.0  | 22.1    | 19.1  | 69.0       |
| Office, Laboratory and Store              | sets      | 1               | 8,000              | -     | -     | 8.0     | -     | 8.0        |
| Drover and Fire Shelter                   | sets      | 104             | 330                | 4.9   | 8.2   | 10.6    | 10.6  | 34.3       |
| Fodder Shed                               | no        | 18              | 600                | -     | 3.6   | 3.6     | 9.6   | 16.8       |
| Sub-total                                 |           |                 |                    | 16.7  | 27.8  | 44.3    | 39.3  | 128.1      |
| Handling Facilities                       |           |                 |                    |       |       |         |       |            |
| Dipping Tank and Crush (Small Animals)    | sets      | 1               | 1,600              | -     | -     | 1.6     | -     | 1.6        |
| Spray Race and Crush (Cattle)             | sets      | 27              | 1,600              | 12.8  | 9.6   | 12.8    | 8.0   | 43.2       |
| Lorry Ramps                               | no        | 20              | 300                | 0.9   | 1.8   | 1.8     | 1.5   | 6.0        |
| Rail Ramps                                | no        | 4               | 1,600              | 1.6   | 1.6   | 1.6     | 1.6   | 6.4        |
| Sub-total                                 |           |                 |                    | 15.3  | 13.0  | 17.8    | 11.1  | 57.2       |
| Water                                     |           |                 |                    |       |       |         |       |            |
| Boreholes and Casing                      | no        | 27              | 18,000             | 144.0 | 108.0 | 144.0   | 90.0  | 486.0      |
| Wells (Hand Dug)                          | no        | 13              | 300                | -     | 1.8   | 0.9     | 1.2   | 3.9        |
| Stock Ponds                               | no        | 50              | 12,000             | 84.0  | 156.0 | 228.0   | 132.0 | 600.0      |
| Engine, Pump and Shed                     | set       | 40              | 4,000              | 32.0  | 48.0  | 44.0    | 36.0  | 160.0      |
| Reservoirs (12,000 Gal.)                  | no        | 41              | 2,000              | 16.0  | 24.0  | 24.0    | 18.0  | 82.0       |
| Piping and Fittings                       | m         | 10,000          | 5                  | 12.5  | 12.5  | 15.0    | 10.0  | 50.0       |
| Troughs                                   | no        | 92              | 700                | 12.6  | 18.2  | 19.6    | 14.0  | 64.4       |
| Sub-total                                 |           |                 |                    | 301.1 | 368.5 | 475.5   | 301.2 | 1,446.3    |
| Services                                  |           |                 |                    |       |       |         |       |            |
| Electric Security Lighting                | no        | 1               | 1,500              | -     | -     | 1.5     | -     | 1.5        |
| Telephone Connection Fee                  | no        | 1               | 200                | -     | -     | 0.2     | -     | 0.2        |
| Sub-total                                 |           |                 |                    | -     | -     | 1.7     | -     | 1.7        |
| Labor 2/                                  | -         | -               | -                  | 143.1 | 178.6 | 277.2   | 155.0 | 753.9      |
| Movable Assets                            |           |                 |                    |       |       |         |       |            |
| Radio Telephones                          | no        | 1               | 2,970              | -     | -     | 3.0     | -     | 3.0        |
| Laboratory Equipment                      | set       | 1               | 2,000              | -     | -     | 2.0     | -     | 2.0        |
| Weighing Scales                           | no        | 1               | 1,100              | -     | -     | 1.1     | -     | 1.1        |
| Fodder Covers                             | no        | 1               | 1,000              | -     | -     | 1.0     | -     | 1.0        |
| Spray Equipment Fixed                     | no        | 1               | 1,000              | -     | -     | 1.0     | -     | 1.0        |
| Spray Equipment Hand                      | no        | 26              | 350                | 2.8   | 2.1   | 2.5     | 1.7   | 9.1        |
| Carts                                     | no        | 2               | 200                | -     | -     | 0.4     | -     | 0.4        |
| Furniture, Strong Box, Clearing Equipment | sets      | 105             | 190                | 2.7   | 4.3   | 6.6     | 6.4   | 20.0       |
| Sub-total                                 |           |                 |                    | 5.5   | 6.4   | 17.6    | 8.1   | 37.6       |
| Veterinary                                |           |                 |                    |       |       |         |       |            |
| Acaricides - Start-up                     | 1000 head | 100             | 100                | 10.0  | -     | -       | -     | 10.0       |
| Total                                     |           |                 |                    | 639.4 | 821.6 | 1,234.5 | 713.4 | 3,408.9    |
| Contingencies                             |           |                 |                    |       |       |         |       |            |
| Physical 10%                              |           |                 |                    | 63.9  | 82.2  | 123.5   | 71.3  | 340.9      |
| Price 5%                                  |           |                 |                    | 32.0  | 41.1  | 61.7    | 35.7  | 170.5      |
| Total Investment Costs                    |           |                 |                    | 735.3 | 944.9 | 1,419.7 | 820.4 | 3,920.3    |

1/ Comprises the following facilities phased as follows:

|                                                        | Year-1 | Year-2 | Year-3 | Year-4 |
|--------------------------------------------------------|--------|--------|--------|--------|
| 13 Stock Staging Posts with Well Water                 | -      | 6      | 3      | 4      |
| 15 Stock Staging Posts Without Water                   | -      | -      | 3      | 12     |
| 26 Grazing Reserves with Spray Race Crush and Borehole | 8      | 6      | 7      | 5      |
| 50 Grazing Reserves With Stock Pond                    | 7      | 13     | 19     | 11     |
| 1 Marshalling Yard at Dire Dawa                        | -      | -      | 1      | -      |
| 4 Railway Loading Ramps with Yards                     | 1      | 1      | 1      | 1      |
| 20 Lorry Loading Ramps                                 | 3      | 6      | 6      | 5      |

2/ For the 28 stock staging posts.

3/ At 30% of investment cost of fixed assets.

**ETHIOPIA**  
**SECOND LIVESTOCK DEVELOPMENT PROJECT**  
**Stockroutes and Marshalling Yards**

Revenue  
(Eth\$ '000)

|                                                       | Years       |              |              |              |              |                |                |                |                |
|-------------------------------------------------------|-------------|--------------|--------------|--------------|--------------|----------------|----------------|----------------|----------------|
|                                                       | <u>1</u>    | <u>2</u>     | <u>3</u>     | <u>4</u>     | <u>5</u>     | <u>6</u>       | <u>7</u>       | <u>8</u>       | <u>9-20</u>    |
| <b>STOCKROUTES</b>                                    |             |              |              |              |              |                |                |                |                |
| <u>Number of Livestock Entering Stockroutes</u>       |             |              |              |              |              |                |                |                |                |
| Cattle <sup>1/</sup> .....                            | 23,800      | 91,800       | 198,200      | 324,400      | 397,400      | 417,900        | 435,600        | 449,200        | 456,000        |
| Sheep and Goats <sup>2/</sup> .....                   | 20,200      | 77,800       | 271,100      | 584,400      | 762,200      | 797,400        | 835,000        | 870,400        | 888,900        |
| Camels <sup>3/</sup> .....                            | -           | -            | 7,200        | 14,400       | 29,400       | 30,900         | 32,700         | 34,200         | 34,800         |
| <u>Stockroute Fees</u>                                |             |              |              |              |              |                |                |                |                |
| Cattle @ Eth\$ 2.00/head .....                        | 47.6        | 183.6        | 396.4        | 648.8        | 794.8        | 835.8          | 871.2          | 898.4          | 912.0          |
| Sheep and Goats @ Eth\$ 0.50/6 head ...               | 1.7         | 6.5          | 22.6         | 48.7         | 63.5         | 66.4           | 69.6           | 72.5           | 74.1           |
| Camels @ Eth\$ 2.00/head .....                        | -           | -            | 14.4         | 28.8         | 58.8         | 61.8           | 65.4           | 68.4           | 69.6           |
| Sub-total                                             | <u>49.3</u> | <u>190.1</u> | <u>433.4</u> | <u>726.3</u> | <u>917.1</u> | <u>964.0</u>   | <u>1,006.2</u> | <u>1,039.3</u> | <u>1,055.7</u> |
| <b>MARSHALLING YARDS</b>                              |             |              |              |              |              |                |                |                |                |
| <u>Number of Livestock Entering Marshalling Yards</u> |             |              |              |              |              |                |                |                |                |
| Cattle .....                                          | -           | -            | -            | 6,800        | 13,600       | 20,500         | 27,300         | 27,300         | 27,300         |
| Sheep and Goats .....                                 | -           | -            | -            | 75,000       | 150,000      | 225,000        | 300,000        | 300,000        | 300,000        |
| Camels .....                                          | -           | -            | -            | 3,500        | 7,000        | 10,000         | 14,000         | 14,000         | 14,000         |
| <u>Marshalling Yard Fees Received by LMB</u>          |             |              |              |              |              |                |                |                |                |
| Cattle @ Eth\$ 1.00/head .....                        | -           | -            | -            | 6.8          | 13.6         | 20.5           | 27.3           | 27.3           | 27.3           |
| Sheep and Goats @ Eth\$ 0.40/head .....               | -           | -            | -            | 30.0         | 60.0         | 90.0           | 120.0          | 120.0          | 120.0          |
| Camels @ Eth\$ 1.00/head .....                        | -           | -            | -            | 3.5          | 7.0          | 10.0           | 14.0           | 14.0           | 14.0           |
| Sub-total                                             | <u>-</u>    | <u>-</u>     | <u>-</u>     | <u>40.3</u>  | <u>80.6</u>  | <u>120.5</u>   | <u>161.3</u>   | <u>161.3</u>   | <u>161.3</u>   |
| <b>TOTAL REVENUE</b>                                  | <u>49.3</u> | <u>190.1</u> | <u>433.4</u> | <u>766.6</u> | <u>997.7</u> | <u>1,084.5</u> | <u>1,167.5</u> | <u>1,200.6</u> | <u>1,217.0</u> |

<sup>1/</sup> Estimated at 76% of all sales at Primary Markets.

<sup>2/</sup> Estimated as 42% of all sales at Jijiga Area Primary Markets and 80% of all other Primary Markets.

<sup>3/</sup> Estimated as 100% of all sales at Primary Markets.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Stockroutes and Marshalling Yards

Operating Costs

(Eth\$ '000)

| <u>Category</u>                                      | <u>Unit</u> | <u>Unit Cost<br/>Eth\$</u> | <u>Year</u> |              |              |              |              |              |              |              |
|------------------------------------------------------|-------------|----------------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                      |             |                            | <u>1</u>    | <u>2</u>     | <u>3</u>     | <u>4</u>     | <u>5</u>     | <u>6</u>     | <u>7</u>     | <u>8-20</u>  |
| <u>Staff</u>                                         |             |                            |             |              |              |              |              |              |              |              |
| Pump Attendants .....                                | Man-Years   | 2,550                      | 20.4        | 51.0         | 79.1         | 102.0        | 102.0        | 102.0        | 102.0        | 102.0        |
| Attendants/Watchmen .....                            | " "         | 970                        | 6.8         | 19.4         | 46.6         | 63.1         | 63.1         | 63.1         | 63.1         | 63.1         |
| Clerk Grade 1 .....                                  | " "         | 4,900                      | -           | -            | 4.9          | 4.9          | 4.9          | 4.9          | 4.9          | 4.9          |
| Clerk Grade 2 (Check Points) .....                   | " "         | 4,130                      | 4.1         | 12.4         | 20.6         | 20.6         | 20.6         | 20.6         | 20.6         | 20.6         |
| Vaccinators .....                                    | " "         | 2,800                      | -           | -            | 5.6          | 5.6          | 5.6          | 5.6          | 5.6          | 5.6          |
| Labor .....                                          | " "         | 750                        | -           | -            | 3.0          | 3.0          | 3.0          | 3.0          | 3.0          | 3.0          |
| Sub-total                                            |             |                            | <u>31.3</u> | <u>82.8</u>  | <u>159.8</u> | <u>199.2</u> | <u>199.2</u> | <u>199.2</u> | <u>199.2</u> | <u>199.2</u> |
| <u>Operating</u>                                     |             |                            |             |              |              |              |              |              |              |              |
| Maintenance of assets <sup>1/</sup> .....            | -           | -                          | -           | 24.3         | 56.0         | 103.5        | 130.3        | 130.3        | 130.3        | 130.3        |
| Replacements <sup>2/</sup> .....                     | -           | -                          | -           | 3.8          | 9.2          | 15.4         | 19.8         | 19.8         | 19.8         | 19.8         |
| Fuel and Electricity <sup>3/</sup> .....             | -           | -                          | 2.4         | 6.0          | 12.7         | 15.4         | 15.4         | 15.4         | 15.4         | 15.4         |
| Office, Stationery, Cleaning<br>Materials, etc. .... | -           | -                          | 3.2         | 8.0          | 13.0         | 16.6         | 16.6         | 16.6         | 16.6         | 16.6         |
| Acaricides <sup>4/</sup> .....                       | -           | -                          | 4.8         | 13.6         | 28.8         | 39.1         | 41.1         | 43.8         | 46.3         | 48.3         |
| Sub-total                                            |             |                            | <u>10.4</u> | <u>55.7</u>  | <u>116.7</u> | <u>190.0</u> | <u>223.2</u> | <u>225.9</u> | <u>228.4</u> | <u>230.4</u> |
| Total                                                |             |                            | 41.7        | 138.5        | 276.5        | 389.2        | 422.4        | 425.1        | 427.6        | 429.6        |
| Contingency: Physical 10%                            |             |                            | <u>4.2</u>  | <u>13.9</u>  | <u>27.7</u>  | <u>38.9</u>  | <u>42.2</u>  | <u>42.5</u>  | <u>42.8</u>  | <u>43.0</u>  |
| Total Operating Costs                                |             |                            | <u>45.9</u> | <u>152.4</u> | <u>304.2</u> | <u>428.1</u> | <u>464.6</u> | <u>467.6</u> | <u>470.4</u> | <u>472.6</u> |

<sup>1/</sup> At 5% of investment cost (not including labor).

<sup>2/</sup> Engines and pumps, and moveable assets only, at 10% per annum.

<sup>3/</sup> Stockroute boreholes and wells @ Eth\$300/yr, Marshalling Yards Eth\$3,200 for water, and Eth\$500 electricity.

<sup>4/</sup> At Eth\$0.10/head of cattle entering the stockroutes and also on Marshalling Yard exports.

ETHIOPIASECOND LIVESTOCK DEVELOPMENT PROJECTMarket and Stockroute Department - Technical and Administrative ServicesInvestment Costs  
(Eth\$'000)

| INVESTMENTS                                           | Unit | Units | Unit Cost | Year----- |       |       |       | Total Cost |
|-------------------------------------------------------|------|-------|-----------|-----------|-------|-------|-------|------------|
|                                                       |      |       |           | 1         | 2     | 3     | 4     |            |
| Headquarters and Maintenance Units                    |      |       | (Eth\$)   |           |       |       |       |            |
| 4-Wheel Drive vehicle.....                            | no   | 1     | 16,000    | 16.0      | -     | -     | -     | 16.0       |
| 6 Ton Lorry .....                                     | no   | 1     | 34,000    | 34.0      | -     | -     | -     | 34.0       |
| Office Furniture & Equipment..                        | set  | 1     | 10,510    | 10.5      | -     | -     | -     | 10.5       |
| Diesel engine & Pump.....                             | set  | 5     | 4,000     | 4.0       | 4.0   | 4.0   | 8.0   | 20.0       |
| Tools & Equipment .....                               | set  | 5     | 2,085     | 2.1       | 2.1   | 2.1   | 4.2   | 10.5       |
| Radio Telephone (fixed).....                          | set  | 1     | 2,970     | 3.0       | -     | -     | -     | 3.0        |
| Sub-total .....                                       |      |       |           | 69.6      | 6.1   | 6.1   | 12.2  | 94.0       |
| Salary - Head of Stockroute & Market Department ..... |      |       |           | 90.0      | 90.0  | 90.0  | 90.0  | 360.0      |
| Marketing Teams                                       |      |       |           |           |       |       |       |            |
| Vehicles                                              |      |       |           |           |       |       |       |            |
| 4-Wheel Drive Van.....                                | no   | 18    | 14,000    | 46.0      | 70.0  | 74.0  | 42.0  | 232.0      |
| 4-Wheel Drive Truck.....                              | no   | 8     | 25,000    | 50.0      | 50.0  | 75.0  | 25.0  | 200.0      |
| 6 Ton Lorry .....                                     | no   | 1     | 34,000    | -         | -     | 34.0  | -     | 34.0       |
| Trailer.....                                          | no   | 8     | 2,200     | 4.4       | 4.4   | 6.6   | 2.2   | 17.6       |
| Sub-total .....                                       |      |       |           | 100.4     | 124.4 | 189.6 | 69.2  | 483.6      |
| General Equipment                                     |      |       |           |           |       |       |       |            |
| Safes (fitted to vehicles)1/..                        | no   | 8     | 330       | 0.3       | 0.7   | 1.0   | 0.3   | 2.3        |
| Typewriters.....                                      | no   | 7     | 770       | 0.8       | 1.5   | 2.3   | 0.8   | 5.4        |
| Hand calculators2/.....                               | no   | 16    | 500       | 2.0       | 2.0   | 2.0   | 2.0   | 8.0        |
| Tentage & Camping equipment1/                         | set  | 8     | 1,800     | 1.8       | 3.6   | 5.4   | 1.8   | 12.6       |
| Tools & Equipment2/.....                              | set  | 16    | 740       | 3.0       | 3.0   | 3.0   | 3.0   | 12.0       |
| Radio Telephones - Mobile.....                        | set  | 11    | 2,640     | 7.9       | 7.9   | 10.6  | 2.6   | 29.0       |
| " " Fixed .....                                       | set  | 1     | 2,970     | -         | -     | 3.0   | -     | 3.0        |
| Office Furniture (Jijuga).....                        | set  | 1     | 5,000     | -         | -     | 5.0   | -     | 5.0        |
| Sub-total .....                                       |      |       |           | 15.8      | 18.7  | 32.3  | 10.5  | 77.3       |
| Veterinary Equipment                                  |      |       |           |           |       |       |       |            |
| Base set .....                                        | set  | 9     | 3,800     | 11.4      | 11.4  | 11.4  | -     | 34.2       |
| Mobile set2/.....                                     | set  | 16    | 1,500     | 6.0       | 6.0   | 6.0   | 6.0   | 24.0       |
| Sub-total.....                                        |      |       |           | 17.4      | 17.4  | 17.4  | 6.0   | 58.2       |
| Central Buildings4/                                   |      |       |           |           |       |       |       |            |
| Housing & Office .....                                | set  | 1     | 110,000   | -         | 110.0 | -     | -     | 110.0      |
| Total.....                                            |      |       |           | 293.2     | 366.6 | 335.4 | 187.9 | 1,183.1    |
| Contingency: Physical at 10% ....                     |      |       |           | 29.3      | 36.7  | 33.5  | 18.8  | 118.3      |
| Price at 5% ....                                      |      |       |           | 14.7      | 18.3  | 16.8  | 9.4   | 59.2       |
| Total Investment Costs..                              |      |       |           | 337.2     | 421.6 | 385.7 | 216.1 | 1,360.6    |

1/ One per assistant livestock marketing officer.

2/ One per market master.

3/ Includes Cattle Spraying Equipment.

4/ For livestock marketing officer, Jijiga.

February 25, 1972

## SECOND LIVESTOCK DEVELOPMENT PROJECT

## Market and Stockroute Department - Technical and Administrative Services

Operating Costs  
(Eth\$'000)

| Headquarters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| <b>General</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| Head of Market & Stockroute Department .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| Deputy Head of Market & Stockroute Department .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| Secretary .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | man/years | 9,680  | 9.7                | 9.7   | 9.7  | 9.7  | 9.7  | 9.7  | 9.7  |
| Clerk Grade 1 .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | man/years | 4,900  | 4.9                | 4.9   | 4.9  | 4.9  | 4.9  | 4.9  | 4.9  |
| Clerk Grade 2 .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | man/years | 4,130  | 4.1                | 4.1   | 4.1  | 4.1  | 4.1  | 4.1  | 4.1  |
| Driver/ .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | man/years | 2,550  | 2.6                | 2.6   | 2.6  | 2.6  | 2.6  | 2.6  | 2.6  |
| Vehicle Replacements 2/ .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | year      | 10,000 | -                  | 10.0  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Vehicle Maintenance & Running Costs 2/ .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | year      | 19,200 | 19.2               | 19.2  | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 |
| Maintenance & Replacement of Equipments 2/ .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -         | -      | -                  | 2.0   | 2.6  | 3.2  | 4.4  | 4.4  | 4.4  |
| Stationery, Legal fees, Utilities, etc. Addis Office ..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -         | -      | 20.0               | 20.0  | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
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1/ Unit costs shown are basic salaries, plus four annual proficiency increments, plus 30% allowances for travel, housing, pension fund/gratuity, leave pay, field bonus and overtime.

2/ At 20% per annum of cost price from the year after purchase.

3/ Fuel, maintenance, insurance, taxes, etc. Lorry 32,000 km/yr @ Eth\$0.35/km 4-wheel drive vehicles 32,000 km/yr @ Eth\$0.25/km.

4/ At 10% per annum of cost price. Includes replacement.

5/ Fuel, maintenance, insurance, taxes, etc. Lorry 64,000 km/yr, @ Eth\$0.35/km, 4-wheel drive vehicles 16,000 km/yr, @ Eth\$0.25/km.



## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

## Model - LMB Operated Cattle Truck

Investment, Revenue and Operating Costs  
(Eth\$'000)

|                                              | Years       |             |             |             |             |
|----------------------------------------------|-------------|-------------|-------------|-------------|-------------|
|                                              | <u>1</u>    | <u>2</u>    | <u>3</u>    | <u>4</u>    | <u>5</u>    |
| <u>Investment</u>                            |             |             |             |             |             |
| Truck & Trailer                              | 63.0        | -           | -           | -           | -           |
| Contingency - Physical 10%                   | 6.3         | -           | -           | -           | -           |
| - Price 5%                                   | <u>3.2</u>  | -           | -           | -           | -           |
| Total Investment                             | <u>72.5</u> | -           | -           | -           | -           |
| <u>Revenue</u>                               |             |             |             |             |             |
| Transporting Cattle <sup>3/</sup>            | 20.5        | 51.0        | 51.0        | 51.0        | 51.0        |
| Backload <sup>4/</sup>                       | <u>2.9</u>  | <u>5.8</u>  | <u>5.8</u>  | <u>5.8</u>  | <u>5.8</u>  |
| Total Revenue                                | <u>23.4</u> | <u>56.8</u> | <u>56.8</u> | <u>56.8</u> | <u>56.8</u> |
| <u>Operating Costs</u>                       |             |             |             |             |             |
| Fuel <sup>1/</sup>                           | 4.7         | 9.3         | 9.3         | 9.3         | 9.3         |
| Maintenance                                  | 3.1         | 6.3         | 6.3         | 6.3         | 6.3         |
| Insurance, Registration & Fees <sup>2/</sup> | 3.3         | 6.6         | 6.6         | 6.6         | 6.6         |
| Driver                                       | 2.4         | 4.8         | 4.8         | 4.8         | 4.8         |
| Driver's Assistant                           | <u>0.4</u>  | <u>0.8</u>  | <u>0.8</u>  | <u>0.8</u>  | <u>0.8</u>  |
| Sub-Total                                    | 13.9        | 27.8        | 27.8        | 27.8        | 27.8        |
| Contingency - Physical 10%                   | <u>1.4</u>  | <u>2.8</u>  | <u>2.8</u>  | <u>2.8</u>  | <u>2.8</u>  |
| Total Operating Costs                        | <u>15.3</u> | <u>30.6</u> | <u>30.6</u> | <u>30.6</u> | <u>30.6</u> |

<sup>1/</sup> 62,000 km/yr @ 3 km/l of fuel @ Eth\$0.45/l.<sup>2/</sup> Including insurance of cargo.<sup>3/</sup> 55 head/trip of average length 340 km, and 90 trips/year @ Eth\$0.03 per head km.<sup>4/</sup> 31,00 km per year at 0.25 of the 15 ton capacity at Eth\$0.05/ton km.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model - Privately Operated Cattle Truck

Financial Projection  
(Eth\$'000)

| Category                                            | Year         |             |             |             |             |
|-----------------------------------------------------|--------------|-------------|-------------|-------------|-------------|
|                                                     | <u>1</u>     | <u>2</u>    | <u>3</u>    | <u>4</u>    | <u>5</u>    |
| <u>CASH INFLOW</u>                                  |              |             |             |             |             |
| 1. Revenue                                          |              |             |             |             |             |
| a. Transporting Cattle <u>1/</u> .....              | 51.0         | 51.0        | 51.0        | 51.0        | 51.0        |
| b. Backload <u>2/</u> .....                         | 5.8          | 5.8         | 5.8         | 5.8         | 5.8         |
| 2. Investment                                       |              |             |             |             |             |
| a. Trucker's Contribution .....                     | 14.5         | -           | -           | -           | -           |
| b. Long-term Loan .....                             | 58.0         | -           | -           | -           | -           |
| 3. Short-term Resources <u>3/</u>                   |              |             |             |             |             |
| a. Last Year's Cash Balance .....                   | -            | 5.0         | 5.0         | 5.0         | 5.0         |
| b. Trucker's Contribution .....                     | 5.0          | -           | -           | -           | -           |
| Total Expected Cash Inflow .....                    | <u>134.3</u> | <u>61.8</u> | <u>61.8</u> | <u>61.8</u> | <u>61.8</u> |
| <u>CASH OUTFLOW</u>                                 |              |             |             |             |             |
| 1. Investment <u>4/</u>                             |              |             |             |             |             |
| a. Trucker's Contribution .....                     | 14.5         | -           | -           | -           | -           |
| b. Long-term Loan .....                             | 58.0         | -           | -           | -           | -           |
| 2. Operating Costs                                  |              |             |             |             |             |
| a. Fuel <u>5/</u> .....                             | 9.3          | 9.3         | 9.3         | 9.3         | 9.3         |
| b. Maintenance .....                                | 6.3          | 6.3         | 6.3         | 6.3         | 6.3         |
| c. Insurance, Registration and Fees <u>6/</u> ..... | 6.6          | 6.6         | 6.6         | 6.6         | 6.6         |
| d. Driver .....                                     | 4.8          | 4.8         | 4.8         | 4.8         | 4.8         |
| e. Driver's Assistant .....                         | 0.8          | 0.8         | 0.8         | 0.8         | 0.8         |
| Sub-total .....                                     | <u>27.8</u>  | <u>27.8</u> | <u>27.8</u> | <u>27.8</u> | <u>27.8</u> |
| Contingencies - Physical 10% .....                  | <u>2.8</u>   | <u>2.8</u>  | <u>2.8</u>  | <u>2.8</u>  | <u>2.8</u>  |
| Sub-total .....                                     | <u>30.6</u>  | <u>30.6</u> | <u>30.6</u> | <u>30.6</u> | <u>30.6</u> |
| 3. Debt Service - Long-term Loan <u>7/</u> .....    | 18.1         | 18.1        | 18.1        | 18.1        | -           |
| 4. Available for Cash Withdrawals .....             | <u>8.1</u>   | <u>8.1</u>  | <u>8.1</u>  | <u>8.1</u>  | <u>31.2</u> |
| Total Expected Cash Outflow .....                   | <u>129.3</u> | <u>56.8</u> | <u>56.8</u> | <u>56.8</u> | <u>61.8</u> |
| Balance at Year's End .....                         | <u>5.0</u>   | <u>5.0</u>  | <u>5.0</u>  | <u>5.0</u>  | <u>-</u>    |

1/ 55 head per trip average 340 km. 90 trips per year @ Eth\$0.30 per head/km.

2/ 31,000 km/unit/year at  $\frac{1}{4}$  of the 15 ton capacity at Eth\$0.05 ton/km.

3/ To fund two months' operating costs.

4/ Truck and Trailer ..... Eth\$63,000

Contingencies - Physical 10% ..... Eth\$ 6,300

Contingencies - Price 5% ..... Eth\$ 3,150

Total ..... Eth\$72,450

5/ 62,000 km/year at 3 km/liter of fuel @ Eth\$0.45/liter.

6/ Includes insurance of cargo.

7/ At 9.5% per year.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model I - Slaughterslab Weekly Throughput About 16 Head of Cattle

Investment Cost  
(Eth\$)

| <u>INVESTMENTS</u>                         | <u>Unit</u>    | <u>No. of<br/>Units</u> | <u>Unit Cost</u> | <u>Year-1</u> | <u>Total Cost</u> |
|--------------------------------------------|----------------|-------------------------|------------------|---------------|-------------------|
| Fencing .....                              | m              | 120                     | 4.6              | 552           | 552               |
| Gates .....                                | m              | 2                       | 73.0             | 146           | 146               |
| Building: Slaughterslab<br>with Roof ..... | m <sup>2</sup> | 17                      | 123.0            | 2,091         | 2,091             |
| Slaughter Equipment .....                  |                |                         |                  | 390           | 390               |
| Hide Shed & Frames .....                   |                |                         |                  | 1,820         | 1,820             |
| Sub-total .....                            |                |                         |                  | 4,999         | 4,999             |
| Contingency: Physical 10%..                |                |                         |                  | 499           | 499               |
| Price 5% .....                             |                |                         |                  | 249           | 249               |
| Total Investment Cost ..                   |                |                         |                  | 5,747         | 5,747             |

February 25. 1972

## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

## Model I - Slaughterslab Weekly Throughput About 16 Head of Cattle

Revenue and Operating Costs  
(Eth\$)

| Category                                                      | Unit     | Unit Cost | Year               |              |              |              |              |              |              |
|---------------------------------------------------------------|----------|-----------|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                               |          |           | <u>1</u> <u>1/</u> | <u>2</u>     | <u>3</u>     | <u>4</u>     | <u>5</u>     | <u>6</u>     | <u>7-20</u>  |
| REVENUE                                                       |          |           |                    |              |              |              |              |              |              |
| Throughput of Cattle .....                                    | no       | -         | 260                | 520          | 550          | 580          | 610          | 640          | 670          |
| Slaughter Facilities & Hide Shed Fees .                       | no       | 2.75      | 715                | 1,430        | 1,513        | 1,595        | 1,678        | 1,760        | 1,843        |
| Hide Shed Fees <u>2/</u> .....                                | no       | 1.50      | 78                 | 156          | 165          | 174          | 183          | 190          | 200          |
| Total Revenue .....                                           |          |           | <u>793</u>         | <u>1,586</u> | <u>1,678</u> | <u>1,769</u> | <u>1,861</u> | <u>1,950</u> | <u>2,043</u> |
| OPERATING COSTS                                               |          |           |                    |              |              |              |              |              |              |
| Maintenance of Buildings<br>and Plant (3% of Investment)..... |          |           | -                  | 150          | 150          | 150          | 150          | 150          | 150          |
| Consumable Stores .....                                       |          |           | 30                 | 60           | 63           | 66           | 69           | 73           | 77           |
| Staff Salaries:                                               |          |           |                    |              |              |              |              |              |              |
| Hide Worker <u>3/</u> .....                                   | man/year | 480       | <u>300</u>         | <u>600</u>   | <u>630</u>   | <u>665</u>   | <u>700</u>   | <u>700</u>   | <u>700</u>   |
| Sub-total .....                                               |          |           | 330                | 810          | 843          | 881          | 919          | 923          | 927          |
| Contingency:                                                  |          |           |                    |              |              |              |              |              |              |
| Physical 10% .....                                            |          |           | <u>33</u>          | <u>81</u>    | <u>84</u>    | <u>88</u>    | <u>91</u>    | <u>92</u>    | <u>92</u>    |
| Total Operating Costs .....                                   |          |           | <u>363</u>         | <u>891</u>   | <u>927</u>   | <u>969</u>   | <u>1,010</u> | <u>1,015</u> | <u>1,019</u> |

1/ Allow six months to start-up.

2/ Fees for suspension drying hides from cattle not slaughtered on slaughterslabs.

3/ In addition to initial basic salary of Eth\$480/year, a worker annually gets 20% for social service payments, and 5%/year in year-2 through year-5 as merit increases.

ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Model II - Slaughterslab Weekly Throughput About 80 Head of Cattle

Investment Cost  
(Eth\$)

| <u>INVESTMENTS</u>                  | <u>Unit</u> | <u>No. of<br/>Units</u> | <u>Unit Cost</u> | <u>Year-1</u> | <u>Total Cost</u> |
|-------------------------------------|-------------|-------------------------|------------------|---------------|-------------------|
| Fencing .....                       | m           | 220                     | 4.86             | 1,070         | 1,070             |
| Gates .....                         | m           | 5                       | 72.00            | 360           | 360               |
| Buildings: Office and Outbuildings. |             |                         |                  | 444           | 444               |
| Slaughterslab.....                  |             |                         |                  | 6,850         | 6,850             |
| Offal Slab.....                     |             |                         |                  | 458           | 458               |
| Effluent Disposal .....             |             |                         |                  | 1,080         | 1,080             |
| Slaughter Equipment .....           |             |                         |                  | 2,268         | 2,268             |
| Water Installation .....            |             |                         |                  | 368           | 368               |
| Cattle Pen .....                    |             |                         |                  | 552           | 552               |
| Hide Shed & Frames .....            |             |                         |                  | 5,198         | 5,198             |
| Sub-total .....                     |             |                         |                  | 18,648        | 18,648            |
| Contingency: Physical 10% .....     |             |                         |                  | 1,864         | 1,864             |
| Price 5% .....                      |             |                         |                  | 932           | 932               |
| Total Investment Cost .....         |             |                         |                  | 21,444        | 21,444            |

February 25, 1972

## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

## Model II - Slaughterslab Weekly Throughput About 80 Head of Cattle

Revenue and Operating Costs  
(Eth\$)

| Category                                                      | Unit           | Unit Cost | Year         |              |              |              |              |              |              |
|---------------------------------------------------------------|----------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                               |                |           | <u>1</u>     | <u>1/</u>    | <u>2</u>     | <u>3</u>     | <u>4</u>     | <u>5</u>     | <u>6</u>     |
| <u>REVENUE</u>                                                |                |           |              |              |              |              |              |              |              |
| Throughput of Cattle .....                                    | no             | -         | 625          | 2,500        | 2,630        | 2,760        | 2,900        | 3,050        | 3,200        |
| Slaughter Facilities & Hide Shed Fees ..                      | no             | 2.75      | 1,719        | 6,875        | 7,232        | 7,590        | 7,975        | 8,388        | 8,800        |
| Hide Shed Fees <u>2/</u> .....                                | no             | 1.50      | <u>187</u>   | <u>750</u>   | <u>789</u>   | <u>828</u>   | <u>870</u>   | <u>915</u>   | <u>960</u>   |
| Total Revenue .....                                           |                |           | <u>1,906</u> | <u>7,625</u> | <u>8,021</u> | <u>8,418</u> | <u>8,845</u> | <u>9,303</u> | <u>9,760</u> |
| <u>OPERATING COSTS</u>                                        |                |           |              |              |              |              |              |              |              |
| Maintenance of Buildings<br>and Plant (3% of Investment)..... |                |           | -            | 558          | 558          | 558          | 558          | 558          | 558          |
| Consumable Stores, Knives, Tools ..                           |                |           | 55           | 220          | 231          | 242          | 254          | 266          | 279          |
| Office Stationery, Postage.....                               |                |           | -            | 220          | 220          | 220          | 220          | 220          | 231          |
| Water.....                                                    | m <sup>3</sup> | 0.50      | 17           | 66           | 69           | 73           | 77           | 80           | 84           |
| Staff Salaries <u>3/</u> :                                    |                |           |              |              |              |              |              |              |              |
| Technician .....                                              | man/year       | 1,200     | 360          | 1,510        | 1,600        | 1,670        | 1,750        | 1,750        | 1,750        |
| Hide Worker <u>4/</u> .....                                   | man/year       | 480       | 288          | 1,200        | 1,260        | 1,330        | 1,400        | 1,400        | 2,100        |
| Guards .....                                                  | man/year       | 480       | <u>288</u>   | <u>1,200</u> | <u>1,260</u> | <u>1,330</u> | <u>1,400</u> | <u>1,400</u> | <u>1,400</u> |
| Sub-total .....                                               |                |           | 1,008        | 4,974        | 5,198        | 5,423        | 5,659        | 5,674        | 6,402        |
| Contingency:                                                  |                |           |              |              |              |              |              |              |              |
| Physical 10% .....                                            |                |           | <u>100</u>   | <u>497</u>   | <u>519</u>   | <u>542</u>   | <u>565</u>   | <u>567</u>   | <u>640</u>   |
| Total Operating Costs .....                                   |                |           | <u>1,108</u> | <u>5,471</u> | <u>5,717</u> | <u>5,965</u> | <u>6,224</u> | <u>6,241</u> | <u>7,042</u> |

1/ Three months operations only year-1.

2/ Fees for suspension drying hides from cattle not slaughtered on slaughterslabs.

3/ In addition to initial basic salary of Eth\$480/year, a worker annually gets 20% for social service payments, and 5%/year in year-2 through year-5 as merit increases.

4/ Additional hide worker employed from year-7.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model III - Slaughterhouse Weekly Throughput About 170 Head of Cattle

Investment Cost  
(Eth\$)

| <u>INVESTMENTS</u>              | <u>Unit</u>    | <u>No. of<br/>Units</u> | <u>Unit Cost</u> | <u>Year-1</u> | <u>Total Cost</u> |
|---------------------------------|----------------|-------------------------|------------------|---------------|-------------------|
| Fencing .....                   | m              | 350                     | 4.54             | 1,590         | 1,590             |
| Gates .....                     | m              | 5                       | 72.0             | 360           | 360               |
| Buildings: Slaughterhouse ..... | m <sup>2</sup> | 190                     | 174.0            | 33,060        | 33,060            |
| Latrine & Outbuildings ..       | m <sup>2</sup> | 50                      | 6.0              | 300           | 300               |
| Effluent Disposal.....          |                |                         |                  | 2,970         | 2,970             |
| Abattoir Equipment .....        |                |                         |                  | 5,700         | 5,700             |
| Water Installation .....        |                |                         |                  | 1,092         | 1,092             |
| Electricity Installation.....   |                |                         |                  | 1,900         | 1,900             |
| Cattle Pens.....                | m              | 94                      | 8.0              | 752           | 752               |
| Hide Shed & Frames .....        |                |                         |                  | 8,960         | 8,960             |
| Access Road .....               | m <sup>2</sup> | 235                     | 4.50             | 1,056         | 1,056             |
| Delivery Area .....             | m <sup>2</sup> | 200                     | 4.50             | 900           | 900               |
| Meat Delivery Vehicle .....     | no             | 1                       | 20,000.00        | 20,000        | 20,000            |
| Office Equipment .....          |                |                         |                  | 200           | 200               |
| Safe .....                      | no             | 1                       | 300.00           | 300           | 300               |
| Sub-total .....                 |                |                         |                  | 79,140        | 79,140            |
| Contingency: Physical 10% ..... |                |                         |                  | 7,914         | 7,914             |
| Price 5%.....                   |                |                         |                  | 3,957         | 3,957             |
| Total Investment Cost ...       |                |                         |                  | <u>91,011</u> | <u>91,011</u>     |

## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

## Model III - Slaughterhouse Weekly Throughput About 170 Head of Cattle

Revenue and Operating Costs  
(Eth\$)

| Category                                                          | Unit           | Unit Cost | Year |        |        |        |        |        |        |
|-------------------------------------------------------------------|----------------|-----------|------|--------|--------|--------|--------|--------|--------|
|                                                                   |                |           | 1    | 2      | 3      | 4      | 5      | 6      | 7      |
| <b>REVENUE</b>                                                    |                |           |      |        |        |        |        |        |        |
| Throughput of Cattle .....                                        | no             |           |      | 5,280  | 5,550  | 5,830  | 6,130  | 6,400  | 6,770  |
| Slaughterhouse and Hide Shed Fees,<br>Meat Delivery Charges ..... | no             | 7.50      | -    | 39,600 | 41,625 | 43,725 | 45,975 | 48,300 | 50,775 |
| Total Revenue .....                                               |                |           |      | 39,600 | 41,625 | 43,725 | 45,975 | 48,300 | 50,775 |
| <b>OPERATING COSTS</b>                                            |                |           |      |        |        |        |        |        |        |
| Maintenance of Buildings<br>and Plant (3% of Investment) .....    |                |           | -    | 1,650  | 1,650  | 1,650  | 1,650  | 1,650  | 1,650  |
| Consumable Stores .....                                           |                |           | -    | 1,000  | 1,050  | 1,102  | 1,157  | 1,215  | 1,275  |
| Office Stationery, Telephone, Postage ...                         |                |           | -    | 480    | 480    | 480    | 480    | 480    | 480    |
| Water .....                                                       | m <sup>3</sup> | 0.50      | -    | 212    | 223    | 234    | 245    | 258    | 271    |
| Electricity.....                                                  | kwh            | 0.10      | -    | 72     | 76     | 80     | 84     | 88     | 92     |
| Vehicle Maintenance, Insurance, Fuel ....                         | km             | 0.30      | -    | 4,500  | 4,500  | 4,500  | 4,500  | 4,500  | 4,500  |
| Replacement of Vehicle (10% of<br>Investment Cost) 2/ .....       |                |           |      |        | 2,000  | 2,000  | 2,000  | 2,000  | 2,000  |
| Staff Salaries 3/:                                                |                |           |      |        |        |        |        |        |        |
| Technician (1) .....                                              | no             | 1800.00   | -    | 2,160  | 2,270  | 2,380  | 2,500  | 2,630  | 2,760  |
| Slaughterman (2) .....                                            | no             | 540.00    | -    | 1,300  | 1,360  | 1,430  | 1,500  | 1,580  | 1,660  |
| Flayers (4).....                                                  | no             | 600.00    | -    | 2,880  | 3,020  | 3,180  | 3,450  | 3,520  | 3,520  |
| Eviserator (1) .....                                              | no             | 540.00    | -    | 650    | 680    | 710    | 750    | 790    | 790    |
| Butcher (3) .....                                                 | no             | 540.00    | -    | 1,950  | 2,040  | 2,130  | 2,250  | 2,370  | 2,370  |
| Offal Worker (1) .....                                            | no             | 540.00    | -    | 650    | 680    | 710    | 750    | 790    | 790    |
| Hide Worker (3) .....                                             | no             | 600.00    | -    | 2,160  | 2,260  | 2,380  | 2,590  | 2,640  | 2,640  |
| Driver (1) .....                                                  | no             | 720.00    | -    | 1,730  | 1,810  | 1,900  | 2,000  | 2,100  | 2,100  |
| Guards (2) .....                                                  | no             | 480.00    | -    | 1,160  | 1,210  | 1,270  | 1,330  | 1,400  | 1,400  |
| General Slaughter 4/ .....                                        |                |           |      |        |        | 650    | 680    | 710    | 1,580  |
| Sub-total .....                                                   |                |           |      | 22,554 | 25,309 | 26,786 | 27,917 | 28,721 | 29,694 |
| Contingency:                                                      |                |           |      |        |        |        |        |        |        |
| Physical 10% .....                                                |                |           |      | 2,554  | 2,530  | 2,680  | 2,791  | 2,872  | 2,959  |
| Total Operating Costs .....                                       |                |           |      | 25,108 | 27,839 | 29,466 | 30,708 | 31,593 | 32,653 |

1/ Allow one year construction to start up.

2/ Replacement of vehicle at 10 years.

3/ In addition to initial basic salary of Eth\$480/year, a worker annually gets 20% for social service payments, and 5%/year in year-2 through year-5 as merit increases.

4/ Additional slaughterhouse worker introduced in year-4 and year-7.

## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

Slaughter Facilities and Hide Shed Department - Technical and Administrative ServicesInvestment Costs  
(Eth\$)

| INVESTMENTS                                                   | Unit | No. of<br>Units | Unit Cost | -----Year----- |         |         |         | Total<br>Cost |  |
|---------------------------------------------------------------|------|-----------------|-----------|----------------|---------|---------|---------|---------------|--|
|                                                               |      |                 |           | 1              | 2       | 3       | 4       |               |  |
| <u>Headquarters</u>                                           |      |                 |           |                |         |         |         |               |  |
| 4-Wheel Drive .....                                           | no   | 1               | 12,000    | 12,000         | -       | -       | -       | 12,000        |  |
| Car .....                                                     | no   | 1               | 6,000     | 6,000          | -       | -       | -       | 6,000         |  |
| Desks .....                                                   | no   | 6               | 140       | 840            | -       | -       | -       | 840           |  |
| Desk Chairs .....                                             | no   | 6               | 80        | 480            | -       | -       | -       | 480           |  |
| Office Chairs .....                                           | no   | 12              | 25        | 300            | -       | -       | -       | 300           |  |
| Filing Cabinets .....                                         | no   | 4               | 200       | 800            | -       | -       | -       | 800           |  |
| Calculators .....                                             | no   | 2               | 1,100     | 2,200          | -       | -       | -       | 2,200         |  |
| Safe .....                                                    | no   | 1               | 1,600     | 1,600          | -       | -       | -       | 1,600         |  |
| Stationery Cupboard .....                                     | no   | 1               | 300       | 300            | -       | -       | -       | 300           |  |
| Typewriters .....                                             | no   | 1               | 720       | 720            | -       | -       | -       | 720           |  |
| Sub-total .....                                               |      |                 |           | 25,240         | -       | -       | -       | 25,240        |  |
| <u>Salaries</u>                                               |      |                 |           |                |         |         |         |               |  |
| Head of Slaughter Facilities<br>and Hide Shed Department .... | no   | 1               | 90,000    | 90,000         | 90,000  | 90,000  | 90,000  | 360,000       |  |
| <u>Slaughter Facilities and<br/>Hide Shed Teams</u>           |      |                 |           |                |         |         |         |               |  |
| 4-Wheel Drive .....                                           | no   | 14              | 12,000    | 60,000         | 72,000  | 36,000  | -       | 168,000       |  |
| Office Tables and Chairs .....                                | sets | 24              | 200       | 1,000          | 1,200   | 600     | -       | 2,800         |  |
| Safe .....                                                    | no   | 14              | 300       | 1,500          | 1,800   | 900     | -       | 4,200         |  |
| Tools and Knives .....                                        | sets | 84              | 90        | 2,700          | 3,240   | 1,620   | -       | 7,560         |  |
| Sub-total .....                                               |      |                 |           | 65,200         | 78,240  | 39,120  | -       | 182,560       |  |
| <u>Training</u>                                               |      |                 |           |                |         |         |         |               |  |
| Superintendents 1/.....                                       |      | 14              | 850       | 4,250          | 5,100   | 2,550   | -       | 11,900        |  |
| Technicians 1/ .....                                          |      | 84              | 850       | 25,500         | 30,600  | 15,300  | -       | 71,400        |  |
| Slaughter Facilities' Technicians 2/                          |      | 69              | 850       | 6,800          | 16,150  | 20,400  | 15,300  | 58,650        |  |
| Flayers 2/ .....                                              |      | 46              | 600       | 4,800          | 9,600   | 9,600   | 4,800   | 28,800        |  |
| Hide-Shed Workers 2/.....                                     |      | 480             | 100       | 5,600          | 13,400  | 16,400  | 11,600  | 48,000        |  |
| Sub-total .....                                               |      |                 |           | 47,950         | 74,850  | 64,250  | 31,700  | 218,750       |  |
| Total .....                                                   |      |                 |           | 228,390        | 243,090 | 193,370 | 121,700 | 786,550       |  |
| <u>Contingency: Physical at 10% .....</u>                     |      |                 |           | 22,839         | 24,309  | 19,337  | 12,170  | 78,655        |  |
| Price at 5% .....                                             |      |                 |           | 11,420         | 12,154  | 9,668   | 6,085   | 39,327        |  |
| Total Investment Cost .....                                   |      |                 |           | 262,649        | 279,553 | 222,375 | 139,955 | 904,532       |  |

1/ Attached to Slaughter Facilities and Hide Shed Teams that are mobile.

2/ Attached to particular slaughter facilities.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Slaughter Facilities and Hide Shed Department - Technical and Administrative Services

Operating Costs  
(Eth\$)

| Category                                                              | Unit     | No. of<br>Units | Unit Cost | Year    |         |         |         |         |         |         |         |
|-----------------------------------------------------------------------|----------|-----------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                                                       |          |                 |           | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8-20    |
| <u>Headquarters</u>                                                   |          |                 |           |         |         |         |         |         |         |         |         |
| Head of Slaughter Facilities and<br>Hide Shed Department .....        | man/year | 1               | 12,000    | -       | -       | -       | -       | 12,000  | 12,000  | 12,000  | 12,000  |
| Deputy Head of Slaughter Facilities and<br>Hide Shed Department ..... | "        | 1               | 12,000    | 12,000  | 12,000  | 12,000  | 12,000  | -       | -       | -       | -       |
| Typist .....                                                          | "        | 1               | 5,850     | 5,850   | 5,850   | 5,850   | 5,850   | 5,850   | 5,850   | 5,850   | 5,850   |
| Clerks .....                                                          | "        | 2               | 5,850     | 11,700  | 11,700  | 11,700  | 11,700  | 11,700  | 11,700  | 11,700  | 11,700  |
| Driver .....                                                          | "        | 1               | 2,550     | 2,550   | 2,550   | 2,550   | 2,550   | 2,550   | 2,550   | 2,550   | 2,550   |
| Messenger .....                                                       | "        | 1               | 780       | 780     | 780     | 780     | 780     | 780     | 780     | 780     | 780     |
| Sub-total .....                                                       |          |                 |           | 32,880  | 32,880  | 32,880  | 32,880  | 32,880  | 32,880  | 32,880  | 32,880  |
| Replacement of 4-Wheel Drive 1/ .....                                 | year     |                 | 2,400     | -       | 2,400   | 2,400   | 2,400   | 2,400   | 2,400   | 2,400   | 2,400   |
| Vehicle Maintenance, Fuel, Insurance 2/ ..                            | "        |                 | 10,400    | 10,400  | 10,400  | 10,400  | 10,400  | 10,400  | 8,000   | 8,000   | 8,000   |
| Stationery, Postage, Telephone .....                                  | "        |                 | 1,500     | 1,500   | 1,500   | 1,500   | 1,500   | 1,500   | 1,500   | 1,500   | 1,500   |
| Sub-total .....                                                       |          |                 |           | 11,900  | 14,300  | 14,300  | 14,300  | 14,300  | 11,900  | 11,900  | 11,900  |
| <u>Slaughter Facilities and Hide Shed Teams 3/</u>                    |          |                 |           |         |         |         |         |         |         |         |         |
| Superintendents .....                                                 | man/year | 14 1/4          | 6,000     | 19,500  | 64,350  | 103,840 | 121,320 | 126,150 | 132,370 | 132,720 | 132,720 |
| Technicians .....                                                     | "        | 84 1/4          | 1,200     | 23,400  | 77,280  | 124,680 | 145,740 | 153,120 | 157,980 | 159,600 | 26,600  |
| Mechanics .....                                                       | "        | 14 1/4          | 3,300     | 10,725  | 35,370  | 57,085  | 66,730  | 70,010  | 72,110  | 72,800  | 72,800  |
| Sub-total .....                                                       |          |                 |           | 53,625  | 177,000 | 285,605 | 333,790 | 349,280 | 362,460 | 365,120 | 232,120 |
| Replacement of 4-Wheel Drive 1/ .....                                 | year     |                 | 2,400     | -       | 6,000   | 19,200  | 30,000  | 33,600  | 33,600  | 33,600  | 33,600  |
| Vehicle Maintenance, Fuel, Insurance 5/ ...                           | "        |                 | 6,000     | 15,000  | 48,000  | 75,000  | 84,000  | 84,000  | 84,000  | 84,000  | 84,000  |
| Stationery, Postage, Telephone .....                                  | "        |                 | 250       | 625     | 2,000   | 3,125   | 3,500   | 3,500   | 3,500   | 3,500   | 3,500   |
| Replacement Tools, Knives .....                                       | "        |                 | 150       | 750     | 2,400   | 3,750   | 4,200   | 4,200   | 4,200   | 4,200   | 2,100   |
| Sub-total .....                                                       |          |                 |           | 16,375  | 58,400  | 101,075 | 121,700 | 125,300 | 125,300 | 125,300 | 123,200 |
| Total .....                                                           |          |                 |           | 114,780 | 282,580 | 433,860 | 502,670 | 521,760 | 532,540 | 535,200 | 400,100 |
| <u>Contingency: Physical 10% .....</u>                                |          |                 |           |         |         |         |         |         |         |         |         |
|                                                                       |          |                 |           | 11,478  | 28,258  | 43,386  | 50,267  | 52,176  | 53,254  | 53,520  | 40,010  |
| Total Operating Costs .....                                           |          |                 |           | 126,258 | 310,838 | 477,246 | 552,937 | 573,936 | 585,794 | 588,720 | 440,110 |

- 1/ Replaced after five years.  
2/ Four-wheel drive 32,000 km at Eth\$0.25/km; car 16,000 km at Eth\$0.15/km.  
3/ In addition to initial basic salary, a worker receives 20% social services and 10% away from home allowance and a 5% annual merit increase in year-2 through year-4. Also, each team only works six months in its first year since it takes six months to train a team prior to starting.  
4/ At full development.  
5/ 24,000 km/year at Eth\$0.25/km.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model - Fattening Ranch 3,500 ha

Herd Projection

| Category                                  | Unit  | Before<br>Development | Year |       |       |       |       |       |       |
|-------------------------------------------|-------|-----------------------|------|-------|-------|-------|-------|-------|-------|
|                                           |       |                       | 1    | 2     | 3     | 4     | 5     | 6     | 7-20  |
| <u>Herd Composition</u>                   |       |                       |      |       |       |       |       |       |       |
| Purchased Steers, 2 Years to Fatten ..... | head  | -                     | -    | 400   | 400   | 400   | 400   | 400   | 400   |
| Purchased Steers, 1 Year to Fatten .....  | head  | -                     | -    | 700   | 768   | 772   | 776   | 780   | 780   |
| Breeding-Fattening Herd .....             | head  | 875 1/                | -    | -     | -     | -     | -     | -     | -     |
| Total Head .....                          |       | 875                   | -    | 1,100 | 1,168 | 1,172 | 1,176 | 1,180 | 1,180 |
| Deaths - Total .....                      |       | 79                    | -    | -     | 88    | 82    | 70    | 59    | 59    |
| <u>Purchases</u>                          |       |                       |      |       |       |       |       |       |       |
| Steers, 2 Years to Fatten .....           | head  | -                     | -    | 400   | 400   | 400   | 400   | 400   | 400   |
| Steers, 1 Year to Fatten .....            | head  | -                     | -    | 700   | 400   | 400   | 400   | 400   | 400   |
| Total Purchases .....                     |       | -                     | -    | 1,100 | 800   | 800   | 800   | 800   | 800   |
| <u>Sales</u>                              |       |                       |      |       |       |       |       |       |       |
| Steers @ 420 kg Liveweight 2/.....        | head  | -                     | -    | -     | 644   | 714   | 726   | 741   | 741   |
| Cull Cows and Steers @ 250 kg/head .....  | head  | 67                    | 67   | -     | -     | -     | -     | -     | -     |
| <u>Technical Coefficients</u>             |       |                       |      |       |       |       |       |       |       |
| Mortality (Adult Stock) .....             | %     | 9                     | -    | -     | 8     | 7     | 6     | 5     | 5     |
| Stocking Rate .....                       | ha/AU | 4                     | -    | 3.2   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Weaning Rate .....                        | %     | 36                    | -    | -     | -     | -     | -     | -     | -     |

1/ 1,750 AU comprising a breeding-fattening herd are carried for six months during the wet season, equivalent to 875 AU per full year.

2/ Liveweight gain about 110 kg/head/year from purchase.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model - Fattening Ranch 3,500 ha

Investment Costs  
(Eth\$ '000)

| Category                                        | Unit      | Number<br>of Units | Unit<br>Cost<br>(Eth\$) | -----Year----- |       | Total<br>Cost |
|-------------------------------------------------|-----------|--------------------|-------------------------|----------------|-------|---------------|
|                                                 |           |                    |                         | 1              | 2     |               |
| <b>FIXED INVESTMENTS</b>                        |           |                    |                         |                |       |               |
| <b>Fencing, Roads and Firebreaks</b>            |           |                    |                         |                |       |               |
| Boundary Fence .....                            | km        | 26                 | 800                     | 20.8           | -     | 20.8          |
| Internal Fencing (Night Paddocks) .....         | km        | 10                 | 800                     | 4.0            | 4.0   | 8.0           |
| Access Road to Ranch Center .....               | km        | 10                 | 500                     | 5.0            | -     | 5.0           |
| Firebreaks .....                                | km        | 20                 | 200                     | 2.0            | 2.0   | 4.0           |
| Sub-total .....                                 |           |                    |                         | 31.8           | 6.0   | 37.8          |
| <b>Buildings</b>                                |           |                    |                         |                |       |               |
| Manager's House .....                           | no        | 1                  | 5,000                   | 5.0            | -     | 5.0           |
| Store .....                                     | no        | 1                  | 2,000                   | 2.0            | -     | 2.0           |
| Labor Houses .....                              | no        | 6                  | 600                     | 3.6            | -     | 3.6           |
| Sub-total .....                                 |           |                    |                         | 10.6           | -     | 10.6          |
| <b>Cattle Handling Facilities</b>               |           |                    |                         |                |       |               |
| Spray Race, Shed, Crush and Yards .....         | set       | 1                  | 3,000                   | 3.0            | -     | 3.0           |
| Spray, Pump and Engine .....                    | set       | 1                  | 1,000                   | 1.0            | -     | 1.0           |
| Sub-total .....                                 |           |                    |                         | 4.0            | -     | 4.0           |
| <b>Water Supply</b>                             |           |                    |                         |                |       |               |
| Borehole and Casing .....                       | no        | 1                  | 18,000                  | 18.0           | -     | 18.0          |
| Borehole Equipment .....                        | set       | 1                  | 4,000                   | 4.0            | -     | 4.0           |
| Reservoir (12,000 Gallons) .....                | no        | 1                  | 2,000                   | 2.0            | -     | 2.0           |
| Pipe and Fittings .....                         | m         | 100                | 5                       | 0.5            | -     | 0.5           |
| Troughs .....                                   | no        | 2                  | 350                     | 0.7            | -     | 0.7           |
| Dams .....                                      | no        | 1                  | 9,000                   | -              | 9.0   | 9.0           |
| Sub-total .....                                 |           |                    |                         | 25.2           | 9.0   | 34.2          |
| <b>Vehicles and Equipment</b>                   |           |                    |                         |                |       |               |
| Pick-up Vehicle .....                           | no        | 1                  | 10,000                  | 10.0           | -     | 10.0          |
| Tools and Cattle Handling Equipment .....       | set       | 1                  | 500                     | 0.5            | -     | 0.5           |
| Sub-total .....                                 |           |                    |                         | 10.5           | -     | 10.5          |
| Sub-total - Fixed Investments .....             |           |                    |                         | 82.1           | 15.0  | 97.1          |
| Contingencies: Physical 10% .....               |           |                    |                         | 8.2            | 1.5   | 9.7           |
| Price 5% .....                                  |           |                    |                         | 4.1            | 0.8   | 4.9           |
| Total Fixed Investments .....                   |           |                    |                         | 94.4           | 17.3  | 111.7         |
| <b>WORKING CAPITAL</b>                          |           |                    |                         |                |       |               |
| Manager's Salary .....                          | man/years | 1.5                | 5,400.00                | 2.7            | 5.4   | 8.1           |
| Laborers .....                                  | man/years | 6.0                | 480.00                  | -              | 2.9   | 2.9           |
| Minerals and Veterinary .....                   | head      | 1,100.0            | 6.00                    | -              | 6.6   | 6.6           |
| Spraying .....                                  | head      | 1,100.0            | 2.50                    | -              | 2.8   | 2.8           |
| Maintenance of Assets .....                     | year      | 1.0                | 3,500.00                | -              | 3.5   | 3.5           |
| Vehicle Running and Maintenance .....           | km        | 22,500.0           | 0.20                    | 1.5            | 3.0   | 4.5           |
| Borehole Running .....                          | hours     | 700.0              | 3.00                    | 0.3            | 1.8   | 2.1           |
| Small Tools, Office Running .....               | years     | 2.0                | 500.00                  | 0.5            | 0.5   | 1.0           |
| Sub-total .....                                 |           |                    |                         | 5.0            | 26.5  | 31.5          |
| Steers, 2 Years to Fatten .....                 | head      | 400.0              | 66.00                   | -              | 26.4  | 26.4          |
| Steers, 1 Year to Fatten .....                  | head      | 700.0              | 99.00                   | -              | 69.3  | 69.3          |
| Sub-total .....                                 |           |                    |                         | 5.0            | 122.2 | 127.2         |
| Contingencies: Physical 10% <sup>1/</sup> ..... |           |                    |                         | 0.5            | 2.7   | 3.2           |
| Price 5% .....                                  |           |                    |                         | 0.3            | 6.1   | 6.4           |
| Total Working Capital .....                     |           |                    |                         | 5.8            | 131.0 | 136.8         |
| Total Investment Costs .....                    |           |                    |                         | 100.2          | 148.3 | 248.5         |

<sup>1/</sup> Not applied to livestock purchases.

## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

Model - Fattening Ranch 3,500 ha

Revenue and Operating Costs  
(Eth\$)

| Category                                 | Unit      | -----Unit Price-----  |                     | Before 1/<br>Development | -----Year----- |   |       |       |       |       |       |
|------------------------------------------|-----------|-----------------------|---------------------|--------------------------|----------------|---|-------|-------|-------|-------|-------|
|                                          |           | Before<br>Development | Post<br>Development |                          | 1              | 2 | 3     | 4     | 5     | 6     | 7-20  |
| REVENUE                                  |           |                       |                     |                          |                |   |       |       |       |       |       |
| Sale of Steers .....                     | head      | 70 <u>2/</u>          | 190 <u>3/</u>       | 4.7                      | 4.7            | - | 122.4 | 135.7 | 137.9 | 140.8 | 140.8 |
| Sale of Hides .....                      | ½ deaths  | -                     | 8                   | -                        | -              | - | 0.4   | 0.3   | 0.3   | 0.2   | 0.2   |
| Total Revenue .....                      |           |                       |                     | 4.7                      | 4.7            | - | 122.8 | 136.0 | 138.2 | 141.0 | 141.0 |
| OPERATING COSTS                          |           |                       |                     |                          |                |   |       |       |       |       |       |
| Operating                                |           |                       |                     |                          |                |   |       |       |       |       |       |
| Manager .....                            | man/years | -                     | 5,400.00            | -                        | -              | - | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   |
| Laborers .....                           | man/years | 480                   | 480.00              | 1.9                      | 1.9            | - | 2.9   | 2.9   | 2.9   | 2.9   | 2.9   |
| Minerals and Veterinary .....            | head      | 0.50                  | 6.00                | 0.4                      | 0.4            | - | 7.0   | 7.0   | 7.1   | 7.1   | 7.1   |
| Spraying .....                           | head      | -                     | 2.50                | -                        | -              | - | 2.9   | 2.9   | 2.9   | 2.9   | 2.9   |
| Maintenance of Assets <u>4/</u> .....    | year      | -                     | 6,300.00            | -                        | -              | - | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| Vehicle Running and Maintenance ..       | km        | -                     | 0.20                | -                        | -              | - | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Borehole Running .....                   | hours     | -                     | 3.00                | -                        | -              | - | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   |
| Replacements <u>5/</u> .....             | -         | -                     | -                   | -                        | -              | - | -     | -     | -     | 10.0  | 2.0   |
| Small Tools, Office Running .....        | year      | 100                   | 500.00              | 0.1                      | 0.1            | - | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Sub-total .....                          |           |                       |                     | 2.4                      | 2.4            | - | 27.8  | 27.8  | 27.8  | 37.8  | 29.8  |
| Contingencies: Physical 10% .....        |           |                       |                     | -                        | -              | - | 2.8   | 2.8   | 2.8   | 3.8   | 3.0   |
| Sub-total .....                          |           |                       |                     | 2.4                      | 2.4            | - | 30.6  | 30.6  | 30.6  | 41.6  | 32.8  |
| Livestock Purchases                      |           |                       |                     |                          |                |   |       |       |       |       |       |
| Steers, 2 Years to Fatten <u>6/</u> .... | head      | -                     | 66.00               | -                        | -              | - | 26.4  | 26.4  | 26.4  | 26.4  | 26.4  |
| Steers, 1 Year to Fatten <u>7/</u> ..... | head      | -                     | 99.00               | -                        | -              | - | 39.6  | 39.6  | 39.6  | 39.6  | 39.6  |
| Sub-total .....                          |           |                       |                     | -                        | -              | - | 66.0  | 66.0  | 66.0  | 66.0  | 66.0  |
| Total Operating Costs.....               |           |                       |                     | 2.4                      | 2.4            | - | 96.6  | 96.6  | 96.6  | 107.6 | 98.8  |

1/ Based on a typical breeding fattening herd of 875 AU with a 7.7% offtake (including home consumption).

Only 875 AU can be run on the land before water resources are developed.

2/ 250 kg @ Eth\$0.30/kg in the local market less Eth\$5 per head marketing expenses.

3/ 420 kg @ Eth\$0.50/kg in Addis Ababa market less transport Eth\$15/head and selling fees and feed Eth\$5/head.

4/ At 5% of investment cost of fencing, roads, firebreaks, buildings and cattle handling facilities and water supply.

5/ Equated at 20% per annum of purchase price after year-6.

6/ Average 200 kg liveweight at Eth\$0.33/kg landed, or Eth\$66/head.

7/ Average 300 kg liveweight at Eth\$0.33/kg landed, or Eth\$99/head.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT

Model - Fattening Ranch 3,500 ha

Financial Projection  
(Eth\$'000)

| Category                                | Before<br>Development | Year         |              |              |              |              |              |              |              |                 |
|-----------------------------------------|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|
|                                         |                       | <u>1</u>     | <u>2</u>     | <u>3</u>     | <u>4</u>     | <u>5</u>     | <u>6</u>     | <u>7-13</u>  | <u>14-19</u> | <u>20</u>       |
| <u>CASH INFLOW</u>                      |                       |              |              |              |              |              |              |              |              |                 |
| 1. Annual Sales .....                   | 4.7                   | 4.7          | -            | 122.8        | 136.0        | 138.2        | 141.0        | 141.0        | 141.0        | 192.5 <u>2/</u> |
| 2. Investments                          |                       |              |              |              |              |              |              |              |              |                 |
| a. Rancher Contribution <u>1/</u> ..... | -                     | 20.0         | 29.7         | -            | -            | -            | -            | -            | -            | -               |
| b. Long-term Loans .....                | -                     | 80.2         | 118.6        | -            | -            | -            | -            | -            | -            | -               |
| 3. Short-term Resources                 |                       |              |              |              |              |              |              |              |              |                 |
| a. Last Year's Cash Balance .....       | -                     | -            | -            | -            | 3.0          | 4.7          | 8.6          | 3.0          | 3.0          | 3.0             |
| b. Rancher Contribution .....           | -                     | 1.5          | 13.3         | -            | -            | -            | -            | -            | -            | -               |
| c. Short-term Loans.....                | -                     | -            | -            | -            | -            | -            | -            | -            | -            | -               |
| Total Expected Cash Inflow ....         | <u>4.7</u>            | <u>106.4</u> | <u>161.6</u> | <u>122.8</u> | <u>139.0</u> | <u>142.9</u> | <u>149.6</u> | <u>144.0</u> | <u>144.0</u> | <u>195.5</u>    |
| <u>CASH OUTFLOW</u>                     |                       |              |              |              |              |              |              |              |              |                 |
| 1. Investments                          |                       |              |              |              |              |              |              |              |              |                 |
| a. Rancher Contribution .....           | -                     | 20.0         | 29.7         | -            | -            | -            | -            | -            | -            | -               |
| b. Long-term Loans.....                 | -                     | 80.2         | 118.6        | -            | -            | -            | -            | -            | -            | -               |
| 2. Operating Costs .....                | 2.4                   | 2.4          | -            | 96.6         | 96.6         | 96.6         | 107.6        | 98.8         | 98.8         | 32.8            |
| 3. Debt Service                         |                       |              |              |              |              |              |              |              |              |                 |
| a. Of Long-term Loans <u>3/</u> .....   | -                     | 3.8          | 13.3         | 18.9         | 31.7         | 31.7         | 31.7         | 31.7         | -            | -               |
| b. Of Short-term Loans <u>4/</u> .....  | -                     | -            | -            | -            | -            | -            | -            | -            | -            | -               |
| 4. Available for Cash Withdrawals ..... | <u>2.3</u>            | <u>-</u>     | <u>-</u>     | <u>4.3</u>   | <u>6.0</u>   | <u>6.0</u>   | <u>7.3</u>   | <u>10.5</u>  | <u>42.2</u>  | <u>162.7</u>    |
| Total Expected Cash Outflow ...         | <u>4.7</u>            | <u>106.4</u> | <u>161.6</u> | <u>119.8</u> | <u>134.3</u> | <u>134.3</u> | <u>146.6</u> | <u>141.0</u> | <u>141.0</u> | <u>195.5</u>    |
| Balance at Year End .....               | <u>0.0</u>            | <u>0.0</u>   | <u>0.0</u>   | <u>3.0</u>   | <u>4.7</u>   | <u>8.6</u>   | <u>3.0</u>   | <u>3.0</u>   | <u>3.0</u>   | <u>-</u>        |

1/ 20% of total investment.

2/ Winding up sale

741 head @ Eth\$180 = Eth\$141.0

380 head @ Eth\$135 = Eth\$ 51.3

Sale of Hides = Eth\$ 0.2

Total Eth\$192.5

3/ At 9.5% per annum.

4/ At 10.5% per annum.

ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Proposed Terms of Reference for Preparation  
of the Fourth Livestock Development Project

1. The Bank Group Livestock Review and Identification Mission which visited Ethiopia in April/May 1970, and the recent Agricultural Sector Review Mission identified many promising livestock projects. Lowland sheep, especially in the Jijiga area, highland sheep in the Gimba-Mehal-Meda area, and beef cattle production in the Danakil plains are projects that look promising. These projects would be essentially production-oriented. A final decision has not yet been made on which project should be prepared first. Since Ethiopia lacks the ability to implement all three simultaneously such a decision is necessary.

2. Foreign technical help would be required to help Ethiopia prepare one of these projects. The extent of this requirement would depend on future developments in Ethiopia, particularly on whether or not the present substantial planning and project preparation capability is fostered, encouraged and built upon or whether it is allowed to dissipate. In any event, it is estimated that about 54 man months would be required in total.

3. The expertise required would be approximately as follows:

|                                    |                      |
|------------------------------------|----------------------|
| Beef Cattle Production Specialists | 7 man months         |
| Sheep Production Specialist        | 7 man months         |
| Agricultural Economist             | 12 man months        |
| Sociologist                        | 6 man months         |
| Hydrologist                        | 6 man months         |
| Census Specialist                  | 2 man months         |
| Pasture Specialist                 | 7 man months         |
| Veterinarian                       | <u>7 man months</u>  |
| Total                              | <u>54 man months</u> |

4. Total cost is estimated at about US\$400,000, including US\$130,000 for aerial census work.

5. Preliminary work would involve reaching agreement with Government on the objectives of Government policy in these areas. The primary function of the project preparation team would be to prepare in the prescribed area a technically, financially and economically sound project within the policy framework specified by Government. Particular care would be required to identify the production unit -- private individuals, groups, entire villages or tribes -- most suitable as a basis for development.

October 10, 1972

ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

LDB Headquarters Technical and Administrative Services 1/

Investment and Operating Costs  
(Eth\$'000)

|                                     | Unit | Units | Unit<br>Cost<br>Eth\$ | -----year----- |              |              |              | Total<br>Cost  |
|-------------------------------------|------|-------|-----------------------|----------------|--------------|--------------|--------------|----------------|
|                                     |      |       |                       | <u>1</u>       | <u>2</u>     | <u>3</u>     | <u>4</u>     |                |
| <u>INVESTMENT COSTS</u>             |      |       |                       |                |              |              |              |                |
| Project Manager .....               | no   | 1     | 90,000                | 90.0           | 90.0         | 90.0         | 90.0         | 360.0          |
| Deputy Project Manager .....        | no   | 1     | 15,000                | 15.0           | 15.0         | 15.0         | 15.0         | 60.0           |
| Financial Officer .....             | no   | 1     | 90,000                | 90.0           | 90.0         | 90.0         | 90.0         | 360.0          |
| Deputy Financial Officer .....      | no   | 1     | 15,000                | 15.0           | 15.0         | 15.0         | 15.0         | 60.0           |
| Marketing Specialist.....           | no   | 1     | 90,000                | -              | 90.0         | 90.0         | 90.0         | 270.0          |
| Construction Officer .....          | no   | 1     | 70,000                | 70.0           | 70.0         | 70.0         | 70.0         | 280.0          |
| Draftsman.....                      | no   | 1     | 12,000                | 10.0           | 10.0         | 10.0         | 10.0         | 40.0           |
| Accounting Consultant Services..... |      |       |                       | 125.0          | 125.0        | 80.0         | -            | 330.0          |
| 4-Wheel Drive .....                 | no   | 2     | 16,000                | 32.0           | -            | -            | -            | 32.0           |
| Sub-total .....                     |      |       |                       | 447.0          | 505.0        | 460.0        | 380.0        | 1,792.0        |
| Contingencies - Physical 10% .....  |      |       |                       | 44.7           | 50.5         | 46.0         | 38.0         | 179.2          |
| Price 5% .....                      |      |       |                       | 22.4           | 25.2         | 23.0         | 19.0         | 89.6           |
| Total Investment Cost.....          |      |       |                       | <u>514.1</u>   | <u>580.7</u> | <u>529.0</u> | <u>437.0</u> | <u>2,060.8</u> |
| <u>OPERATING COSTS</u>              |      |       |                       |                |              |              |              |                |
|                                     |      |       |                       | <u>1</u>       | <u>2</u>     | <u>3</u>     | <u>4</u>     | <u>5-20</u>    |
| 4-Wheel Drive .....                 | no   | 2     | 8,000                 | 16.0           | 16.0         | 16.0         | 16.0         | -              |
| Secretary .....                     | no   | 1     | 10,000                | 10.0           | 10.0         | 10.0         | 10.0         | 10.0           |
| Project Manager .....               | no   | 1     | 17,500                | -              | -            | -            | -            | 17.5           |
| Financial Officer .....             | no   | 1     | 17,500                | -              | -            | -            | -            | 17.5           |
| Sub-total .....                     |      |       |                       | 26.0           | 26.0         | 26.0         | 26.0         | 45.0           |
| Contingency - Physical 10% .....    |      |       |                       | 2.6            | 2.6          | 2.6          | 2.6          | 4.5            |
| Total Operating Costs .....         |      |       |                       | <u>28.6</u>    | <u>28.6</u>  | <u>28.6</u>  | <u>28.6</u>  | <u>49.5</u>    |

1/ LDB Technical and Administrative Services in addition to those attached to the Market and Stockroute Department and the Slaughter Facilities and Hide Shed Department.

ETHIOPIA  
SECOND LIVESTOCK DEVELOPMENT PROJECT  
Phasing of Project Investments

|                                              | Phasing of Investments<br>(Ech\$ '000) |         |         |         |          | Phasing of Investments<br>(Number) |      |      |      |       |
|----------------------------------------------|----------------------------------------|---------|---------|---------|----------|------------------------------------|------|------|------|-------|
|                                              | 1                                      | 2       | 3       | 4       | Total    | 1                                  | 2    | 3    | 4    | Total |
| <b>LMB</b>                                   |                                        |         |         |         |          |                                    |      |      |      |       |
| Headquarters Staffing 1/                     | 514.1                                  | 580.7   | 529.0   | 437.0   | 2,060.8  | n.a.                               | n.a. | n.a. | n.a. | n.a.  |
| Market and Stockroute 2/                     |                                        |         |         |         |          |                                    |      |      |      |       |
| 1. Technical and Administrative Services     |                                        |         |         |         |          |                                    |      |      |      |       |
| a. Headquarters                              | 176.5                                  | 103.5   | 103.5   | 103.5   | 487.0    | n.a.                               | n.a. | n.a. | n.a. | n.a.  |
| b. Marketing Teams                           | 153.6                                  | 311.1   | 275.2   | 98.6    | 838.5    | 4                                  | 4    | 4    | 4    | 16    |
| c. Maintenance Units                         | 7.0                                    | 7.0     | 7.0     | 14.0    | 35.0     | 1                                  | 1    | 1    | 2    | 5     |
| Sub-total                                    | 337.1                                  | 421.6   | 385.7   | 216.1   | 1,360.5  |                                    |      |      |      |       |
| 2. Markets                                   |                                        |         |         |         |          |                                    |      |      |      |       |
| a. Primary                                   | 134.3                                  | 249.5   | 268.7   | 268.6   | 921.1    | 7                                  | 13   | 14   | 14   | 48    |
| b. Terminal                                  | 30.9                                   | 30.9    | 61.9    | 61.9    | 185.6    | 1                                  | 1    | 2    | 2    | 6     |
| Sub-total                                    | 165.2                                  | 280.4   | 330.6   | 330.5   | 1,106.7  |                                    |      |      |      |       |
| 3. Stockroutes                               | 735.3                                  | 944.9   | 1,419.7 | 820.4   | 3,920.3  | 1                                  | 3    | 3    | 4    | 11    |
| 4. LMB Trucking                              | 145.0                                  | 145.0   | 72.5    | -       | 362.5    | 2                                  | 2    | 1    | -    | 5     |
| Slaughter Facilities and Hide Shed Component |                                        |         |         |         |          |                                    |      |      |      |       |
| 1. Technical and Administrative Services     |                                        |         |         |         |          |                                    |      |      |      |       |
| a. Headquarters                              | 132.5                                  | 103.5   | 103.5   | 103.5   | 443.0    | n.a.                               | n.a. | n.a. | n.a. | n.a.  |
| b. Training                                  | 55.1                                   | 86.1    | 73.9    | 36.5    | 251.6    | n.a.                               | n.a. | n.a. | n.a. | n.a.  |
| c. Slaughter Facilities and Hide Shed Teams  | 75.0                                   | 89.9    | 45.0    | -       | 209.9    | 5                                  | 6    | 3    | -    | 14    |
| Sub-total                                    | 262.6                                  | 279.5   | 222.4   | 140.0   | 904.5    |                                    |      |      |      |       |
| 2. Slaughter Facilities and Hide Sheds       |                                        |         |         |         |          |                                    |      |      |      |       |
| a. Slaughterlabs - Model I                   | 86.2                                   | 143.7   | 172.4   | 114.9   | 517.2    | 15                                 | 25   | 30   | 20   | 90    |
| b. Slaughterlabs - Model II                  | 128.7                                  | 321.7   | 428.9   | 343.1   | 1,222.3  | 6                                  | 15   | 20   | 16   | 57    |
| c. Slaughterhouse - Model III                | 182.0                                  | 364.0   | 364.0   | 182.0   | 1,092.1  | 2                                  | 4    | 4    | 2    | 12    |
| Sub-total                                    | 396.9                                  | 829.4   | 965.3   | 640.0   | 2,831.6  |                                    |      |      |      |       |
| Incremental Working Capital                  | 383.0                                  | 394.0   | 203.0   | -       | 980.0    | n.a.                               | n.a. | n.a. | n.a. | n.a.  |
| Total LMB                                    | 2,939.2                                | 3,875.5 | 4,134.2 | 3,184.0 | 13,526.9 |                                    |      |      |      |       |
| <b>Government</b>                            |                                        |         |         |         |          |                                    |      |      |      |       |
| 1. Project Preparation                       | 400.0                                  | 460.0   | -       | -       | 860.0    | n.a.                               | n.a. | n.a. | n.a. | n.a.  |
| 2. Ranching Operations 2/                    | 90.0                                   | 90.0    | 90.0    | 90.0    | 360.0    |                                    |      |      |      |       |
| Total Government                             | 550.0                                  | 550.0   | 90.0    | 90.0    | 1,280.0  |                                    |      |      |      |       |
| Total Project Cost                           | 3,489.2                                | 4,425.5 | 4,218.2 | 3,674.0 | 14,806.9 |                                    |      |      |      |       |
| <b>AIDB</b>                                  |                                        |         |         |         |          |                                    |      |      |      |       |
| 1. Ranch Development                         | 100.2                                  | 348.7   | 497.0   | 296.6   | 1,242.5  | 1                                  | 2    | 2    | -    | 5     |
| 2. Private Trucking                          | -                                      | -       | 145.0   | 217.5   | 362.5    | -                                  | -    | 2    | 3    | 5     |
| Total AIDB                                   | 100.2                                  | 348.7   | 642.0   | 514.1   | 1,605.0  |                                    |      |      |      |       |

1/ Excluding staff specifically assigned to the Market and Stockroute or Slaughter Facilities and Hide Shed components of the project.  
2/ Seconded to LMB.

Note: n.a. = not applicable

ETHIOPIASECOND LIVESTOCK DEVELOPMENT PROJECTEstimated Schedule of Disbursement of IDA Credit  
(US\$'000)

| <u>Project<br/>Year</u> | <u>End of<br/>Quarter</u> | <u>Estimated Disbursement</u> |                              |
|-------------------------|---------------------------|-------------------------------|------------------------------|
|                         |                           | <u>Amount<br/>Disbursed</u>   | <u>Balance of<br/>Credit</u> |
| 1                       | 0                         | 0                             | 4,500                        |
|                         | 1                         | 100                           | 4,400                        |
|                         | 2                         | 330                           | 4,170                        |
|                         | 3                         | 560                           | 3,940                        |
|                         | 4                         | 808                           | 3,692                        |
| 2                       | 1                         | 1,120                         | 3,380                        |
|                         | 2                         | 1,430                         | 3,070                        |
|                         | 3                         | 1,740                         | 2,760                        |
|                         | 4                         | 2,058                         | 2,442                        |
| 3                       | 1                         | 2,390                         | 2,110                        |
|                         | 2                         | 2,720                         | 1,780                        |
|                         | 3                         | 3,050                         | 1,450                        |
|                         | 4                         | 3,368                         | 1,132                        |
| 4                       | 1                         | 3,650                         | 850                          |
|                         | 2                         | 3,930                         | 570                          |
|                         | 3                         | 4,210                         | 290                          |
|                         | 4                         | 4,500                         | 0                            |

April 25, 1972

November 20, 1972

## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

Government Cash Flow From Project  
(Eth\$'000)

| Year | -----Inflow----- |                                         |                        |                 | -----Outflow----- |                    |                                        |                        |                            |                  |
|------|------------------|-----------------------------------------|------------------------|-----------------|-------------------|--------------------|----------------------------------------|------------------------|----------------------------|------------------|
|      | IDA<br>Credit    | Government<br>Contribution<br>(Surplus) | LMB 1/<br>Debt Service | Total<br>Inflow | Loans to<br>LMB   | Grant to<br>LMB 2/ | Grant for<br>Ranching<br>Specialist 3/ | Feasibility<br>Studies | Debt Service<br>IDA Credit | Total<br>Outflow |
| 1    | 1,858            | 1,254                                   | 8                      | 3,120           | 2,077             | 479                | 90                                     | 460                    | 14                         | 3,120            |
| 2    | 2,875            | 1,165                                   | 27                     | 4,067           | 2,925             | 557                | 90                                     | 460                    | 35                         | 4,067            |
| 3    | 3,013            | 960                                     | 50                     | 4,023           | 3,407             | 518                | 90                                     | -                      | 58                         | 4,073            |
| 4    | 2,604            | 77                                      | 71                     | 2,752           | 2,135             | 449                | 90                                     | -                      | 78                         | 2,752            |
| 5    | -                | (1)                                     | 79                     | 78              | -                 | -                  | -                                      | -                      | 78                         | 78               |
| 6    | -                | (1,154)                                 | 1,232                  | 78              | -                 | -                  | -                                      | -                      | 78                         | 78               |
| 7    | -                | (1,154)                                 | 1,232                  | 78              | -                 | -                  | -                                      | -                      | 78                         | 78               |
| 8    | -                | (1,154)                                 | 1,232                  | 78              | -                 | -                  | -                                      | -                      | 78                         | 78               |
| 9    | -                | (1,154)                                 | 1,232                  | 78              | -                 | -                  | -                                      | -                      | 78                         | 78               |
| 10   | -                | (1,154)                                 | 1,232                  | 78              | -                 | -                  | -                                      | -                      | 78                         | 78               |
| 11   | -                | (1,050)                                 | 1,232                  | 182             | -                 | -                  | -                                      | -                      | 182                        | 182              |
| 12   | -                | (1,051)                                 | 1,232                  | 181             | -                 | -                  | -                                      | -                      | 181                        | 181              |
| 13   | -                | (1,052)                                 | 1,232                  | 180             | -                 | -                  | -                                      | -                      | 180                        | 180              |
| 14   | -                | (1,053)                                 | 1,232                  | 179             | -                 | -                  | -                                      | -                      | 179                        | 179              |
| 15   | -                | (1,053)                                 | 1,232                  | 179             | -                 | -                  | -                                      | -                      | 179                        | 179              |
| 16   | -                | (1,054)                                 | 1,232                  | 178             | -                 | -                  | -                                      | -                      | 178                        | 178              |
| 17   | -                | (1,055)                                 | 1,232                  | 177             | -                 | -                  | -                                      | -                      | 177                        | 177              |
| 18   | -                | (1,056)                                 | 1,232                  | 176             | -                 | -                  | -                                      | -                      | 176                        | 176              |
| 19   | -                | (1,057)                                 | 1,232                  | 175             | -                 | -                  | -                                      | -                      | 175                        | 175              |
| 20   | -                | (1,058)                                 | 1,232                  | 174             | -                 | -                  | -                                      | -                      | 174                        | 174              |

1/ Loan term 20 years at 3/4 of 1% interest for the first five years and 8% thereafter.

2/ Government gives as a grant to LMB 75% of the cost of expatriates.

3/ Government gives as a grant 100% of the cost of Ranching Specialist.

| Category                                                       | 1         | 2         | 3         | 4         | 5       | 6       | 7       | 8       | 9       | 10-20   |
|----------------------------------------------------------------|-----------|-----------|-----------|-----------|---------|---------|---------|---------|---------|---------|
| I. Total LME Operations                                        |           |           |           |           |         |         |         |         |         |         |
| 1. Investment Costs                                            |           |           |           |           |         |         |         |         |         |         |
| a. Headquarters Technical and Administrative Services 1/ ..... | 191.1     | 179.7     | 167.0     | 144.0     | -       | -       | -       | -       | -       | -       |
| b. Market and Stockroute Component ..                          | 1,304.6   | 1,713.9   | 2,130.5   | 1,289.0   | -       | -       | -       | -       | -       | -       |
| c. Slaughter Facilities and Hide Shed Component .....          | 581.5     | 1,031.0   | 1,109.7   | 702.0     | -       | -       | -       | -       | -       | -       |
| Sub-total .....                                                | 2,078.0   | 2,924.6   | 3,407.2   | 2,135.0   | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs                                 |           |           |           |           |         |         |         |         |         |         |
| a. Headquarters Technical and Administrative Services 1/ ..... | 28.6      | 28.6      | 28.6      | 28.6      | 49.5    | 49.5    | 49.5    | 49.5    | 49.5    | 49.5    |
| b. Market and Stockroute Component ..                          | 353.5     | 1,230.3   | 2,056.8   | 2,694.3   | 2,761.2 | 2,703.0 | 2,644.6 | 2,616.2 | 2,616.2 | 2,616.2 |
| c. Slaughter Facilities and Hide Shed Component .....          | 138.5     | 433.9     | 818.8     | 1,144.1   | 1,328.5 | 1,375.0 | 1,407.6 | 1,285.3 | 1,304.9 | 1,318.9 |
| Sub-total .....                                                | 722.6     | 1,692.8   | 2,904.2   | 3,867.0   | 4,139.2 | 4,127.5 | 4,101.7 | 3,951.0 | 3,970.6 | 3,984.6 |
| 3. Incremental Revenues                                        |           |           |           |           |         |         |         |         |         |         |
| a. Market and Stockroute Component ..                          | 317.1     | 1,102.0   | 2,170.5   | 3,286.9   | 4,068.9 | 4,159.7 | 4,236.5 | 4,294.0 | 4,352.0 | 4,352.0 |
| b. Slaughter Facilities and Hide Shed Component .....          | 23.2      | 197.1     | 530.9     | 898.1     | 1,128.6 | 1,186.3 | 1,246.4 | 1,299.7 | 1,335.4 | 1,349.5 |
| Sub-total .....                                                | 340.3     | 1,299.1   | 2,701.4   | 4,185.0   | 5,197.5 | 5,346.0 | 5,482.9 | 5,593.7 | 5,687.4 | 5,701.5 |
| 4. Net Incremental Cash Flow .....                             | (2,460.3) | (3,416.3) | (4,610.0) | (1,817.0) | 1,052.3 | 1,218.5 | 1,381.2 | 1,642.7 | 1,716.8 | 1,716.8 |
| 5. Financial Rate of Return = 8.94%                            |           |           |           |           |         |         |         |         |         |         |
| II. Market and Stockroute Component                            |           |           |           |           |         |         |         |         |         |         |
| 1. Investment Costs                                            |           |           |           |           |         |         |         |         |         |         |
| a. Stockroutes .....                                           | 735.3     | 944.9     | 1,419.7   | 820.4     | -       | -       | -       | -       | -       | -       |
| b. Trucking .....                                              | 145.0     | 145.0     | 72.5      | -         | -       | -       | -       | -       | -       | -       |
| c. Markets .....                                               | 165.2     | 280.4     | 330.6     | 330.5     | -       | -       | -       | -       | -       | -       |
| d. Technical and Administrative Services .....                 | 259.1     | 353.6     | 307.7     | 138.1     | -       | -       | -       | -       | -       | -       |
| Sub-total .....                                                | 1,304.6   | 1,713.9   | 2,130.5   | 1,289.0   | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs                                 |           |           |           |           |         |         |         |         |         |         |
| a. Stockroutes .....                                           | 45.9      | 152.4     | 304.2     | 428.1     | 464.6   | 467.6   | 470.4   | 472.6   | 472.6   | 472.6   |
| b. Trucking .....                                              | 30.6      | 91.8      | 137.7     | 153.0     | 153.0   | 91.8    | 30.6    | -       | -       | -       |
| c. Markets .....                                               | 66.3      | 185.7     | 324.2     | 464.1     | 471.4   | 471.4   | 471.4   | 471.4   | 471.4   | 471.4   |
| d. Technical and Administrative Services .....                 | 412.7     | 800.4     | 1,290.7   | 1,649.1   | 1,672.2 | 1,672.2 | 1,672.2 | 1,672.2 | 1,672.2 | 1,672.2 |
| Sub-total .....                                                | 555.5     | 1,230.3   | 2,056.8   | 2,694.3   | 2,761.2 | 2,703.0 | 2,644.6 | 2,616.2 | 2,616.2 | 2,616.2 |
| 3. Incremental Revenue                                         |           |           |           |           |         |         |         |         |         |         |
| a. Stockroutes .....                                           | 49.1      | 190.1     | 433.4     | 766.6     | 997.7   | 1,084.5 | 1,167.5 | 1,200.6 | 1,217.0 | 1,217.0 |
| b. Trucking .....                                              | 46.8      | 160.4     | 250.6     | 284.0     | 284.0   | 170.4   | 56.8    | -       | -       | -       |
| c. Markets .....                                               | 221.2     | 751.5     | 1,486.5   | 2,236.3   | 2,781.2 | 2,904.8 | 3,012.2 | 3,093.4 | 3,135.0 | 3,135.0 |
| Sub-total .....                                                | 317.1     | 1,102.0   | 2,170.5   | 3,286.9   | 4,068.9 | 4,159.7 | 4,236.5 | 4,294.0 | 4,352.0 | 4,352.0 |
| 4. Net Incremental Cash Flow .....                             | (1,543.0) | (1,842.2) | (2,016.8) | (696.4)   | 1,301.7 | 1,456.7 | 1,591.9 | 1,677.8 | 1,735.8 | 1,735.8 |
| 5. Financial Rate of Return = 18.19%                           |           |           |           |           |         |         |         |         |         |         |
| III. Market and Stockroute Component Models                    |           |           |           |           |         |         |         |         |         |         |
| A. Model - Cattle Truck                                        |           |           |           |           |         |         |         |         |         |         |
| 1. Investment Costs .....                                      | 72.5      | -         | -         | -         | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                           | 15.3      | 30.6      | 30.6      | 30.6      | 30.6    | -       | -       | -       | -       | -       |
| 3. Incremental Revenue .....                                   | 23.4      | 56.8      | 56.8      | 56.8      | 56.8    | -       | -       | -       | -       | -       |
| 4. Net Incremental Cash Flow .....                             | (64.4)    | 26.2      | 26.2      | 26.2      | 26.2    | -       | -       | -       | -       | -       |
| 5. Financial Rate of Return = 22.8%                            |           |           |           |           |         |         |         |         |         |         |
| B. Model - Primary Market 2/                                   |           |           |           |           |         |         |         |         |         |         |
| 1. Investment Costs .....                                      | 19.2      | -         | -         | -         | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                           | 8.2       | 8.6       | 8.6       | 8.6       | 8.6     | 8.6     | 8.6     | 8.6     | 8.6     | 8.6     |
| 3. Incremental Revenue .....                                   | 21.4      | 37.0      | 38.6      | 40.1      | 41.8    | 43.6    | 43.6    | 43.6    | 43.6    | 43.6    |
| 4. Net Incremental Cash Flow .....                             | (6.0)     | 28.4      | 30.0      | 31.5      | 33.2    | 35.0    | 35.0    | 35.0    | 35.0    | 35.0    |
| 5. Financial Rate of Return = over 100%                        |           |           |           |           |         |         |         |         |         |         |
| C. Model - Terminal Market 2/                                  |           |           |           |           |         |         |         |         |         |         |
| 1. Investment Costs .....                                      | 30.9      | -         | -         | -         | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                           | 8.5       | 9.4       | 9.4       | 9.4       | 9.4     | 9.4     | 9.4     | 9.4     | 9.4     | 9.4     |
| 3. Incremental Revenue .....                                   | 71.4      | 142.9     | 150.0     | 157.6     | 165.5   | 173.7   | 173.7   | 173.7   | 173.7   | 173.7   |
| 4. Net Incremental Cash Flow .....                             | 32.0      | 133.5     | 140.6     | 148.2     | 156.1   | 164.3   | 164.3   | 164.3   | 164.3   | 164.3   |
| 5. Financial Rate of Return = over 100%                        |           |           |           |           |         |         |         |         |         |         |

| Category                                                                     | 1       | 2         | 3         | 4       | 5       | 6       | 7       | 8       | 9       | 10-20   |
|------------------------------------------------------------------------------|---------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|
| <u>LME OPERATIONS</u>                                                        |         |           |           |         |         |         |         |         |         |         |
| IV. Slaughter Facilities and Hide Shed Component <sup>3/</sup>               |         |           |           |         |         |         |         |         |         |         |
| 1. Investment Costs                                                          |         |           |           |         |         |         |         |         |         |         |
| a. Slaughter Facilities and Hide Sheds.                                      | 396.9   | 829.4     | 965.3     | 640.0   | -       | -       | -       | -       | -       | -       |
| b. Technical and Administrative Services .....                               | 184.6   | 201.6     | 144.4     | 62.0    | -       | -       | -       | -       | -       | -       |
| Sub-total .....                                                              | 581.5   | 1,031.0   | 1,109.7   | 702.0   | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs                                               |         |           |           |         |         |         |         |         |         |         |
| a. Slaughter Facilities and Hide Sheds.                                      | 12.2    | 123.1     | 341.6     | 591.2   | 754.6   | 789.2   | 818.9   | 845.2   | 864.8   | 878.8   |
| b. Technical and Administrative Services .....                               | 126.3   | 310.8     | 477.2     | 552.9   | 573.9   | 585.8   | 588.7   | 440.1   | 440.1   | 440.1   |
| Sub-total .....                                                              | 138.5   | 433.9     | 818.8     | 1,144.1 | 1,328.5 | 1,375.0 | 1,407.6 | 1,285.3 | 1,304.9 | 1,318.9 |
| 3. Incremental Revenue                                                       |         |           |           |         |         |         |         |         |         |         |
| a. Slaughter Facilities and Hide Sheds.                                      | 23.2    | 197.1     | 530.9     | 898.1   | 1,128.6 | 1,186.3 | 1,246.4 | 1,299.7 | 1,335.4 | 1,349.5 |
| 4. Net Incremental Cash Flow .....                                           | (696.8) | (1,267.8) | (1,397.6) | (948.0) | (199.9) | (188.7) | (161.4) | 14.4    | 30.5    | 30.6    |
| 5. Financial Rate of Return = negative                                       |         |           |           |         |         |         |         |         |         |         |
| V. Slaughter Facilities & Hide Shed Component Models                         |         |           |           |         |         |         |         |         |         |         |
| A. Model I - Slaughterlab Weekly Through-put About 16 Head <sup>2/</sup>     |         |           |           |         |         |         |         |         |         |         |
| 1. Investment Costs .....                                                    | 5.7     | -         | -         | -       | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                                         | 0.4     | 0.9       | 0.9       | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     |
| 3. Incremental Revenue .....                                                 | 0.8     | 1.6       | 1.7       | 1.8     | 1.9     | 2.0     | 2.0     | 2.0     | 2.0     | 2.0     |
| 4. Net Incremental Cash Flow .....                                           | (5.3)   | 0.7       | 0.8       | 0.8     | 0.9     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     |
| 5. Financial Rate of Return = 16.0%                                          |         |           |           |         |         |         |         |         |         |         |
| B. Model II - Slaughterlab Weekly Throughput About 80 Head <sup>2/</sup>     |         |           |           |         |         |         |         |         |         |         |
| 1. Investment Costs .....                                                    | 21.4    | -         | -         | -       | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                                         | 1.1     | 5.5       | 5.7       | 6.0     | 6.2     | 6.2     | 7.0     | 7.0     | 7.0     | 7.0     |
| 3. Incremental Revenue .....                                                 | 1.9     | 7.6       | 8.0       | 8.4     | 8.8     | 9.3     | 9.8     | 9.8     | 9.8     | 9.8     |
| 4. Net Incremental Cash Flow .....                                           | (20.6)  | 2.1       | 2.3       | 2.4     | 2.6     | 3.1     | 2.8     | 2.8     | 2.8     | 2.8     |
| 5. Financial Rate of Return = 11.1%                                          |         |           |           |         |         |         |         |         |         |         |
| C. Model III - Slaughterhouse Weekly Throughput About 170 Head <sup>2/</sup> |         |           |           |         |         |         |         |         |         |         |
| 1. Investment Costs .....                                                    | 91.0    | -         | -         | -       | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                                         | -       | 25.1      | 27.8      | 29.5    | 30.7    | 31.6    | 32.7    | 32.7    | 32.7    | 32.7    |
| 3. Incremental Revenue .....                                                 | -       | 39.6      | 41.6      | 43.7    | 46.0    | 48.3    | 50.8    | 50.8    | 50.8    | 50.8    |
| 4. Net Incremental Cash Flow .....                                           | (91.0)  | 14.5      | 13.8      | 14.2    | 15.3    | 16.7    | 18.1    | 18.1    | 18.1    | 18.1    |
| 5. Financial Rate of Return = 16.9%                                          |         |           |           |         |         |         |         |         |         |         |
| <u>AIDB OPERATIONS</u>                                                       |         |           |           |         |         |         |         |         |         |         |
| VI. Model - Fattening Ranch 3,500 ha                                         |         |           |           |         |         |         |         |         |         |         |
| 1. Investment Costs .....                                                    | 100.2   | 148.3     | -         | -       | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                                         | -       | (2.4)     | 94.2      | 94.2    | 94.2    | 105.2   | 96.4    | 96.4    | 96.4    | 96.4    |
| 3. Incremental Revenue .....                                                 | -       | (4.7)     | 118.1     | 131.3   | 133.5   | 136.3   | 136.3   | 136.3   | 136.3   | 136.3   |
| 4. Net Incremental Cash Flow .....                                           | (100.2) | (150.5)   | 23.9      | 37.1    | 39.3    | 31.1    | 39.9    | 39.9    | 39.9    | 39.9    |
| 5. Financial Rate of Return = 13.2%                                          |         |           |           |         |         |         |         |         |         |         |
| VII. Model - Privately-Operated Cattle Truck                                 |         |           |           |         |         |         |         |         |         |         |
| 1. Investment Costs .....                                                    | 72.5    | -         | -         | -       | -       | -       | -       | -       | -       | -       |
| 2. Incremental Operating Costs .....                                         | 30.6    | 30.6      | 30.6      | 30.6    | 30.6    | -       | -       | -       | -       | -       |
| 3. Incremental Revenue .....                                                 | 56.8    | 56.8      | 56.8      | 56.8    | 56.8    | -       | -       | -       | -       | -       |
| 4. Net Incremental Cash Flow .....                                           | (45.3)  | 26.2      | 26.2      | 26.2    | 26.2    | -       | -       | -       | -       | -       |
| 5. Financial Rate of Return = 43.10%                                         |         |           |           |         |         |         |         |         |         |         |

1/ Technical and Administrative Services at Headquarters in addition to that of the Market and Stockroute Department and the Slaughter Facilities and Hide Shed Department.

2/ Shows the marginal financial rate of return.

3/ The financial rate of return is negative because the improved hides resulting from the extension efforts of the slaughter facilities and hide shed teams outside the slaughter facilities give no financial revenue to LMB.

4/ In year-20 when the closing cattle inventory is included the value is Eth\$195.2.

ETHIOPIA

SECOND LIVESTOCK DEVELOPMENT PROJECT

Economic Rate of Return

1. The economic rate of return was calculated on the basis of data shown in Appendix 14-1. Key assumptions and adjustments made were that:

- (a) operating costs would remain at current price levels (including labor which was charged at the present wage rates);
- (b) fees charged by the LMB for the use of Project facilities would remain at the same nominal level throughout the life of the Project;
- (c) the current exchange rate is equal to the shadow exchange rate;
- (d) almost a million improved hides would result annually from the extension efforts of the slaughter facilities and hide shed teams outside the Project slaughter facilities and hide sheds;
- (e) beef, valued at Eth.\$ 7.00/head would be saved on each animal using the Project stockroutes; and
- (f) fees charged at slaughter facilities and hide sheds fully reflect the economic benefits from the facilities.

2. Based on these assumptions, the economic rate of return would be about 22%. Should no improved hides originate outside the Project facilities, then the economic rate of return would drop to about 15%. On balance, this Project carries a low risk that the economic benefits would not be realized. However, there would be major organizational problems, especially in staffing, to get the facilities built on schedule.



## ETHIOPIA

## SECOND LIVESTOCK DEVELOPMENT PROJECT

Summary Economic Rate of Return Calculations  
(Eth\$'000)

| Category                                                  | 1                | 2                | 3                | 4                | 5              | 6              | 7              | 8              | 9              | 10-19          | 20             |
|-----------------------------------------------------------|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>INCREMENTAL BENEFITS</b>                               |                  |                  |                  |                  |                |                |                |                |                |                |                |
| 1. Primary Markets and Stockroutes                        |                  |                  |                  |                  |                |                |                |                |                |                |                |
| a. Cattle                                                 | 166.6            | 642.6            | 1,387.4          | 2,270.8          | 2,781.8        | 2,925.3        | 3,049.2        | 3,144.4        | 3,192.0        | 3,192.0        | 3,192.0        |
| b. Sheep and Goats                                        | 33.9             | 130.4            | 273.3            | 436.8            | 531.4          | 557.9          | 581.8          | 599.5          | 608.8          | 608.8          | 608.8          |
| c. Camels                                                 | 4.2              | 16.2             | 47.2             | 79.8             | 120.5          | 126.6          | 133.0          | 137.6          | 139.7          | 139.7          | 139.7          |
| d. Drugs                                                  | 42.0             | 120.0            | 204.0            | 288.0            | 288.0          | 288.0          | 288.0          | 288.0          | 288.0          | 288.0          | 288.0          |
| 2. Marshalling Yards                                      | -                | -                | -                | 40.3             | 80.6           | 120.5          | 161.3          | 161.3          | 161.3          | 161.3          | 161.3          |
| 3. Terminal Markets                                       | 71.4             | 214.3            | 435.7            | 736.2            | 908.9          | 954.3          | 993.5          | 1,025.7        | 1,042.1        | 1,042.1        | 1,042.1        |
| 4. Slaughter Facilities and Hide Sheds                    | 23.2             | 197.1            | 530.9            | 898.1            | 1,128.6        | 1,186.3        | 1,246.4        | 1,299.7        | 1,335.4        | 1,349.5        | 1,349.5        |
| 5. Other Improved Hides <sup>1/</sup>                     | -                | -                | -                | 350.0            | 800.0          | 1,000.0        | 1,200.0        | 1,500.0        | 1,800.0        | 1,800.0        | 1,800.0        |
| 6. Trucking                                               | 46.8             | 160.4            | 364.2            | 568.0            | 568.0          | 454.4          | 340.8          | 170.4          | -              | -              | -              |
| 7. Fattening Ranches                                      | -                | (4.7)            | 108.7            | 358.1            | 632.3          | 665.9          | 675.9          | 681.5          | 681.5          | 681.5          | 976.0          |
| Sub-total                                                 | 388.1            | 1,476.3          | 3,351.4          | 6,026.1          | 7,840.1        | 8,279.2        | 8,669.9        | 9,008.1        | 9,248.8        | 9,262.9        | 9,267.4        |
| <b>INCREMENTAL OPERATING COSTS</b>                        |                  |                  |                  |                  |                |                |                |                |                |                |                |
| 1. LMS Operations                                         | 722.6            | 1,692.8          | 2,904.2          | 3,867.0          | 4,139.2        | 4,127.5        | 4,101.7        | 3,951.0        | 3,970.6        | 3,984.6        | 3,984.6        |
| 2. Private Trucking                                       | -                | -                | 61.2             | 153.0            | 153.0          | 153.0          | 153.0          | 91.8           | -              | -              | -              |
| 3. Fattening Ranches                                      | -                | (2.4)            | 89.4             | 277.8            | 471.0          | 482.0          | 495.2          | 499.6          | 482.0          | 482.0          | 482.0          |
| Sub-total                                                 | 722.6            | 1,690.4          | 3,054.8          | 4,297.8          | 4,763.2        | 4,762.5        | 4,749.9        | 4,542.4        | 4,452.6        | 4,466.6        | 4,466.6        |
| <b>INVESTMENTS</b>                                        |                  |                  |                  |                  |                |                |                |                |                |                |                |
| 1. LMS Headquarters Technical and Administrative Services | 514.1            | 580.7            | 529.0            | 437.0            | -              | -              | -              | -              | -              | -              | -              |
| 2. Markets and Stockroutes                                | 1,237.6          | 1,646.9          | 2,136.0          | 1,367.0          | -              | -              | -              | -              | -              | -              | -              |
| 3. Slaughter Facilities and Hide Sheds                    | 659.5            | 1,109.0          | 1,187.7          | 780.0            | -              | -              | -              | -              | -              | -              | -              |
| 4. Trucking                                               | 145.0            | 145.0            | 217.5            | 217.5            | -              | -              | -              | -              | -              | -              | -              |
| 5. Fattening Ranches                                      | 190.2            | 438.7            | 587.0            | 386.6            | -              | -              | -              | -              | -              | -              | -              |
| Sub-total                                                 | 2,746.4          | 3,920.3          | 4,657.4          | 3,188.1          | -              | -              | -              | -              | -              | -              | -              |
| <b>NET BENEFITS</b>                                       | <b>(3,080.9)</b> | <b>(4,134.4)</b> | <b>(4,360.8)</b> | <b>(1,459.8)</b> | <b>3,076.9</b> | <b>3,516.7</b> | <b>3,920.0</b> | <b>4,465.7</b> | <b>4,796.2</b> | <b>4,796.3</b> | <b>5,090.8</b> |

Economic Rate of Return = 21.52

- 1/ Eth\$7.00/head of meat is saved for every animal that uses the stockroute.
- 2/ Increased value of improved hides coming from outside the slaughter facilities and hide sheds, mainly as a result of the efforts of the slaughter facilities and hide shed teams and the demonstration effect of the hide sheds. Increased value per hide estimated at Eth\$2.00.



