ADDIS ABABA CHAMBER OF COMMERCE AND SECTORAL ASSOCIATIONS

Final Report

On

The Study on

Livestock Resources: Potentials, Constraints, and Prospects for Private-Sector Development

July 2006
## Table of Contents

I. EXECUTIVE SUMMARY .................................................................................. v

II. INTRODUCTION .......................................................................................... 1

   2.1 Background ................................................................................................. 1
   2.2 Objectives of the Study ................................................................................. 2
   2.3 The Study’s Coverage and Scope ................................................................. 2
   2.4 The Methodology of the Study ..................................................................... 3

III. SURVEY RESULTS AND SITUATION ANALYSIS ..................................... 5

   3.1 Livesock Resources ...................................................................................... 5

      3.1.1 Livestock Population ............................................................................ 5
      3.1.2 Livestock Off-Take ................................................................................. 10
      3.1.3 Spatial Livestock Distribution by Type ................................................. 10
      3.1.4 Other Resources .................................................................................... 11

   3.2 The Government’s and Partner Organizations’ Interventions ...... 23

      3.2.1 Past Interventions ............................................................................... 23
      3.2.3 The Current Government-Related Services in Livestock .............. 32
      3.2.4 Private-Sector Interventions ............................................................... 35

   3.3 Public-Sector Institutions ......................................................................... 48

      3.3.1 Pastoral Commissions ........................................................................ 48
      3.3.2 Regional Governments ........................................................................ 49

   3.4 Domestic and International Markets ......................................................... 62

      3.4.1 Demand ............................................................................................... 62
      3.4.2 Supply ................................................................................................. 69
3.5 Existing Infrastructure and Incentives ............................................87

IV MAJOR FINDINGS ..............................................................................98

4.1 Major Development Gaps .................................................................98
4.2 Potential Areas for Intervention ....................................................115

V. CONCLUSION AND RECOMMENDATIONS ..................................122

ANNEX I: NON-COMMERCIAL PROJECT IDEAS ..............................5

ANNEX-III: A LIST OF THE PARTICIPANTS OF THE VLIDATION WORKSHOP
...........................................................................................................16

ANNEX- IV: A CHECKLIST OF ISSUES AND QUESTIONNAIRE ........18

A List of Tables

Table 1: The estimated number of cattle by sex, age, breed, and purpose 6
Table 2: The estimated number of sheep and goats by sex, age, and breed .................................................................8
Table 3: The estimated number of camels by sex and purpose ..........9
Table 4: The estimated number of poultry by breed .........................9
Table 5: The estimated number of beehives by type and honey production .........................................................................10
Table 6: The spatial distribution of livestock by species type ..........11
Table 7: The feed resources annually available for the livestock in the highlands .................................................................12
Table 8: The feed resources available for the livestock in the pastoral areas ........................................................................13
Table 9: Classified land area by use type ...........................................16
Table 10: Ethiopian surface water resources by major river basins ....17
Table 11: Milk production from cattle and camel under traditional and improved management .................................................20
Table 12: The productivity of cattle, sheep and chicken in meat under different management systems .........................................21
Table 13: On-station performance of indigenous, exotic and local crosses for dairy purposes in the Ethiopian highlands* ............22
Table 14: Achievements in the sub-project areas from 1976-1986 ......25
Table 15: Current livestock-related investment interventions ..........50
Table 16: Livestock investment opportunities in the SNNP by location, availability of land and suitability ...............................56
Table 17: A summary of private livestock production investments in the SNNPR (1985-to date) ................................................................. 57
Table 18: The rural land-rent rate per year in the SNNP by zone and special woredas ........................................................................................................ 58
Table 19: The rural agricultural land-rent per year in the SNNP by investment type ................................................................................................. 58
Table 20: The per capita consumption of meat (cattle, sheep and goat) and milk and eggs (kg), 1999-2004 ................................................................. 62
Table 21: The projected demand for cattle, sheep and goat meat and eggs (kg), 2006-2010 ...................................................................................... 64
Table 22: The projected demand for milk (kg), 2006-2010 .......................... 65
Table 23: The meat availability, import and consumption of selected Middle-East countries (metric tons) 1997-2002 .................................................. 68
Table 24: Meat import of selected Middle East countries by livestock species (metric ton), 1997-2002 ................................................................. 68
Table 25: Projected domestic supply of meat and live animals for Ethiopia, 2006-2010 ......................................................................................... 69
Table 26: Estimate of annual live animals, hides and skins leaving Ethiopia via contraband trade ................................................................. 72
Table 27: Live animal and meat export over the last five years .................. 79
Table 28: Sheep and goat annual slaughter capacity of export abattoirs in the central highlands of Ethiopia .......................................................... 81
Table 29: Number and type of human resources presently available and planned in the future in animal health, 2006 ........................................... 81
Table 30: The current and planned regional veterinary laboratories in the country .................................................................................................. 90
Table 31: The current human resource (technical) status of veterinary laboratories .................................................................................................. 91
Table 32: Land availability for livestock investment by location and enterprise suitability in the SNNP ................................................................. 96

**Acronyms**

AACC : Addis Ababa Chamber of Commerce

AADD : Addis Ababa Dairy Development Project (AADDP)

ADB : African Development Bank

ADLI : Agricultural Development-Led Industrialization

AHS : African Horse Sickness

AIDB : Agricultural and Industrial Development Bank

CBPP : Contagious Bovine Pluro Pneumonia

CCPP : Caprine Contagious Pluro Pneumonia

CPO : Cooperative Promotion Office

CSA : Central Statistical Agency

DDA : Dairy Development Agency

DDE : Dairy Development Enterprise

EIAR : Ethiopian Institute of Agricultural Research
ESRP : South East Range Land Project
EU : European Union
FAO : Food and Agriculture Organization
FLDP : First Livestock Development Project
FMD : Foot and Mouth Disease
IDA : International Development Association
ILRI : International Livestock Research Institute
JIRDU : Jijjiga Range Lands Development Unit
LEAP : Livelihood Enhancement for Pastoralists and Agro-Pastoralists Program
LLP : Leather and Leather Products
LLPTI : Leather and Leather Products Technology Institute
LMB : Livestock and Meat Board
LSD : Lumpy Skin Disease
LUPRD : Land Use Planning and Research Department
LVIA : La Volenteerian Italian Association
MOA : Ministry of Agriculture
MoARD : Ministry of Agriculture and Rural Development
MOTI : Ministry of Trade and Industry
NAHRC : National Animal Health Research Center
ND : New Castle Disease
NGO : Non-Governmental Organization
NORDU : Northern Range Development Unit
NTTCC : National Tsetse and Trypanosomiasis Control Center
NVI : National Veterinary Institute
PLC : Private Limited Company
PPR : Peste des Petits Ruminants
RSDP : Road Sector Development Program
SDDP : Selalle Dairy Development Project
SDPRP : Sustainable Development and Poverty Reduction Program
SERP : Southern and Eastern Range Project
SIT : Sterile Insect Technique
SLDP : Second Livestock Development Project
SNNPR : Southern Nations, Nationalities and Peoples Region
SORDU : Southern Range Development Unit
STEP : Southern Tsetse Eradiation Project
TLDP : Third Livestock Development Project
TLU : Tropical Livestock Unit
UNIDO) : United Nations Industrial Development Organization
USA : United States of America
USAID : United States of America International Development Agency
VAT : Value Added Tax
WFP : World Food Program
I. EXECUTIVE SUMMARY

Introduction

This study on livestock resource potentials, constraints and opportunities for intervention by the private sector was undertaken by ITAB CONSULT PLC, in accordance with the agreement it had signed with the Addis Ababa Chamber of Commerce and Sectoral Associations, and with financial support from the Swedish International Development Agency (Sida).

The study aims at assessing the resource potential, constraints and areas of intervention for the business community and other stakeholders. It also focuses on the identification of the right type of participation toward the sustainable development of the livestock industry so as to make it duly contribute its share to the overall economic development of the country.

The study covers the production and distribution of livestock species (cattle, sheep goats, camel, poultry, and bees) and the marketing and processing of their products (live animals, meat, milk, hides and skins, eggs, and honey). Such services as extension, veterinary and artificial insemination (AI) and infrastructure have also been addressed, in relation to livestock resources.

Quantitative and qualitative data were collected for use in the study. Quantitative data were collected from such secondary sources as the publications of the Central Statistical Agency (CSA), the annual reports of the National Bank of Ethiopia (NBE) and of the Food and Agriculture Organization (FAO). The qualitative information was gathered through checklists, semi-structured and open questionnaires and discussions with the pertinent federal and four regional states, selected enterprises, sectoral associations and individuals. The assessment was, nevertheless, constrained by the unavailability of consistent and updated data on distribution, production, processing and marketing as well as by the limited coverage of the pastoral areas by the CSA. Lack of information and the reluctance of some regional investment bureaus to avail themselves for team interviews and discussions have also contributed to the constraint.

The Results of the Survey

Livestock Resources

Ethiopia owns immense but largely untapped livestock resources scattered over a diverse agro-ecology. These resources are concentrated in four regional states: Oromiya, Amhara, SNNPR and Tigray. The Borana zone of Oromiya and the Somali and Afar regions, which are predominantly pastoral, are the major
sources of marketable animals. The country’s main livestock resources that have both monetary and food value for humans are cattle, shoats, camels, poultry and bees.

Annual growth rates for large and small ruminants are estimated at 1.1% and -0.2% over the period 1990-93, respectively. This compares unfavorably with the corresponding figure for the human population’s annual growth rate of 2.9% over the same period. This gap is a cause for concern, since the sub-sector is failing to supply adequate food to satisfy the domestic and export needs of the country.

**Land, Animal Feed and Water Resources**

The country possesses a total of 111.5 million ha of land, which is used in the following proportions: 51% for grazing and browsing, 18% unutilized, 15% for crop production, 12% retained in forest, shrubs and bushes and 4% kept as unproductive (MOA, 1993). Agro-ecologically, the upper highlands are suitable for sheep production, whereas the area within 1500-3000 meters above sea level is suitable for both livestock and crop production. The lowland areas with elevations of less than 1,500 meters above sea level, for their part, have high potential for perennial crop and livestock production.

Animal feed source options in the country include grazing and browsing (permanent grazing land, fallow crop land, and stubble, following harvest) and industrial byproducts. The indications are, however, that there is a chronic shortage of animal feed in the country due either to the seasonality in the availability thereof and the poorly developed animal feed conservation method for use during lean years. The current national animal feed demand is estimated at 95.8 million tons of DM, whereas the supply thereof amounts only to 65.6 million tons of DM—leaving an unsatisfied huge gap.

The highland areas are well endowed with water for livestock consumption, but the water in the lowland pastoral areas is a rare and precious resource. Massive water development has to, therefore, be undertaken at strategic places, if the livestock resource is to be put to use properly. In addition to availability, the quality of the water is an area of high concern, as all potential livestock areas in the low lands are virtually remote from the places where they can access tapped clean water.

**Trained Human Resources and Livestock Services**

Both the federal Government and the regional states have given due attention to the development of trained human resources of different caliber in all sectoral disciplines, including the animal sciences. Accordingly, the existing institutions of higher learning, including the universities, are being strengthened and expanded, and new ones are being opened at strategic
locations—the ultimate aim being to enable each regional state to be self-sufficient in producing most of the trained human resources it would need.

Despite the existence of a considerable number of trained personnel in the field, the husbandry and health status of the Ethiopian livestock is at its lowest possible level. Except for rinderpest, the major livestock diseases of public-health importance have not as yet been fully controlled, or eradicated. In the husbandry area, poor management practices, including poor genetic potential, still lead to low productivity and poor product quality. Complex factors, including shortage of skilled human resources, have contributed to the low productivity of the livestock industry in the country. In general, there is limitation in prioritizing needs during development planning and allocating the scarcely available resources.

The Government’s and Partner Organizations’ Interventions

Over the past four decades, the Ethiopian Government and its partner organizations have sponsored various development interventions with a view to creating economic linkages between rural and urban settings. The development interventions were initiated and implemented at different times, mainly on cattle, and included nationwide, regional and specific-area livestock development programs and project-based government interventions. The efforts were made with financial support from bilateral and multilateral organizations.

The livestock development project that is currently being implemented in the country is the National Livestock Development Project. The project aims at achieving a sustainable increase in the incomes of households that keep livestock in order to attain greater food security, reduce poverty and contribute to the country’s foreign-exchange earnings.

In addition to the National Livestock Development Project, an organization known as Land O’ Lakes is at present implementing the Ethiopia Dairy Development Project. This project will be funded by USAID for a period of five years, and aims at developing milk-shed areas in selected areas of Oromiya, including Addis Ababa, and some regions like Amhara and Tigray. ACDI/VOCA, too, in partnership with Save the Children and CARE, has launched a market-access and cooperative development program as part and parcel of USAID’s Livelihood Enhancement for Pastoral Communities and Agro-Pastoralists (LEAP) Program. The USAID, in collaboration with the MoARD, has funded projects aimed at upgrading the quality of Ethiopian sheep and goats and at developing the sanitary and phytosanitary situation of the meat industry and thereby improving the country’s meat and livestock exports.

Private-Sector Interventions and Existing Motivations
The private sector’s participation in the development effort of the livestock industry is still minimal. There are, however, indications that it is determined to get involved in the production, processing and marketing of livestock and livestock products in earnest. Fully aware that economic development cannot be achieved unless the private sector, too, participates and thereby complements the public effort in this regard, the policymakers, for their part, have of late begun creating an environment that is conducive for its (the private sector’s) active involvement.

If an environment that is favorable for its participation is created and mechanisms whereby it is encouraged to do so are put in place, there is no reason why the private sector will not actively participate in the national development effort. Creating for the private sector such an environment and coming up with a mechanism whereby it will be motivated into participation, of course, translate into, among other things, making it easy for it to access land, providing it with tax holidays, and ensuring the full respect of property rights.

There are, nonetheless, a host of challenges that private investment in the livestock industry will have to overcome. These, to mention just a few, are the following:

- Weak and poorly implemented policies;
- Under-developed infrastructure;
- An inadequate market information system;
- Stiff competition on the world market;
- Weak linkages and lack of coordination among the various support-giving institutions;
- A feeble technological and extension delivery; and
- Lack of strong institutions representing the interests of the private sector.

The Major Development Gaps

Animal feed shortage, heavy reliance on the public sector for animal health and AI services, a high prevalence of many diseases, a paucity of improved breeds in the national herd/flock, the weak delivery of technological inputs and extension services and poor research and extension linkage are a few of the major production gaps.

At the processing level, the low participation of the private sector, the inadequate coverage of the public service of many production systems, the weak infrastructure development that leaves much to be desired in terms of connecting the high production potential areas with the high demand and consumption centers, an acute shortage of surplus production to justify the establishment of processing units in some low production areas of the country, subsistent orientation of small-holder producers, poor linkage between small-
holder producers and processors, the low quality of the raw materials that are produced the traditional way, the under-developed quality control and standards are the major development gaps.

Livestock marketing is constrained by the absence of a domestic market information system, a heavy reliance on the public sector for animal health services, poor facilities for health services, under-developed livestock transportation systems, repetitive taxation and absence of ranches and feedlots to ensure the reliable and uninterrupted supply of animals for both the domestic and the world markets. The major gaps associated with the export markets are that the domestic prices of live animals are constantly increasing parallel to the cost of feeding and transporting them, whereas they (the live animals) fetch lower prices on the Middle East markets due to poor quality and weak sanitary and phytosanitary situations. Trade operators lack access to important market decision-support information such as market trends, attitudes, the changing habits of consumers, changes in the distribution channels, substitute products, demographical changes, tariffs, rules, regulations and trade restrictions in the importing countries.

The institutions associated with livestock markets in the industry comprise the Live Animal Traders Association, the Tanners Association, Dairy Cooperatives and Unions, Pastoral Live-Animal-Marketing Cooperatives, the Meat Exporters Association, the Beekeepers Association, Chambers of Commerce and Sectoral Associations, and the Livestock Marketing Authority. Depending on the strengths and weaknesses of their leadership and years of work experience, the associations are found at different stages of development and face varying constraints. The interaction among the different associations is so weak that they cannot be expected to form the necessary sub-sectoral synergies and thereby be more effective.

The Potential Areas of Intervention

To enhance the development process in the livestock industry, the areas for immediate policy intervention include the creation of disease-free zones, an urgent action on honey and beeswax adulteration, policy formulation on live-animal transportation, protection and support for livestock commodity-based cooperatives and unions. Furthermore, the development of the infrastructure, especially the marketplaces, roads, telecommunications, electric power and other essential facilities; the incorporation into the implementation process of the commodity-based extension strategy of integrated health, breeding, feeding and genetic improvement components are within the domain of the public sector.

Forage seed production and distribution, multiplication and distribution of improved animal genotypes (heifers, bulls, rams, bucks, and cockerels), more involvement in dairy, meat, hides and skins and honey processing are the
potential areas for private-sector intervention. In the area of livestock trade, the provision of en-route facilities such as resting grounds with feeding, health and watering equipment at cost are also possibilities for private-sector investment. Further intervention opportunities for the private sector are artificial insemination (AI), veterinary, abattoirs and slaughter services, and live-animal transport services.

Project profiles have been prepared for the potential areas identified for private-sector interventions in this study.

The role of the private-sector institutions shall be advocating for the design of appropriate policies, rules and regulations, including their effective implementation by the federal Government and the regional states, to facilitate and create an enabling environment for the production, processing and marketing of livestock and livestock products on behalf of their members. They also need to build their financial and technical capacities by being engaged in income-generating activities.

**The Conclusion of the Study**

In spite of the substantial resource endowment and the various important cultural and economic roles that livestock plays in the lives of the farmers and pastoral communities, its contribution to the industry and to the agricultural and overall GDP is unduly low, standing only at 35% and 18%, respectively. The major contributing factors to the low performance of the sub-sector are, of course, the following:

- The subsistence-production-orientation of farmers;
- Low production and productivity;
- Under-developed processing opportunities;
- A weak technological and extension support;
- Poorly developed infrastructure;
- Restrained livestock markets;
- Lack of an effective policy support; and
- Weak private-sector participation.

Based on the conclusions drawn by the situation analysis done on the past and present livestock sub-sector, the following are the recommended actions by all concerned stakeholders toward the development of this industry:

- Strengthening extension services aimed at increasing the productivity of the livestock sub-sector, with a view to increasing its socio-economic contribution;
- Providing more quality services in the areas of feeding, housing, breeding and health;
Increasing the area coverage of the services to reach the potential corners in the country;

Mobilizing the concerted effort of both the public and private sectors;

Enhancing the efforts of the federal and regional governments to make a positive stride in this area;

Increasing the participation of the private sector to complement public services;

Gearing public services toward those locations that are not, for the time being, attractive to private investors due to various reasons, including the under-developed infrastructure;

withdrawing the public sector from services that can be efficiently handled by the private sector and confining it to regulatory functions in the long run; and

Forging economic ties between large commercial farms and small-holder farmers for their mutual economic benefits.

The potential private investment areas currently conceived include the following:

- Service delivery (vet, artificial insemination, transportation and marketing);
- Forage seed production;
- Establishing and running commercial dairy farms;
- Multiplication and dissemination of improved animal genotypes;
- Collecting and processing milk and honey; and
- Operation of abattoirs/slaughterhouses.

In this study, three major areas constituted a solid recommendation for the AACCSA to render development support to the livestock industry. These are indicated below in an ascending order:

There is a need for a more aggressive move toward strengthening and empowering trading institutions such as associations for live animal trade, meat export trade, leather and leather products trade, honey trade and others. This could be achieved through sectoral associations once their capacities have been properly enhanced. So far, no attempt has been made to create synergies among these associations, with a view to concerting their efforts and making them powerful pressure groups that positively influence policies and promote
their best interests. Nor do they have the technical know-how and the financial self-sufficiency that they (the associations) need to attract capable leaders.

One of the major constraints of the livestock trade at both the domestic and international levels is lack of market information. The Addis Ababa Chamber of Commerce and Sectoral Associations should, therefore, make it a point to engage the Ethiopian Government in a policy dialogue toward the establishment of efficient and effective domestic and export livestock-information centers. The centers will have to, of course, be established in strategic areas, so that they will be close to those who are engaged in livestock trading and can thus readily provide them with the relevant information—information that will go a long way in helping them make the right marketing decisions.

Participation in regional and international trade fairs, exhibitions and experience-sharing tours is one way of luring new investors into the livestock trade. The Addis Ababa Chamber of Commerce and Sectoral Associations could throw its weight behind the effort to organize such events, too—with the active participation of prospective entrepreneurs.
II. INTRODUCTION

2.1 Background

The diversified agro-ecological and climatic setting that Ethiopia is endowed with has offered it a potential agricultural development opportunity. So if the country can rise to the challenge of seizing this opportunity, it will definitely be able to bring about sound and sustained economic growth and development. Properly planned and managed with available livestock and plant resources, in conjunction with an appropriate policy environment, this potential could put the country on the right track to food self-sufficiency. According to LUPRD 1981, MOA 1996, the country's total land area is estimated at 111.5 million hectares. Of this, 66% is said to be suitable for agriculture—including livestock production.

The total human population for the year 2006 was estimated at 75,067,000. Of this total, 16% were assumed to reside in urban areas, and 84% in rural areas. The same demographic estimate puts the age structure distribution at about 24% and 7.0% for those below 14 years of age and above 54 years of age inclusive, respectively.

The livestock sub-sector dependency of the rural population as given by Winrock, 1992, is indicated as 7.8% solely livestock dependent, 14.6% predominately livestock-dependent and 74.5% dependent on crop production. The production system of the latter is mixed crop-livestock farming with the dominant operation serving as the main source of income.

Though subsistence in its nature, the agricultural sector in Ethiopia is a major player in the country's economy. The mode of production is highly traditional, based on small-scale fragmented pieces of land, and aims mainly at satisfying household daily needs. Large-scale, privately owned, mechanized and market-oriented production is, to a large extent, a recent phenomenon that followed the privatization of the various publicly owned farms and the introduction by the Government of certain incentives to attract private investors to the agricultural sector.

Considering the global situation, it is worth-noting here that the countries that are enjoying a good standard of living at present are those that have a well-developed animal agriculture. This line of development has helped them build strong nations that have sound economies and healthy citizens. In the Ethiopian context, despite the huge livestock population that the country possesses, the contribution that livestock makes to the overall national economy of the country is low.

It is assumed that the contribution of this sub-sector to the total agricultural output is about 18%, and to the total GDP around 35%. Livestock, however,
makes a significant contribution to the economy in a different way, in that more than 90% of the land used for producing crops is cultivated by using about 7.1 million oxen—both in the highland and mid-altitude areas.

The general performance trend of the livestock sub-sector, which is similar to that of many other sub-Saharan African countries, is below expectations. As a matter of fact, it has been steadily declining over the years (ILRI, 1995). This is attributable to the inefficient productivity of livestock, arising mainly from poor feeding, lack of quality health care, poor supporting services, low capital investment in human and fixed assets and, to a lesser extent, low commodity output due to reasons related to genetic limitations.

It is in recognition of these facts that the Addis Ababa Chamber of Commerce and Sectoral Associations, with financial support from the Swedish International Development Agency, commissioned ITAB CONSULT PLC to undertake this study on livestock resources, constraints and potentials for private-sector participation.

2.2 The Objectives of the Study

The major objectives of the study are to assist the business community in deciding where, when and how to intervene in the development of the livestock sub-sector and to identify the required advocacy interventions to influence government policies and regulations for the creation of an enabling environment for private-sector participation.

The major objectives of this study are, therefore, the following:

- To analyze available data;
- To identify the livestock resources and related activities that have potential for private-sector intervention on a commercial basis;
- To identify the required policy interventions needed on the part of the Government and other institutions, such as the private-sector associations; and
- To create an enabling environment, with due emphasis on the ways that the public and private interventions can be linked and organized for a more effective economic development.

2.3 The Study’s Coverage and Scope

The study covers the production, processing, marketing and distribution of livestock (cattle, sheep, goats, camel, poultry, and bees) and livestock products, live animals, meat, milk, hides and skins, eggs, and honey).
It also covers services and infrastructure in relation to livestock resources. These include extension, veterinary, artificial insemination, and transport (land, sea and air transport). In order to achieve the above-stated objectives, the following were carried out:

- Review of the potential livestock resources of the country by region, in terms of number and quality;
- Review of the contributions made by the private sector so far to the development of the sub-sector at the production, processing, marketing and distribution stages;
- Review of the supply and demand situation of both domestic and international markets with regard to live animals, carcass, and other livestock products;
- Study and identification of livestock management, marketing, policy, infrastructure, legal, educational, institutional and other related constraints of the sub-sector;
- Assessment and identification of development gaps that should be filled by the public and private sectors to rationally tap the potential resources;
- Identification of feasible intervention areas for the private sector; and
- Development of project profiles for same.

2.4 The Study Methodology

Both quantitative and qualitative approaches were used in the study. Quantitative data were collected mostly from secondary sources such as CSA publications, the annual reports of the NBE and of FAO. The qualitative information is gathered through checklists, semi-structured and open questionnaires and discussions with the representatives of the pertinent federal and regional offices, associations, the business community, and individuals.

At the initial stage, available documents were reviewed. Then, livestock production and marketing practices were identified and thoroughly assessed. Most of the data were collected from Government Ministries and Agencies, including the Ministry of Agriculture and Rural Development, the Ministry of Trade and Industry, the Ministry of Water Resources, the Central Statistical Agency and the Ethiopian Investment Agency.
In addition, secondary data were collected from the Pastoral Commission/Offices of Oromiya, Somali and SNNPR, as they are responsible for the development of the livestock in their respective pastoral areas. The investment offices of the selected regions were also contacted for data on the various livestock resource bases, investment policies and guidelines.

Data were collected from the Ethiopian Institute of Agricultural Research (EIAR), the Ethiopian Society of Animal Production, the International Livestock Research Institute (ILRI), the Addis Ababa University, the Institute of Development Research, VOCA Ethiopia and SNV as well.

Prior to the launching of field visits, instruments of data collection were prepared for the study. These instruments included checklists for the information to be collected from various research documents and studies on different aspects of livestock, for the questions to be posed to government organizations, and for the issues selected for discussion with entrepreneurs.

Focused discussions regarding livestock resources potentials, constraints, prospects and policies were conducted with officials and experts of the federal and selected regional offices. At the federal level, the offices included the Livestock Development Department, the Marketing Department, and the Animal Health Department of the Ministry of Agriculture and Rural Development, as well as the Export Promotion Department of the Ministry of Trade and Industry. The regions selected for focused discussions were Oromiya, Amhara, SNNPR and Somali. The first three regions were selected because most of the livestock resources are in these regions, whereas Somali represents pastoral areas and harbors the highest camel population of the country.

Furthermore, surveys and discussions were conducted with private entrepreneurs and private-sector organizations. To this end, samples of private-sector livestock projects engaged in the production, processing and marketing of livestock, which were considered to be representative were selected for the surveys and discussions. As the objective was to collect relevant and adequate information, only those that were believed to have good records and able to provide information were selected from the list of projects or of entrepreneurs, in consultation with the experts of the Ministry of Agriculture and Rural Development. Discussions with private-sector organizations included those held with Chambers and Sectoral Associations. Finally, the findings of this study were enriched by a one-day workshop organized by AACCSA. Representatives of various pertinent organizations participated in this workshop and made important contributions in the in-group and plenary sessions, following the presentation of the findings by the consultancy. The major suggestions forwarded at this workshop have been incorporated into this document.
2.5 Limitations of the Study

Undertaking an accurate assessment of the agricultural sector in general and the livestock sub-sector in particular in Ethiopia is virtually impossible. Finding reliable and recent data on resource endowment, including the livestock population, production, productivity, processing and marketing and consumption parameters is one of the problems faced while undertaking this study. Due to lack of a central data bank and the poor communication among the major national data-producing organizations, different sources (e.g., CSA, MoARD and FAO) give varying temporal and spatial figures on the same parameter. To overcome such disparities, the team agreed to adopt CSA’s data, since it is the officially mandated source for the country. It is only in the absence of such data that the team reverted to the use of other data sources.

Another area of constraint in the use of data lies in the limited coverage of the CSA data on the pastoral and agro-pastoral production systems. It is only in very few years of the CSA survey studies that these production systems have been covered. That, of course, has severely limited the availability of data for wider references.

Some of the entrepreneurs, especially in the areas of honey and wax export, were unwilling to hold any discussions with this study team. That was reflected by their failure to show up at the appointed time, saying that they had to attend to an urgent matter, and so forth, rather than through an outright refusal to participate in the discussions. Similarly, the representatives of a few of the regional Investment Bureaus were reluctant to meet with the team (e.g., the Amhara Regional State), whereas others were unable to avail themselves (e.g., the Oromiya Regional State) at the time of the team’s visit due to prior commitments to other tasks such as meetings.

III. SURVEY RESULTS AND A SITUATION ANALYSIS

3.1 Livestock Resources

3.1.1 Livestock Population

Ethiopia is blessed with immense and largely untapped livestock resources, which can be used as instruments of development provided they are properly managed with an appropriate policy. Ethiopia’s agro-ecology can be broadly divided into highlands (≥1500 m above sea level) and lowlands (<1500 m below sea level).

The lowlands, which are commonly referred to as “pastoral areas,” are found in the Eastern, South Eastern and Southern parts of the country. In reference to the administrative structure, these are largely the Afar, Somali, and Borana in the Oromiya Regional State and the Omo Valley in the SNNP Regional State.
Not only are livestock resources the main subsistence base for the people but also the preferred commodities for the export market.

The country's main livestock resources that have both monetary and food value for humans are cattle, sheep and goats (shoats), camels, poultry and honey. Accordingly, a quantified situation analysis of these resources is briefly presented here below.

a) Cattle

The current cattle population of Ethiopia is estimated at about 40.4 million heads, of which 44.9% and 55.1% are reported to be males and females, respectively, as presented in table 1 below.

Table 1: The estimated number of cattle by sex, age, breed and purpose

<table>
<thead>
<tr>
<th>Age, Breed and Purpose</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>Total</td>
<td>40,380,098</td>
<td>100</td>
<td>18,113,961</td>
</tr>
<tr>
<td>Under 6 months</td>
<td>3,802,609</td>
<td>9.42</td>
<td>1,850,628</td>
</tr>
<tr>
<td>6 months - &lt; 1 year</td>
<td>3,177,446</td>
<td>7.87</td>
<td>1,530,558</td>
</tr>
<tr>
<td>1 years - &lt; 3 years</td>
<td>6,303,101</td>
<td>15.61</td>
<td>2,799,692</td>
</tr>
<tr>
<td>3 years - &lt; 10 years</td>
<td>25,773,657</td>
<td>63.83</td>
<td>11,255,560</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>1,323,285</td>
<td>3.28</td>
<td>677,523</td>
</tr>
<tr>
<td>Cattle by breed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40,380,098</td>
<td>100</td>
<td>18,113,961</td>
</tr>
<tr>
<td>Indigenous</td>
<td>40,091,011</td>
<td>99.28</td>
<td>18,002,266</td>
</tr>
<tr>
<td>Cross-bred</td>
<td>263,284</td>
<td>0.65</td>
<td>102,966</td>
</tr>
<tr>
<td>Exotic</td>
<td>25,803</td>
<td>0.06</td>
<td>8,729</td>
</tr>
<tr>
<td>Aged ≥ 3 years by breed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25,773,657</td>
<td>63.83</td>
<td>11,255,560</td>
</tr>
<tr>
<td>Used for milk</td>
<td>6,221,593</td>
<td>15.41</td>
<td>6,221,593</td>
</tr>
<tr>
<td>Used for draft</td>
<td>10,420,352</td>
<td>25.81</td>
<td>10,286,769</td>
</tr>
<tr>
<td>Used for beef</td>
<td>290,425</td>
<td>0.72</td>
<td>216,750</td>
</tr>
<tr>
<td>Used for breeding</td>
<td>7,448,052</td>
<td>18.44</td>
<td>376,682</td>
</tr>
<tr>
<td>Used for other purposes</td>
<td>1,393,236</td>
<td>3.45</td>
<td>375,359</td>
</tr>
<tr>
<td>Dairy Animal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy cows</td>
<td>6,221,593</td>
<td>15.41</td>
<td>6,221,593</td>
</tr>
<tr>
<td>Milking cows</td>
<td>8,194,238</td>
<td>20.29</td>
<td>8,194,238</td>
</tr>
</tbody>
</table>

Source: CSA, 2005/06

The distribution of the above cattle population in terms of age, blood-line and function is as provided here below.

i) Age Distribution

Sucklers and growing calves account for about 8.4%, in the case of the males, and 8.9%, in the case of the females. The herd structure in both sex categories is dominated by age groups of 3-10 years, whereas older animals beyond the age of 10 years constitute less than 2% in both groups (Table 1).
ii) Blood-Line Distribution

As can be expected, the cattle herd in the country is dominated by the indigenous blood group. Crossbreds and exotic animals account for less than 1% of the total herd (see table). This negligible number of improved genotypes in the national herd composition will have a profound impact on the productivity of the herd as will be discussed later on.

iii) Functional Distribution

As can be surmised by closely looking at Table 1, in Ethiopia, cattle are bred and kept for multiple purposes. There is no one particular function, which is so dominant in its contribution over the other uses, though males are usually kept mainly for draft, and females for milk production and breeding. These major purposes for both sexes have accounted for their relatively high contributions as can be seen from the table. Despite the general belief that only the males are used for draft, this study has found out that cows, too, are occasionally used for this purpose, even though their number is insignificant.

Ethiopian cattle are, in general, poor milk producers, and their main uses are limited to the supply of draft power and beef. As a source of beef, though only a small percentage (0.72) is utilized, the amount can be increased by increasing the off-take rate in the pastoral areas. That, of course, calls for the creation of conditions that are favorable for marketing. In addition, better export earnings can be obtained by targeting male animal marketing at younger ages than is currently done.

b) Sheep and Goats

The respective sheep and goat populations in Ethiopia are 20.7 and 16.4 million. Of these, 25.8% of the sheep and 30.2% of the goats are males, and 74.2% of the sheep and 69.9% of the goats females (Table2).

i) Age Distribution

The flock structure in both species is dominated by younger age groups—to be more exact, by those that are less than one year old and those that are above two years old, with the exception of male sheep where the proportion of males that are more than two years old is low. The proportion of animals of one to two years of age in the flock is low under both species, since marketing takes place at this age usually under low live weight conditions.

ii) Blood-Line Distribution
As in the cattle herd, and probably even more pronounced here, almost all Ethiopian sheep and goat flocks are of indigenous blood. Exotics and crosses contribute a negligible portion, more so in the case of the sheep than in the case of the goats (Table 2).

### iii) Functional Distribution

Sheep are reared for mutton, wool and breeding purposes, whereas goats are kept for milk, meat and breeding. Of all the purposes for keeping sheep, breeding (2.5%) and mutton (2%) are more important than any other factor, in the case of the male population, whereas breeding is the single most vital reason for the females. Milk (3%) for the female and breeding for both sexes (4% for males and 37.3% for females) appear to be the main reasons for keeping goats. Highlanders are not used to eating goat meat and drinking goat milk, though the trend in the consumption of goat meat in the major towns of the highlands is currently increasing.

#### Table 2: The estimated number of sheep and goats by sex, age, breed and purpose

<table>
<thead>
<tr>
<th>Age and Breed</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total sheep</strong></td>
<td>20,733,913</td>
<td>5,339,509</td>
<td>15,394,404</td>
</tr>
<tr>
<td>Under 6 months</td>
<td>3,961,912</td>
<td>2,899,058</td>
<td>3,062,154</td>
</tr>
<tr>
<td>6 months - &lt; 1 year</td>
<td>1,970,304</td>
<td>808,350</td>
<td>1,162,154</td>
</tr>
<tr>
<td>1 year - &lt; 2 years</td>
<td>2,195,048</td>
<td>655,957</td>
<td>1,539,091</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>10,606,449</td>
<td>976,144</td>
<td>9,630,305</td>
</tr>
<tr>
<td><strong>Total sheep by Breed Type</strong></td>
<td>20,733,913</td>
<td>5,339,509</td>
<td>15,394,404</td>
</tr>
<tr>
<td>Indigenous</td>
<td>20,709,049</td>
<td>5,330,420</td>
<td>15,375,629</td>
</tr>
<tr>
<td>Crossbred</td>
<td>21,916</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Exotic</td>
<td>2,948</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td><strong>Goats aged 2 years and older by purpose.</strong></td>
<td>7,890,117</td>
<td>1,223,235</td>
<td>6,666,882</td>
</tr>
<tr>
<td>used for milk</td>
<td>493,115</td>
<td>1,282</td>
<td>493,115</td>
</tr>
<tr>
<td>used for meat</td>
<td>550,697</td>
<td></td>
<td>46,861</td>
</tr>
<tr>
<td>used for breeding</td>
<td>6,777,553</td>
<td>6,101,151</td>
<td></td>
</tr>
<tr>
<td>used for other purposes</td>
<td>68,713</td>
<td>42,997</td>
<td>25,716</td>
</tr>
<tr>
<td><strong>Source:</strong> CSA, 2005/06</td>
<td>* not significant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
c) Camels

The total camel population, which is distributed over five regions, including Dire Dawa, is 0.44 million. Of these, 41% and 59% are males and females, respectively. Camels are generally kept for milk, transportation and draft—the former two being their most important functions.

<table>
<thead>
<tr>
<th>Age, Breed and Purpose</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>Total</td>
<td>437,606</td>
<td>100</td>
<td>179,292</td>
</tr>
<tr>
<td>Under 4 years</td>
<td>119,201</td>
<td>27.24</td>
<td>57,373</td>
</tr>
<tr>
<td>4 years and older</td>
<td>318,405</td>
<td>72.76</td>
<td>121,919</td>
</tr>
<tr>
<td>All uses</td>
<td>318,405</td>
<td>72.76</td>
<td>121,919</td>
</tr>
<tr>
<td>Meat</td>
<td>5,256</td>
<td>1.20</td>
<td>3,959</td>
</tr>
<tr>
<td>Milk</td>
<td>29,583</td>
<td>29.61</td>
<td>-</td>
</tr>
<tr>
<td>Transportation</td>
<td>87,806</td>
<td>24.64</td>
<td>97,654</td>
</tr>
<tr>
<td>Draft</td>
<td>5,265</td>
<td>1.23</td>
<td>4,043</td>
</tr>
<tr>
<td>Other uses</td>
<td>70,495</td>
<td>16.11</td>
<td>16,263</td>
</tr>
</tbody>
</table>

Source: CSA, 2005/06  *Not significant

Table 3: The estimated number of camels by sex and purpose


d) Poultry

The total poultry population in the country is estimated at 32.2 million. Of these, 94% are indigenous, 4.4% cross, and 1.5% exotic birds (Table 4). Chicks, laying hens and cocks, or roosters, respectively account for 39%, 33% and 11% of the flock composition. About 4% of the hens of laying-age become non-productive at one particular time in the year. The combined estimated annual egg production for the year 2005/06 from the three breed groups was estimated at 67,559,613 eggs.

Poultry in Ethiopia, for the most part, is a backyard operation that uses a few scavenging birds that are of low productivity. The eggs and meat thus produced fall far short of meeting the growing local demand for eggs and poultry meat in the urban areas. The steady escalation of the prices paid for both eggs and meat is indicative of the growing local demand therefor.

Table 4: The estimated number of poultry by breed

<table>
<thead>
<tr>
<th>Type of Poultry</th>
<th>All</th>
<th>%</th>
<th>Indigenous</th>
<th>Number</th>
<th>%</th>
<th>Hybrid</th>
<th>Number</th>
<th>%</th>
<th>Exotic</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All poultry</td>
<td>32,224,478</td>
<td>100.0</td>
<td>30,328,962</td>
<td>94.1</td>
<td>2</td>
<td>1,404,427</td>
<td>4.36</td>
<td>489,089</td>
<td>1.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocks</td>
<td>3,383,646</td>
<td>10.50</td>
<td>3,162,264</td>
<td>9.81</td>
<td></td>
<td>161,637</td>
<td>0.50</td>
<td>59,745</td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cockerels</td>
<td>1,478,202</td>
<td>4.59</td>
<td>1,390,445</td>
<td>4.32</td>
<td></td>
<td>74,159</td>
<td>0.23</td>
<td>13,598</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pullets</td>
<td>2,981,903</td>
<td>9.25</td>
<td>2,766,972</td>
<td>8.59</td>
<td></td>
<td>135,122</td>
<td>0.42</td>
<td>79,809</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-laying hens</td>
<td>1,137,468</td>
<td>3.53</td>
<td>1,074,628</td>
<td>3.34</td>
<td></td>
<td>42,563</td>
<td>1.13</td>
<td>20,278</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chicks | 12,590,344 | 39.07 | 2,118,507 | 37.6 | 426,062 | 1.32 | 45,775 | 0.14
Laying hens | 10,650,915 | 33.05 | 9,816,146 | 30.4 | 564,885 | 0.75 | 269,884 | 0.84

**Source:** CSA 2005/06

e) Beehives

Beehives in Ethiopia are categorized into traditional, intermediate and modern types (Table 5). Their respective annual honey-production contribution to the total honey yield in the country is 97.8%, 0.6% and 1.6%, respectively. Four regional states—Oromiya, SNNPR, Amhara and Tigray—rank first to fourth, their respective contributions to the total honey production of the country being 56.7%, 22.2%, 15.4% and 4.20%.

**Table 5: The estimated number of beehives by type and honey production**

<table>
<thead>
<tr>
<th>Type of Beehives</th>
<th>Quantity</th>
<th>Frequency of Harvest</th>
<th>Honey Production</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Beehives</td>
<td>4,020,410</td>
<td>100</td>
<td>41,579,435</td>
<td>100</td>
</tr>
<tr>
<td>Traditional</td>
<td>3,965,494</td>
<td>98.63</td>
<td>40,657,751</td>
<td>97.80</td>
</tr>
<tr>
<td>Intermediate</td>
<td>18,713</td>
<td>0.47</td>
<td>242,957</td>
<td>0.60</td>
</tr>
<tr>
<td>Modern</td>
<td>36,202</td>
<td>0.90</td>
<td>678,727</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Source:** CSA 2005/06

Honey is usually produced in mass in agro-ecologies with good diversified vegetations that receive medium to high annual precipitation. It is also produced in smaller quantities in drier areas with scanty vegetation.

The governments of those regions where there is an adequate potential for honey production should create a production environment that is necessary to attract more private investors to go into an outreach honey production, in collaboration with the farmers living nearby, or around an established collection and/or processing center.

### 3.1.2 Livestock Off-Take

Livestock annual growth rates are estimated at 1.1% for cattle and at -0.2% for small ruminants. The human population’s annual growth rate, on the other hand, is 2.5% on average (FAO, 1998). This shows that the livestock population growth rate has been lagging behind the human population growth. The off-take rates, too, were estimated at about 8% for cattle, 35% for sheep, and 38% for goats. As such, they are the lowest in Africa, in terms of their proportions to the livestock populations.

### 3.1.3 Spatial Livestock Distribution by Type
Livestock resource distribution by region is shown in Table 6 below. As can be seen from the table, the Oromiya, Amhara, SNNPR and Tigray regional states, respectively, rank first to fourth in tropical livestock unit (TLU).

In poultry population, Oromiya ranks first, followed by the Amhara and SNNP regional states. This, nonetheless, is not at all surprising, since these regions constitute the major land area of the country and produce a relatively large amount of cereal grains. The rural population in Ethiopia customarily uses cereal grains to raise domestic birds in its backyard. Honey production follows a similar trend, in that most of it is produced in the forest area of the regional state of Oromiya, followed by Amhara, SNNPR and Tigray, in that order.

Table 6: Spatial distribution of livestock by species type

<table>
<thead>
<tr>
<th>Regional States</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Camels</th>
<th>TLU</th>
<th>Poultry</th>
<th>Beehives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Tigray</td>
<td>2,622,166</td>
<td>6.51</td>
<td>213,354</td>
<td>0.63</td>
<td>32,777</td>
<td>7.57</td>
</tr>
<tr>
<td>Afar</td>
<td>317,108</td>
<td>0.79</td>
<td>567,727</td>
<td>1.67</td>
<td>112,131</td>
<td>25.8</td>
</tr>
<tr>
<td>Amhara</td>
<td>10,077,301</td>
<td>25.01</td>
<td>12,386,990</td>
<td>36.46</td>
<td>14,678</td>
<td>3.39</td>
</tr>
<tr>
<td>Oromiya</td>
<td>18,247,970</td>
<td>45.30</td>
<td>13,468,213</td>
<td>39.65</td>
<td>121,970</td>
<td>28.1</td>
</tr>
<tr>
<td>SNNP</td>
<td>8,043,173</td>
<td>19.97</td>
<td>5,457,178</td>
<td>16.06</td>
<td>145,073</td>
<td>33.5</td>
</tr>
<tr>
<td>Harari</td>
<td>37,395</td>
<td>0.09</td>
<td>37,283</td>
<td>0.11</td>
<td>33,633</td>
<td>9.07</td>
</tr>
<tr>
<td>Addis A.</td>
<td>26,266</td>
<td>0.70</td>
<td>15,131</td>
<td>0.04</td>
<td>33,633</td>
<td>9.07</td>
</tr>
<tr>
<td>Dire Dawa</td>
<td>38,439</td>
<td>0.10</td>
<td>178,267</td>
<td>0.53</td>
<td>49,157</td>
<td>3.12</td>
</tr>
<tr>
<td>%Total</td>
<td>100</td>
<td></td>
<td>100</td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

*Source: CSA 2005/06  
*Not significant

3.1.4 Other Resources

a) Feed Resource

Natural grazing and browsing on plots of permanent grazing land and stubble following crop harvest make the main sources of animal feed in Ethiopia. Conserved natural hay and different crop residues such as teff, barley and wheat straws, too, are important feeding strategies and feed components of ruminants in the highland areas.

The use of cultivated improved fodder crops for animal feed is not widely practiced because of an ever-expanding demand for farming land, even at the expense of permanent pasture land. According to MOA, a survey carried out by...
FAO in 1989 indicated that permanent pastureland has been declining by 1.1% over a 16-year period—starting in the year 1973.

Dairy farms and feed-lot operators in urban and peri-urban areas use mainly industrial byproducts such as different oilcakes, wheat bran and brewer’s grain, in combination with purchased hay or straw, to feed their animals. The kind of feed used is largely determined by its availability rather than choice. At times they also make use of formulated concentrate feed purchased from feed-processing plants.

i) Grazing and Browsing

The availability and quality of native pastures for livestock use vary with altitude, rainfall, soil type, and cropping intensity. The total area of grazing and browsing is 67.7 million hectares, of which about 19% is found in the highlands, and the remaining around the pastoral areas (Tables 7 and 8).

Afro-alpine vegetation, found at altitudes above 3,000 meters, is characterized by heaths and Lobelia with cold-resistant short grasses. But much of this area is overgrazed. The highland areas between 2,200 and 3,000 meters high are characterized by mixture pastures of grass and legume, with the legume component decreasing as the altitude decreases. There are extensive grassland plateau and areas of seasonally waterlogged soils. Active plant growth is restricted to periods during the short rains, where these occur, and to one or two months after the small rains. Pastures are generally overgrazed and many areas are invaded by Pennisetum spp. Overgrazing is less severe in areas with lower cropping intensity. The lower-altitude farming areas are characterized by grass-dominant pastures, and production varies with rainfall, which, in some areas, is poor and erratic. And overgrazing is common in settled farming areas.

The higher rainfall areas of the pastoral zone (300-600 mm rainfall per annum) are characterized by dense thorn bushes with a low carrying capacity and more open vegetation with under-story grasses that have higher carrying capacities. The open desert with annual rainfall below 300 mm is characterized by sparse vegetation, including early maturing annual grasses. Carrying capacities vary from 8 to 15 ha per TLU.

In the highland farming system, permanent pastures provide 79% of the feed resources available to livestock. And in the pastoral areas, grazing and browsing provide 100% of such resources (Tables 7 and 8). In the lowland areas, native pasture yields one ton of dry matter per ha or less. And, in intermediate and high altitude areas, the yields of freely drained soil are 3 tons of dry matter per ha, and in seasonally waterlogged fertile areas, 4-6 tons of dry matter per ha.

Table 7: Feed resources available annually to livestock in the highlands
<table>
<thead>
<tr>
<th>Feed Source</th>
<th>Area (million ha)</th>
<th>Availability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing</td>
<td>7.28</td>
<td>4.50</td>
<td>32.76</td>
</tr>
<tr>
<td>Cereals</td>
<td>4.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop residues</td>
<td>1.40</td>
<td>6.50</td>
<td></td>
</tr>
<tr>
<td>Aftermath grazing</td>
<td>0.40</td>
<td>1.84</td>
<td></td>
</tr>
<tr>
<td>Pulse residues</td>
<td>0.81</td>
<td>0.50</td>
<td>0.41</td>
</tr>
<tr>
<td>By-products</td>
<td></td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>41.66</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Alemayehu Mengistu (1984)

### Table 8: Feed resources available to livestock in pastoral areas

<table>
<thead>
<tr>
<th>Rainfall Zone (mm)</th>
<th>Area (millions ha)</th>
<th>Availability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dry Matter h⁻¹</td>
<td>Total Dry Matter (million t)</td>
</tr>
<tr>
<td>500-700</td>
<td>9.90</td>
<td>1.00</td>
<td>10.01</td>
</tr>
<tr>
<td>300-500</td>
<td>8.10</td>
<td>0.64</td>
<td>5.15</td>
</tr>
<tr>
<td>300</td>
<td>22.50</td>
<td>0.35</td>
<td>7.97</td>
</tr>
<tr>
<td>Thorn bush areas</td>
<td>14.50</td>
<td>0.53</td>
<td>7.69</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55.00</strong></td>
<td></td>
<td>30.82</td>
</tr>
</tbody>
</table>

Source: Alemayehu Mengistu (1984)

**ii) Crop Residues and Agro-Industrial Byproducts**

- **Cereals and Pulses**

Cereal straw from *teff*, barley and wheat is the largest component of livestock diet in the intermediate and highland areas that is not obtained *in situ*. Straw is stacked after threshing. Then, it is fed to animals during the dry season, as are pulse-crop residues (e.g., faba beans, chickpeas, haricot beans, field peas and lentil). At lower altitudes in the highland areas, maize (corn), sorghum and millet stovers grow to a greater extent. *Teff* is grown at intermediate altitudes, and barley replaces wheat at the higher altitudes, where pulses are also grown to a great extent. The nutritive values of the different residues vary. Whereas *teff* straw is equivalent to medium-quality hay, the residue of other cereal crops is only of poor to fair quality. On the other hand, pulse haulms are high-quality roughage with 5%-8% protein.

- **Byproducts of Sugar**

The sugar industry in Ethiopia has factories at four sites: Wonji, Shoa, Methara, and Finchaa. The present area of cane is 20,000 ha—the estimated yield of cane tops being six tons of dry matter per hectare, or 120,000 tons of dry matter per year. Production of molasses is estimated at 78,700 tons. Of
this amount, about 30,000 tons of sugar is exported annually. In addition, there is a plan, which will be implemented within a short period of time, to develop about 90 ha of sugar plantation in the lower Awash Valley. This, too, will, of course, be a huge source of feed for livestock development in the future.

- **Oilcakes**

Oilcakes are an excellent concentrate feed for ruminant livestock. Ethiopia grows most of the temperate and sub-tropical oilseed plants such as linseeds, Niger seeds, groundnuts (peanuts), rapeseeds, sesame, sunflower and cotton. The processing of oilseeds is widely practiced at the household level, or in small village mills. In some areas—the northwest, to be more specific—Niger seed cake is currently being wasted.

- **Milling Byproducts**

The various milling byproducts obtained by processing such cereals as wheat and others are of great interest as livestock feed for feedlots, to city dairy holders, and, to a lesser extent, to some dairy cooperatives.

- **Slaughter Products**

Large numbers of livestock—mainly cattle, sheep and goats—are slaughtered every year. Of these, only a small proportion of the cattle are slaughtered in abattoirs with processing facilities. The Addis Ababa Municipality, which owns and manages the abattoirs, produces meat, bone and blood meals as animal feed. At present, most of the meat and bone meal is exported.

- **Brewery Byproducts**

Brewer's grains are traditionally valued for lactating cows because of their palatability and milk-producing property. In addition to commercial beer production at the two breweries in Addis Ababa, and one each at Bedele, Gondar, Kombolcha and Harar, small-scale home brewing of tella (the traditional beer) is also practiced.

- **Other Byproducts**

Coffee pulp and hulls (about 30,000 tons per year) can also be used as minor feed sources in the coffee-growing areas. Since coffee-residue production is seasonal, storage, however, is a problem.

**iii) Cultivated Pasture and Forage-Crop Species**
Cultivated pastures and forage crops, with the exception of alfalfa and Rhodes grass, have not been used on a large scale to date, outside government stations, commercial farms and farmers’ demonstration plots. Fodder crops are commonly grown for feeding dairy cattle, with oats and vetch mixtures—alfalfa, Rhodes grass and fodder beet being the most common ingredients. There has been widespread acceptance of the use of fodder following an intensive rural development program; and an oats/vetch mixture as well as fodder beets have been used to a limited extent for draft oxen. In suitable areas, yields of oats/vetch mixtures are commonly 8-12 tons DM/ha. The use of newly introduced fodder trees (Leucaena, Sesbania and Pigeon pea species) has largely been confined to research centers with on-farm utilization limited only to smaller scale soil-erosion control programs and around farmers' homesteads. Due to land scarcity and a crop-dominated farming system, there has been no significant introduction of cultivated fodder species to the traditional grazing areas. The communal grazing system practiced in the country also prevents a wider use of such fodder trees, since free-grazing animals will damage them at their seedling stage.

Regardless of the availability of the feed source options discussed herein above, indications are that there is a chronic shortage of animal feed in the country due either to the seasonality in their availability and/or the poorly developed conservation method—the availability being outstripped by the huge number of the animals.

Pasture productivity in the high- and mid-altitude areas ranges between 1.5 and 2 ton/ha a year, whereas the corresponding figure for the rangelands is less than a ton. The national annual feed demand for all livestock species is estimated at 95.8 million ton DM, whereas the available amount from the above indicated various feed sources amounts only to 65.6 million ton DM, leaving a demand gap of about 32%. The sub-sector is not only constrained by a supply problem but is also affected by the poor quality of the available animal feed. For instance, natural pasture has less than 6% protein and about 10 MJ/kg DM, with a digestibility of around 61.5%, furnishing only 75% of the nutrient requirement for maintenance and production of animals (MoARD, 2006).

Some owners of the existing animal-feed-processing plants have the following to say regarding the shortage of concentrate feed in the country:

- Following privatization, food-processing plants that operated at profit before privatization started operating at a loss. Owners attribute the cause to the fact that these plants used to get raw materials from state farms at fixed prices without any constraints under the centralized economic development policy of the Socialist Government, since they were public properties. They also had dependable public animal farms as customers—that is, to buy from them the animal feed. That provided a
suitable environment for easing outlets for finished products. At the moment, nevertheless, the plants are operating in the absence of these favorable conditions. That, of course, has made their operation difficult.

- Demand for animal feed on the local market has gone down due to the high cost of raw materials, which has made the finished product too expensive for buyers.

- Processing plants operate below capacity because of the reduced demand for the finished products and the ever-escalating prices of raw materials.

- Animal feed is subject to value-added taxation (VAT).

- Owing to the absence of regulatory and quality control mechanisms, there is unfair competition on the market with traders that sell flourmill byproducts and different oilcakes as concentrate animal feed at lower prices.

- There is no animal-feed quality control in the country, or a regulatory government body that defines standards for animal feed.

b) Land

According to MOA, with a total land area of 1,154,600 km², Ethiopia has five recognizable land-use types as shown in Table 9 below.

<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Area (ha)</th>
<th>% Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop land</td>
<td>16,509,000</td>
<td>14.8</td>
</tr>
<tr>
<td>Grazing and browsing</td>
<td>56,880,000</td>
<td>51.0</td>
</tr>
<tr>
<td>Forest, shrub and bush</td>
<td>13,051,000</td>
<td>11.7</td>
</tr>
<tr>
<td>Unproductive</td>
<td>4,239,000</td>
<td>3.8</td>
</tr>
<tr>
<td>Unutilized</td>
<td>20,859,000</td>
<td>18.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>111,538,000</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: MOA (1993)

The importance of land for livestock production is in terms of the available area for pasture development that can be used for grazing. As shown in the table above, about 51% of the total land is used for grazing and browsing. Even though the yield in terms of dry matter is low under the traditional management system, there could be a huge potential with improved management and use.

Due to the steady growth of the human population, there is an ever-decreasing share of pastureland for grazing in most highlands of Ethiopia, whereas there is a corresponding increase in the cultivated areas to meet the food demand of
the growing human population. While the size of the pastureland keeps on decreasing, on the one hand, the demand for draft power keeps on increasing, on the other. These situations, of course, imply that the number of animals will have to increase so as to meet the required draft power. To that end, wherever and whenever possible, the farmers in these areas incorporate small-scale dairy production into their crop farming. In other words, they are thus bent on producing animal power (oxen) for land cultivation (Zegeye, 2003). The increased incorporation of the previously available pastureland into farmland in turn leads to a selective decrease in the population of mainly shoats and equines.

c) Water

The constant availability of adequate and good quality water is essential for proper livestock husbandry and the productivity thereof. According to Foley, a body can lose practically all of its fat and over half of its protein and still survive, but a loss of 10% of its water results in death.

The country’s surface water resource in 10 major river basins is depicted in Table 10 below. According to the MoWR (1995), four basins—Baro-Akobo, Abay, Tekeze and Omo-Ghibe—comprise 80%–90% of the country’s water resources. The human population residing in these basins, however, is estimated not to exceed 30%–40% of the total. Sixty percent of the human population is concentrated in the central and eastern basins where only 10%–20% of the water resource of the country is found (MoWR 1995). The country has an irrigation potential of four million hectares, of which only about 5% has been developed so far. Actually, the Awash Basin appears to be the only widely developed area with an estimated total irrigated area of 161,125 ha, planted with different industrial and horticultural crops. These potentials are not yet tapped either for crop or livestock production.

<table>
<thead>
<tr>
<th>No.</th>
<th>River Basin</th>
<th>Catchments Area (km²)</th>
<th>Annual Runoff (m³ × 10⁹)</th>
<th>Specific Discharge (litres/km²)</th>
<th>Irrigation Potential (10³ ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abay</td>
<td>199,812,112</td>
<td>52.60</td>
<td>7.8</td>
<td>711</td>
</tr>
<tr>
<td>2</td>
<td>Awash</td>
<td>112,700</td>
<td>4.60</td>
<td>1.4</td>
<td>206</td>
</tr>
<tr>
<td>3</td>
<td>Baro-Akobo</td>
<td>74,100</td>
<td>23.60</td>
<td>9.7</td>
<td>483</td>
</tr>
<tr>
<td>4</td>
<td>Genale-Dawa</td>
<td>171,050</td>
<td>5.88</td>
<td>1.2</td>
<td>326</td>
</tr>
<tr>
<td>5</td>
<td>Mereb</td>
<td>5,900</td>
<td>0.26</td>
<td>3.2</td>
<td>38</td>
</tr>
<tr>
<td>6</td>
<td>Omo-Ghibe</td>
<td>78,200</td>
<td>17.96</td>
<td>6.7</td>
<td>348</td>
</tr>
<tr>
<td>7</td>
<td>Rift Valley</td>
<td>52,740</td>
<td>5.64</td>
<td>3.4</td>
<td>46.5</td>
</tr>
<tr>
<td>8</td>
<td>Tekeze</td>
<td>90,000</td>
<td>7.63</td>
<td>3.2</td>
<td>302</td>
</tr>
<tr>
<td>9</td>
<td>Wabi-Shebele</td>
<td>200,214</td>
<td>3.16</td>
<td>0.5</td>
<td>122</td>
</tr>
<tr>
<td>10</td>
<td>Danakil</td>
<td>74,000</td>
<td>0.86</td>
<td>0.0</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Adapted from Gulilat (2003).

Ethiopia’s ground water potential is estimated at 2.6 billion m³. Traditional ponds have been used in Ethiopia for centuries, to harvest rainwater for both
human and livestock watering, particularly in the arid and semi-arid rural areas where annual rainfall is less than 700 mm. They are major sources of water in the Rift Valley where ground water is deep and other sources of water are not feasible. There are over 8,000 traditional ponds, but they are quite insignificant, in comparison with the potential and the needs of the country. Ponds are simple to construct and can be used for livestock watering with relatively small investment.

Dug wells (3 to 15 meters deep) are the major sources of water both for domestic water supply and agricultural uses. And they are widely used in wetland areas, sand river beds and valley bottom lands in the Ethiopian highlands. Their potential at times is very low. Worse yet, they dry up during the driest period of the year: in the months of March and April. Shallow wells equipped with a 200-liter barrel and small-scale drip irrigation on approximately 0.1 ha supports the production of high-value crops or fodder for livestock.

*Elas* (5 to 10 meters deep) are the other types of traditional wells widely used for livestock watering in Borana, Southern Ethiopia. Water is lifted through a human chain lined up along the wall of the well, each standing on a terrace like a structure. Lifting of water in such a system is done continuously using two or more containers at a time; one container going up with water, while the empty one is passed down the line. A three-to-five-meter livestock watering trough, into which lifted water is emptied, extends near the edge of the well. Even though this way of watering livestock is quite strenuous, the availability of water shows that there is potential for investment in deep wells for use in livestock development.

In the Ethiopian context, in most of the highland areas, water availability for livestock consumption is not a problem quite often, though it may not at times be of an acceptable quality. In the low lands, however, it is in very short supply and seasonally a source of conflict among neighboring ethnic groups, and even among different clans of the same ethnic group.

The water-utilization strategy in the traditional pastoral lowland areas is based on wet-season grazing with animals watering at ephemeral ponds and dry-season grazing close to deep wells (Coppock, 1994). The rationale behind this strategy is that the longer the animals could stay on a wet-season range, the more the dry-season forage close to the deep wells gets conserved, thereby delaying the use of the deep wells into the dry, lean seasons.

In general, water in the lowland pastoral areas is a rare and precious commodity. Massive water development has to, therefore, be undertaken at strategic places if the livestock resource is to be properly put to use to the country's advantage.
Though most of the Ethiopian livestock found in rural settings are produced under open-range conditions, there are also a few animal-related operations in the cities and in the towns—usually on the outskirts of the cities and the towns—that handle commerce-oriented farms at varying scales. These operations are animal-related, in that they have to do with feedlots, dairy and poultry farming, slaughterhouses, and tanneries. All of these operations produce large quantities of waste products, which have the potential to pollute the environment if they find their way into nearby rivers, streams, lakes and/or underground water systems. In addition to the waste generated by the livestock-related operations, those from other industries and agrochemical products sprayed on agricultural fields are potential sources of water pollution both for livestock and humans.

Awareness about the need for ensuring environmental protection and for minimizing pollution has of late been raised among all those concerned. Such public institutions as the Federal Environmental Protection Agency (FEPA) and the MoARD are, in fact, expected to come up with regulatory mechanisms whereby environmental safety could be ensured on a sustainable manner. Quite often, the existence of regulations alone is not enough unless they are complemented with effective implementation strategies.

d) Human Resources

With the objective of attaining the set development goal within the specified period of time, both the federal Government and the regional states have given due attention to the development of trained human resources—at different levels and in all disciplines. This is done with the full understanding that the desired development cannot be attained in the absence of an adequate number of trained human resources.

To that end, the existing institutions of higher learning are being strengthened and expanded, and new ones are being opened at strategic locations. Considerable advances have been made in the country over the last two to three decades in producing trained human resources in animal husbandry and health fields, in particular. Most of that was achieved because the pertinent institutions of higher learning made it a point to train and produce animal husbandry personnel and veterinarians—some of them with first and second degrees. For instance, in 2004/05 alone, a total of 254 professionals were able to graduate from four of the country’s institutions of higher learning: the Addis Ababa University, the Haremaya University, the Southern University and the Mekele University. Of these, 233 graduated with BAs or BScs, and 21 with MAs and MScs—in animal-science-related fields of study. Other universities such as those of Jimma, Bahir Dar and Gondar have also introduced animal-science-related academic programs.
In addition to all that, the number of animal health assistants—comprising veterinary assistants, vaccinators and field scouts—and animal husbandry assistants, including artificial insemination technicians—has shown a marked increase in the last few years. What is more, all indications are that it will keep on increasing.

The ultimate aim is to enable each regional state to be self-sufficient in producing most of the trained human resources it needs. Though there is a general feeling that Ethiopia is deficient in skilled human resources, there is as yet no accurate information on the gap between demand and supply in this regard. More specifically, one cannot say much about it by educational level and sector. Another important area of consideration relating to human resources is the gender balance. Female skilled resources are far fewer than their contemporary males. Worse yet, much remains to be done before an appropriate proportion is reached.

In and of itself, training may not solve the problem. In fact, at times, it can entail an upsurge of unemployed skilled human resources. To forestall the occurrence of such a problem, the skilled labor in the country will have to be creative and imaginative enough to create job opportunities for self-employment, if and when opportunities for joining the general labor market are not available for one reason or another.

**e) Livestock Research Outputs**

The productivity of livestock species in terms of milk production under traditional and improved management practices that are the direct results of research are shown in Table 11 below. It is evident from the table that the daily and annual milk yields and the length of lactation under the traditional management of indigenous breeds can be increased from 1.3 kg, 230 kg and 180 days to 3.5 kg, 700 kg and 200 days, respectively, by improving the management thereof. In a similar manner, the daily and annual milk yield and lactation length can be increased to 7 kg, 2000 kg, and 300 days, respectively, by using improved breeds under improved management. The data also show that age at first calving and calving intervals could be reduced using indigenous and/or improved breeds under improved management.

For camels, however, production improvement under an improved management system is unavailable, since adequate research has not been conducted in this area. The overall data show that there is a great potential in increasing productivity and profit in terms of milk by using improved management and improved breeds of dairy cattle.

**Table 11: Milk production from cattle and camels under traditional and improved management**

<table>
<thead>
<tr>
<th>Species</th>
<th>Daily</th>
<th>Annual</th>
<th>Lactation</th>
<th>Age at First</th>
<th>Calving</th>
</tr>
</thead>
</table>

ITAB-CONSULT PLC
Table 12: The productivity of cattle, sheep and chicken in meat under different management systems

<table>
<thead>
<tr>
<th></th>
<th>Milk Yield (kg)</th>
<th>Milk Yield (kg)</th>
<th>Length (days)</th>
<th>Calving (month)</th>
<th>Intervals (month)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indigenous breed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle</td>
<td>1.3</td>
<td>250</td>
<td>180</td>
<td>60</td>
<td>24</td>
</tr>
<tr>
<td>Camel</td>
<td>7.5</td>
<td>2104</td>
<td>282</td>
<td>60</td>
<td>24</td>
</tr>
<tr>
<td><strong>Improved</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indigenous breed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle</td>
<td>3.5</td>
<td>700</td>
<td>200</td>
<td>44</td>
<td>14</td>
</tr>
<tr>
<td>Camel</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td><strong>Improved</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indigenous breed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved breed</td>
<td>7.0</td>
<td>2000</td>
<td>300</td>
<td>32</td>
<td>14</td>
</tr>
<tr>
<td>Camel</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
</tr>
</tbody>
</table>

Source: EIAR documents  n.a = not available

The productivity of cattle, sheep and chicken in meat under traditional and improved management systems is indicated in Table 12 below. The figures given are productivity levels for indigenous breeds under a traditional management system, and for improved breeds under improved husbandry practices. As shown in the table, live weight at maturity can be improved from 300 kilograms to 600 kilograms by using improved breeds of cattle with proper management. While the live weight of sheep can be increased from 35 kilograms to 50 kilograms, it is possible to double that of chicken by using improved breed. In terms of daily weight gain, indigenous breeds of cattle can yield 500 grams, while the improved breeds can gain as high as 1,200 grams.

The dressing percentage of indigenous breed of cattle is 53, whereas that of improved breed is 58%. The age for chicken, at first laying, could be reduced from six to four months, and the total number of eggs produced per year can be increased from 50 to 180 eggs by using improved breeds.

Research results also show that the carcass weight of cattle, which is 105 kilograms for indigenous cattle, can be increased to 190 kilograms per head by using improved breeds under improved management.
Improvements for better productivity could be brought about either by improving the management of the indigenous breeds or via genetic improvement by crossbreeding and selecting high-performing types. Animals improved through both methods should essentially be supported with proper feeding, breeding and health-care practices. The on-station performance of some of the indigenous cattle breed and their crosses is shown in Table 13 below. As can be observed from this table, the F1 crossbreds have higher milk yields, a longer lactation period and a shorter age at first calving, and less calving intervals than the indigenous breeds. This difference can be maintained only under improved production environments. Otherwise, improved genotypes will find it difficult even to survive—let alone to perform better under poor management conditions.

Table 13: The on-station performance of indigenous, exotic and local crosses for dairy purposes in the Ethiopian highlands*

<table>
<thead>
<tr>
<th>Category</th>
<th>Birth Weight (kg)</th>
<th>Age at first Calving (Month)</th>
<th>Lactation</th>
<th>Calving Intervals (day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boran</td>
<td>24.5</td>
<td>46.6</td>
<td>682.0</td>
<td>120.0</td>
</tr>
<tr>
<td>Horro</td>
<td>18.3</td>
<td>53.0</td>
<td>560.0</td>
<td>132.0</td>
</tr>
<tr>
<td>Arsi</td>
<td>21.5</td>
<td>34.0</td>
<td>224.0</td>
<td>272.0</td>
</tr>
<tr>
<td>Fogera</td>
<td>-</td>
<td>46.0</td>
<td>674.0</td>
<td>150.0</td>
</tr>
<tr>
<td>Barka (Begait)</td>
<td>22.1</td>
<td>60.0</td>
<td>637.0</td>
<td>194.0</td>
</tr>
<tr>
<td>Mean Zebu</td>
<td>23.0</td>
<td>43.0</td>
<td>618.0</td>
<td>150.0</td>
</tr>
<tr>
<td>Mean Friesian</td>
<td>-</td>
<td>40.0</td>
<td>3560.0</td>
<td>350.0</td>
</tr>
<tr>
<td>Friesian F1</td>
<td>-</td>
<td>33.4</td>
<td>2165.0</td>
<td>341.0</td>
</tr>
<tr>
<td>Jersey F1</td>
<td>-</td>
<td>32.4</td>
<td>1737.0</td>
<td>326.0</td>
</tr>
<tr>
<td>Brown Swiss F1</td>
<td>-</td>
<td>35.3</td>
<td>1921.0</td>
<td>37.0</td>
</tr>
</tbody>
</table>

* Adopted from Getachew Feleke (2003)

The research results show that the productivity of indigenous livestock resources that are under traditional management can be increased, while the cost per unit of output can be reduced if their management is improved and commercialized. The research results also disclose that using improved breeds can further increase productivity. One of the reasons for the low productivity of the livestock industry is the low proportion of improved breeds in cattle herds, or in shoat flocks, and their corresponding poor husbandry practices. The differences in productivity between the outputs from the indigenous breeds
under traditional and improved management and the improved breeds under improved management practices in the livestock husbandry are huge potentials that are not yet tapped in the sub-sector.

As shown in Tables 11 to 13 above, the scale of milk and meat improvements that can be achieved depends on the kind of management employed and the types of breed used. Under such varying productivity circumstances, the private sector should invest in such a way that its ultimate financial gains will come from a combination of the above-indicated productivity-influencing factors—making sure that the combination is done in the right proportion. The Government, for its part, has to play the role of Facilitator by creating for the investor a policy environment that is favorable.

3.2   The Government’s and Partner Organizations’ Interventions

3.2.1 Past Interventions

Over the years, the Ethiopian Government and partner organizations have sponsored various livestock development interventions that were initiated and implemented at different times. The interventions, which were focused mainly on cattle, with the purpose of creating economic linkages between rural and urban settings, are briefly discussed here below.

a)   Livestock Development Programs

i) The First Livestock Development Project (FLDP), 1958-1973

The FLDP was focused on the highland areas of the country, and its aim was to supply milk to urban dwellers. As a result, the Dairy Development Agency (DDA) was established in 1971 to undertake extension activities in areas related to the development of dairy production and marketing systems around the cities and the towns. The Government of Ethiopia had to, therefore, allocate for the DDA its operational budget.


The objectives for which the AADDP was established were the production and distribution of improved dairy stock, the provision of artificial insemination services and enhancement of the milk-processing and marketing capacity of the Sholla Plant. The World Bank (IDA) funded the project. It operated under the MOA, covering areas within a 110-kilometer radius of Addis Ababa. Unfortunately, it was short-lived because of the revolution that took place in 1974. The initial plan of the project was to establish 110 medium and 240 small private dairy farms. That plan was, nonetheless, scaled down later to 40 and 200, respectively. Why? Because the cost of stock importation proved to be much higher than had been anticipated. To make the farms operational, 885
pure exotic and crossbred in-calf heifers were distributed to medium- and small-holder farmers. That was further augmented by an importation from Kenya of 110 in-calf heifers. Furthermore, 13 new milk collection centers were constructed, whereas eight were renovated and the Sholla Dairy Plant expansion was completed. These efforts appeared to lay the groundwork necessary for introducing into the country a modern dairy industry. Nevertheless, the military socialist regime known in short as *Derg* came to power in 1974. Soon after that, it confiscated all private businesses. The confiscation, of course, put the newly established dairy farms under the public domain, with a negative consequence on the entrepreneurship initiative of the private sector.

### iii) The Dairy Development Enterprise (DDE), 1979 to the Present

This enterprise used to manage the numerous nationalized dairy farms, collect milk, and operate the Sholla Dairy Plant and market dairy products. It was funded by the AID Bank, ADB, WFP and other donor agencies at different times. At the moment, all the farms but two have been privatized again. No funds from external sources are, however, flowing to the DDE any longer. So it funds all its activities.


The objectives of this project were to develop marketing and infrastructure network and promote the sales and processing of livestock (slaughterhouse building), with the aim of creating a commercial link between the lowlands and the highlands. It operated under the Livestock and Meat Board (LMB). The SLDP has established a number of primary, secondary and terminal markets as well as slaughterhouses—besides building a 600-kilometer-long road. It was, nevertheless, short-lived as a result of the Ethio-Somali conflict.

### V) The Third Livestock Development Project (TLDP), 1975-1992

This project was aimed at developing the infrastructure and natural resources to support livestock production and marketing. The funding agencies were USAID and the World Bank. The TLDP was divided into three sub-projects: the Jijjiga Range Development Unit (JIRDU), covering a land area of 33,000 km² in the eastern part of the country; the Northeastern Range Development Unit (NERDU), covering a land area of 75,000 km² of the northeastern part of Ethiopia; and the Southern Range Development Unit (SORDU), covering an area of 95,000 km² in southern Ethiopia. The interventions of the project involved water development both for human and livestock use, forage development, livestock fattening and marketing, livestock health services and training for the concerned personnel. The achievements in the sub-project areas from 1976 to 1986 are given in Table 14.

The objectives of this project were similar to those of SORDU and JIRDU. This project was, however, funded by ADF, and was, more or less, a continuation of the activities of SORDU and JIRDU in the southeastern part of the country (Borana and Ogaden).


The objectives of FLDP were improving animal-feed resources and animal health and developing skilled human resources. The African Development Bank and the World Bank funded this project. Improved forage development demonstrations were undertaken in selected highland areas. Furthermore, a veterinary diagnostic laboratory and several veterinary clinics were set up, and a number of graduate training opportunities were given to the local staffs working on the project.

Table 14: The achievements in the sub-project areas from 1976-1986

<table>
<thead>
<tr>
<th>Development Component</th>
<th>JIRDU</th>
<th>NERDU **</th>
<th>SORDU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Ponds (number)</td>
<td>8</td>
<td>9</td>
<td>95</td>
</tr>
<tr>
<td>- Cisterns (number)</td>
<td>12</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>- Shallow wells (number)</td>
<td>95</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- Deep wells (number)</td>
<td>1</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Forage development</td>
<td></td>
<td>800</td>
<td>-</td>
</tr>
<tr>
<td>Water spreading (ha)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drought fodder reserves (ha)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterinary services</td>
<td>9.2</td>
<td>1.9</td>
<td>12.0</td>
</tr>
<tr>
<td>Vaccination total (millions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Trade roads (km)</td>
<td>105</td>
<td>55</td>
<td>1137</td>
</tr>
<tr>
<td>- Access roads (km)</td>
<td>515</td>
<td>311</td>
<td>1829</td>
</tr>
<tr>
<td>Holding ranches</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>- Established (number)</td>
<td>-</td>
<td>-</td>
<td>3706</td>
</tr>
<tr>
<td>- Marketed Cattle (number)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small-Holder Fattening Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Purchased Cattle (number)</td>
<td>5197</td>
<td></td>
<td>3804</td>
</tr>
<tr>
<td>- Distributed Cattle (number)</td>
<td>4956</td>
<td></td>
<td>3706</td>
</tr>
<tr>
<td>Training Veterinary Scouts (number)</td>
<td>134</td>
<td>20</td>
<td>164</td>
</tr>
<tr>
<td>- Range wardens (number)</td>
<td>50</td>
<td>20</td>
<td>76</td>
</tr>
<tr>
<td>- Dip/crush attendants (number)</td>
<td>-</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>Meteorology Station (number)</td>
<td>11</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

Adopted from Copook (1994)

Rehabilitating drought-stricken pastoralists through irrigation schemes was also considered, but it was not implemented. There was an armed conflict in the region around NERDU, up until June of 1991. Consequently, it had not been possible to accomplish much.

b) Regional and Specific-Area Development Programs
In addition to the above, a number of specific, regional, development-focused, comprehensive projects aimed at increasing and/or improving milk production were undertaken in the past. A summary of these projects is given in the following sections.

i) The Chilalo Agricultural Development Unit (CADU/ARDU), 1967-1984

This project, initially named “The Chilalo Agricultural Development Unit (CADU)” and later on renamed as “The Arsi Agricultural Development Unit (ARDU),” was implemented between 1967 and 1984. It had made a significant contribution to the development of the livestock sub-sector, as it pioneered a one-cow dairy-development-package concept in Ethiopia, which was later adopted by the Minimum Package Program (MPP) and implemented all over the country. It also introduced dairy crossbred heifer production and distribution, cultivation of forage production, small-scale milk processing and AI services to small-holders in the project area. The project formed a model for other subsequent comprehensive development projects. It could not, however, be replicated nationwide because of the relatively high cost it involved per beneficiary.

ii) The Wolayita Agricultural Development Unit (WADU), 1972/73-1979-80

This project operated between 1972/73 and 1979/80, and was designed to bring about increased crop and livestock (dairying) output in the Sodo and Bolosso Sore Woredas and in two settlement areas in the lowlands initially and in the whole Wolayita Awraja eventually. WADU established 290 cattle dairy farms and introduced AI and bull station breeding services in the area. It also brought down the livestock mortality rate in the project area from 17% to 5%. It did not, nonetheless, live up to its objectives, due to high levels of staff attrition and turnover. Besides, it was too capital-intensive and put more emphasis on infrastructural investment than on extension education.

iii) The Minimum Package Program (MPP), 1972-1980

The program was implemented all over the country in an attempt to transfer CADU’s dairy development experiences to other highland areas of the country. As such, it laid the groundwork necessary for livestock extension work in the country. The acute shortage in the supply of crossbred heifers, nevertheless, hampered the expansion of its work. In addition to that, the Derg’s policy discouraged individual-based dairy operations. That policy, the absence of a development direction for small-holder’s dairy development, and small-holder dairy farmers’ resistance to forming cooperatives and dairy unions stifled the efforts of the program.
iv) The Dairy Rehabilitation and Development Project (DRDP), 1986-1992

The project was aimed at supporting the development of cooperative dairy farms by distributing crossbred heifers and at rehabilitating state-owned dairy farms. It also targeted the provision of animal-health services in 10 provinces of the country. The project established 48 dairy producers’ cooperatives by distributing 510 crossbred heifers. In 1990, however, these cooperatives were disintegrated. Thereafter, the scattered state dairy farms were consolidated into ten units, and rehabilitation work started on two farms. The farmers were, nonetheless, resistant to the formation of a producers’ cooperative. And those formed earlier were poorly managed. When the Derg came up with its mixed economic policy, the dairy farmers’ cooperatives broke up. That in turn resulted in a loss of most of the animals. Though animal health and forage development were the component parts of the project, their implementation was not fully satisfactory, as the two were under different management units. The result obtained from the cross-breeding program that was being implemented on a contractual basis was less than satisfactory, due to lack of follow-up, even though 292 crossbreds were produced.


The components of this project were dairy stock and breeding bull distribution, milk marketing and processing, fodder production, agro-forestry and water development, including the introduction of appropriate technology. And it covered 16 woredas in three regions of the country. More specifically, it distributed 251 in-calf crossbred heifers and 53 breeding bulls, as the result of which 539 female and 448 male calves were born. In addition, nine farmer-managed milk collection and processing units were established, and 11 hand-dug wells, nine springs and three ponds were constructed.


The project was aimed at milk production and marketing as well as processing, at the delivery of pertinent services and at improved forage introduction and provision of training in milk-handling in two woredas of Oromiya and in the SNNPR. Under the project, three milk-marketing and processing units were established; improved varieties of forage crops were introduced both as seeds and seedlings; and training in the proper handling of milk and milk products was given to technicians, development agents and farmers at different times.

vii) Support to National Artificial Insemination Services (SNAIS), 1987-1990

The project was intended to strengthen and expand the National AI Center and to strengthen the AI services at the field level. The Kalitti National AI Center and eight other centers located in different regional states were engaged in
nitrogen production. The Kalitti center was mandated with the additional task of recruiting new young bulls of high potential for semen production and also took up importation of top quality semen from internationally renowned bulls.

The foregoing indicated the different attempts made at various times in the past to improve the development of the livestock sub-sector and some of the gains obtained from the outcome were less than what had been expected. With all these efforts, the sub-sector could have been at a much better development stage than it is today. The effects have failed to sustain because a top-down approach was used. In other words, the conditions necessary for the intended beneficiaries to actively participate were not created. Had a better approach been used, their voices and needs would have been incorporated into the planning and implementation of the projects. The active involvement of the beneficiaries of a project at all stages of designing and implementation is a prerequisite to the success of any project.

3.2.2 The Current Government Interventions

a) Regular Extension and Package

The Livestock Development Strategy developed by the federal Government to be independently implemented by the regional states has two components: animal health and regulatory work and livestock extension services.

The available livestock extension services are in turn of two types (OESPO, 1999).

- **Regular Extension.** These are services related to feeds, general livestock husbandry, including artificial insemination, vaccinations and treatment of sick animals, which have to be paid for by the farmer upon receiving the services.

- **Packages.** A package is composed of an animal species and all the supportive inputs it requires to be productive. Accordingly, though it may vary from region to region (based on potential, priority and the different resources available to implement the program), the following constitute the four known development packages related to livestock:
  - Dairy development package;
  - Meat animals development package;
  - Poultry development package; and
  - Honey and wax development package.

For a given package to be successful and produce the desired results, it has to be supported with all the associated important inputs. In addition to
distributing animals to farmers for dairy, meat and egg production, the packages will involve the inclusion of feed and health components and the full participation of the farmer as well as the concerned technical staffs, including the health and regulatory staffs. In any livestock production system, feed and health care contribute the most to animal productivity.

From the standpoint of the cost involved, it may not be possible to simultaneously implement all of the packages across all regions at a similar level of operation in the beginning. So there is a need for prioritizing potential areas for the service delivery, while implementing the regular extension program side by side with the package program until the whole region has ultimately been covered.

Another point of important consideration with regard to the current livestock-package utilization is that pertaining to economies of scale. For example, the poultry package of five layers and one cock does not seem to justify the farmer’s full attention in sharing adequate time with other more pressing and important daily agricultural functions. In general, the farmer would be better off spending his precious time on economically more viable ventures, rather than loitering around five birds. So the birds are neglected, and no result has been obtained for the most part. The findings of a research done at the Debre Zeit Center have shown that 100 hen-unit small-scale poultry production is the smallest size that can justify the full attention of the family as a business.

b) Project-Based Government Intervention

The currently operational livestock project in the country is known as the National Livestock Development Project. This project has a national significance (covers nine regional states and two city administrations) in its setup and aims at achieving a sustainable increase in household incomes from livestock. That in turn is expected to result in improved food security as well as in increased poverty alleviation, and to make a significant contribution to enhancing the country’s foreign-exchange earnings. The project duration was originally from July 01, 1999 to June 2005. It was then extended twice—each time for a period of one year—its expiry date being July 01, 2007. The ADB, the federal Government of Ethiopia and the regional states jointly funded this project.

The project was composed of four parts that have considerable complementarities and linkages. These are Livestock Production, Animal Heath, Forage Production and Program Management.
c) Partner Organizations’ Interventions

i) Land-O' Lakes-Implemented Ethiopian Dairy Development Project

The project was funded by the USAID for five years. It is aimed at developing milk-shed areas in selected areas of Oromiya (including Addis Ababa), Amhara and Tigray. It strives to achieve its objectives by providing production-related technical assistance at the producer’s level, and by linking producers with consumers and undertaking different advisory and advocacy activities to create the necessary markets.

ii) ACDI/VOCA

In partnership with Save the Children and CARE, ACDI/VOCA has launched a market access and cooperative development program as a part of USAID’s Livelihood Enhancement for the Pastoralists and Agro-Pastoralists (LEAP) program.

ACDI/VOCA’s LEAP project, formerly Southern Tier Initiative-LEAP, builds the capacity of pastoral communities in southern Ethiopia to increase their incomes through improved livestock marketing, increased access to finance and income diversification. In 2005 alone, LEAP facilitated the direct sales of livestock valued, in the aggregate, at USD 590,257 from pastoralist cooperatives to export-oriented abattoirs and live-animal dealers. In addition, LEAP trained 45 development agents in cooperative development and management; established 14 new savings and credit cooperatives; and restructured 20 cooperatives into effective private organizations that provide marketing, input supply and/or savings and credit services to their members.

Through the five-year LEAP program, ACDI/VOCA is increasing market access to pastoralists in the Afder and Liben Zones of Somali and the Borana Zone of Oromiya.

LEAP provides increased market access by training the staffs of the Cooperative Promotion Office (CPO), employees of the cooperative and the pastoralists themselves. These organizations are encouraged to forge relations with rural financial services providers and to expand income-generating activities. ACDI/VOCA focuses on building the institutional capacity of cooperatives’ promotion bureaus, with a view to developing and supporting cooperative organizations. Volunteers evaluate and restructure existing pastoralist organizations to bring them in line with the existing regulations.

LEAP also organizes new marketing associations and cooperatives in such a way that they will be able to provide their respective members with inputs, consumer goods and services. In addition to that, the members of the cooperatives and CPO staffs conduct an onsite study of the Kenyan Marsabit
Traders Association and other highland cooperatives. This experience will not only enhance the organizational development of Ethiopian associations, but will also provide traders on both sides of the border with an opportunity to share information while strengthening local market channels.

ACDI/VOCA’s LEAP program trains Ethiopians in many aspects of cooperative development, such as co-op organization and management, rural finance and business skill development. Furthermore, a number of elected cooperative leaders will be given training in cooperative organization and leadership. Over 1,000 pastoralists and agro-pastoralists will also benefit from this training by forming and participating in cooperatives and associations, guided by the program.

The co-ops under LEAP will operate using the capital invested by their members. Gradually, however, they should be able to reinvest in activities that support diversified income generation and profitable market involvement. The trained community members and the professional staffs managing the cooperatives will ensure greater prosperity for Ethiopian pastoralists by effectively linking them with wider markets and expanding their trade opportunities.

III) SNV (the Netherlands Development Organization)

Support to Business Organizations and their Access to Markets (BOAM) is a program of the SNV, which is funded by the Royal Netherlands Embassy to Ethiopia. BOAM focuses on the delivery of three service areas in supporting agricultural development: capacity enhancement, creation of a platform for public-private dialogue and identification of policy constraints and access to fund to improve market services.

The program provides funds for business development services, research/studies, technical assistance and financial services. The targeted groups to benefit from this program are market-oriented farmers and small- and medium-sized enterprises engaged in agri-business.

The BOAM program focuses on milk and milk products and honey and beeswax from among livestock products. At its pilot phase, in particular, it focuses on three strategic interventions that cover milk-collection centers and their linkages to producers, milk packaging and quality management. The program has made four strategic interventions in honey production and processing during the same phase. These comprised the improvement of the quality of honey in the rural areas, the provision of processing equipment, and the promotion of non-honey products and the development of organic lines. What is more, as part of its non-livestock-related activities during the phase, BOAM has also addressed edible oils and oilseeds as well as pineapple production.
iii) Ethiopian Sheep- and Goat-Productivity Improvement Program

The project is funded by USAID Ethiopia and is planned to be implemented from 2005 to 2010. The institutions involved are the Langston University, the Prairie View A & M University, as well as the Ministry of Agriculture and Rural Development of the Government of Ethiopia.

While the overall objective of the program is to increase the productivity of small ruminants in Ethiopia and thereby contribute to the national effort to ensure food and economic security, the three specific objectives of the program are to improve small ruminant production and marketing practices; to determine the preferred means of utilization of indigenous sheep and goats in future production systems; and to enhance the communication capacity at collaborating Ethiopian institutions to facilitate information-sharing and accessibility, research collaborative capabilities, and distance education capabilities.

3.2.3 The Current Government-Related Services in Livestock

a) Slaughterhouse Operation and Management

In managing slaughterhouses, better sanitation and efficiency can be obtained if the following sets of conditions are met (Williamson and Payne 1965):

- A proper live-animal-holding area and leading crash;
- A smooth, non-slippery floor that is solid;
- A hoisting rail with a pulley system which will make meat inspection much easier;
- An adequate amount of piped water for cleaning;
- A proper waste disposal system;
- Floor rings to secure the animal;
- Hanging rails;
- Adequate electric light;
- A proper curing and storage place for skins and hides; and
- A proper peripheral fence with a solid gate to keep out unauthorized bodies such as dogs or persons.

Under the present arrangement, the abattoirs catering for local consumption in the different regions of Ethiopia are administered and managed by their respective municipality offices. Meat inspection, nonetheless, is the sole responsibility of the woreda agricultural office. The woreda public health office ensures that a proper sanitary condition exists at the slaughterhouses at all times. In the interest of public health, the same office also carries out periodic examinations on the health conditions of the butchers—that is, the people
engaged in the slaughtering of animals. Every butcher must have been accustomed to slaughtering his own animals. He should also have full control over the staffs working under him and on the property of the abattoir that he uses.

The arrangements mentioned above were, of course, made to ensure an equitable sharing of responsibilities in managing the abattoirs. They do not, therefore, seem to be effective enough to provide quality services and safe products to the public by meeting the conditions set. In short, certain areas have been overlooked.

In managing slaughterhouse operations, the main objective should be protecting the public from consuming meat slaughtered under unhygienic conditions. In other words, those who manage slaughterhouses are responsible for making sure that such meat is not handled and sold to consumers without being inspected. Their other objective is protecting the environment from contamination.

These objectives can be fully achieved if the abattoirs are privately managed and the regional government restricts itself to effective regulatory and inspection work, based on the guidelines prepared to that end. In fact, it is widely believed that effective service can be provided to the public if the slaughterhouses in all the regions are run by the butchers themselves.

Through their woreda offices, the regional governments should continue to undertake meat inspection and to render public-health-related inspection services on the abattoirs. The municipalities of the cities and towns where the slaughterhouses are found, for their part, should do nothing else but collect taxes.

Reforming the existing modus operandi with regard to the manner in which the abattoirs are managed, as indicated above, will no doubt enable the towns to provide quality and effective services to their meat-consuming dwellers. That, needless to say, will make their services totally acceptable and satisfactory.

There is enough room for the private investor to go into the slaughterhouse business. Private-sector investment will indisputably make the sub-sector operate more efficiently. That means, there will be a marked improvement in the service delivery time; the services will be more acceptable to consumers; and the working environment will be more hygienic; and to the required environmental standard.

This recommendation is based on the studies undertaken in 10 zones of Oromiya, which sampled 12 slaughterhouses and were done in 1999 (OESPO 1999), as well as on the information obtained later from the SNNPR's Department of Livestock Production and Health Services. Based on the similar
situations existing in these two regions, a nationwide recommendation regarding the operation and management of slaughterhouses has been forwarded.

b) The National Artificial Insemination Center (NAIC)

The National AI Center of the Ministry of Agriculture and Rural Development (MoARD) is located in Addis Ababa. According to the information obtained from the center, it has the following national mandates:

- Train and retrain AI technicians;
- Produce and store liquid nitrogen for the sole purpose of preserving frozen semen;
- Collect, process and distribute semen to the ultimate users in all the regional states; and
- Monitor AI field services.

So far, nevertheless, the center has been engaged only in collecting, processing, storing and distributing the frozen semen of cattle from exotic breeds (Holstein and Jersey), local breeds (Boran, Horro, Fogera and Bagayit) and different levels of Holstein x Local and Jersey x Local crosses.

To facilitate the proper fulfillment of its national duties and responsibilities, it has regional centers at Bahir Dar, Dessie, Mekele, Harar, Wolayita Sodo, Assella and Nekemte. These centers are, nonetheless, currently at different stages of development. In the future, however, all of them are expected to produce liquid nitrogen and serve as storage and distribution centers for semen. At the moment, the centers at Bahir Dar, Mekele, Wolaita Sodo and Assella are fully equipped and functional. In line with the current Five-Year Livestock Development Plan, the following will be implemented:

- Distribute frozen semen from selected quality bulls in the quantity required;
- Increase the number and improve the quality of AI technicians with the ultimate aim of providing efficient and good quality AI services;
- Start semen production at four regional states (Amhara, Tigray, Oromiya and SNNP); and
- Strengthen the screening of bulls and the selection of both local and exotic breeds that are to be used for semen production.

The operation, nonetheless, is not without its problems. To mention but a few, the following constraints have been observed during the operational period:
• A cost-sharing arrangement has not as yet been put in place, so that the federal and regional states would know what they should pay for the services they receive;

• A few regional states have been discriminating against semen from local breeds, in favor of exotic breeds and their crosses;

• The AI service at the regional level is, in general, inefficient;

• Private operators are not yet actively participating in the rendering of the service;

• The fact that the concerned regional governments have not been giving the AI technicians any incentive has been adversely affecting their performance; and

• No productivity-based classification of the local cattle population has as yet been done.

Because of the above-mentioned shortcomings, the center does not appear to be in a position where it can bring about the much-needed improvement in the genotypes of the Ethiopian dairy cattle population at the expected pace. That, therefore, has impeded the improvement of productivity per cow, thereby adversely affecting the overall milk-production potential of the country.

So far as the private sector is concerned, however, these weaknesses are actually blessings in disguise, in that they make the area open and fertile for its participation, provided that the appropriate government-sponsored monitoring and regulatory mechanisms are put in place.

3.2.4 Private-Sector Interventions

a) Livestock Trade

Livestock traders are engaged in the local trade of live animals and in the export thereof. They, nonetheless, face a host of problems. One of these is failure to implement the policies governing livestock export at lower levels, particularly the policy with regard to taxation. Government development intentions are not quite often supported by effective policies and strategies, either. Nor are animal health-care services widely available. En-route animal holding grounds and water services along marketing roads are not well developed and do not, therefore, meet the required standard. Because of the absence of proper livestock transportation facilities, animals are commonly trucked by inappropriate vehicles. In fact, trekking is the usual way of livestock transportation. On average, cattle are trekked about 35-40 kilometers, and shoats 15-25 kilometers each day. Staging points are chosen based on the
customary practices, but may change depending on the season and the security situation. It is estimated that a 100-kilometer trekking costs Birr 1.15 per head of cattle, and Birr 0.16 per shoat. Though trekking may appear inexpensive relative to trucking, the cost reduced through trekking does not outweigh the weight loss incurred and the resultant loss of money at the terminal market sale.

Disease-free zone demarcation for raising livestock for export has not yet taken place, though it is being considered at the moment. The overall policy situation of the country is improving, but it has been undermined by the ineffective implementation of policies at the lower levels of administration. Furthermore, the existing port (Djibouti) is not developed enough to handle animals for export.

As reported to the study team during the discussions it had held with them, livestock traders face a number of other problems, too. These include repetitive taxation, unavailability of animals at the accessible marketplaces, and an acute shortage of capital.

**i) Repetitive taxation.** Regional primary and secondary marketplaces are not usually fenced. Besides, they are under the control of local authorities. At these marketplaces, various arbitrary service charges are, therefore, imposed on buyers and sellers of livestock. The service charges for using the terminal marketplaces range between Birr two and Birr 10 for cattle, and between 0.25 cents and Birr two for sheep. According to the cattle traders, on the Yabello-Addis Ababa livestock marketing route, for instance, cattle traders are charged Birr 3.00-5.00 per head at a primary marketplace, and Birr 30.00-60.00 per head at the en-route posts at Yabello and Adama, respectively, at the time of sales at the terminal marketplaces. That has been corroborated by a market study done by Ayele et al. (2003). The study has disclosed that animals are charged Birr 1.00 and Birr 2.00 per head of shoat and cattle, respectively, for quarantine services. On top of that, Inland Revenue collectors charge Birr 5.00 per head of cattle, and Birr 1.00 per shoat at the marketplaces.

**ii) Shortage of animals at the accessible marketplaces.** According to the interviewed traders (both domestic and export cattle traders), the availability of animals at the accessible marketplaces of Borana has been declining from time to time. The stiff competition between export traders and local traders has further aggravated the shortage. Of course, since the overall market for livestock is growing fast, the diminishing trend in the availability of animals at this early stage appears to be a paradox. According to the traders, the pastoral associations established for easing market-accessibility have not hitherto been able to improve the situation. The traders add that the pastoral associations do not avail the type of animals suitable for feedlot operation, either. Though those involved in live-animal trade and abattoir operation throughout the country seem to be unanimous in this regard, the Oromiya Pastoral Commission
disagrees with them. According to the Commission, only less than 10% of the potential marketable livestock has been traded so far, and that the remaining have not as yet been given any market opportunities. The traders who complain of an acute shortage of livestock are those who have confined themselves to the roadside Borana marketplaces and have stringent animal-selection criteria, the Commission adds. As a further elaboration on the matter, the Commission says that many woredas of Boran, Bale and Hararghe have market-outlet problems; efforts are, therefore, underway by the government of Oromiya to open up marketplaces and build the infrastructure necessary for them to access marketplaces (see Item 3.4 for details). There is no denying the fact that ensuring access to remote marketplaces is a positive step toward enhancing the availability of live animals. It must, however, be noted that taking the necessary measures to balance off-take rates with improvements in the productivity of the livestock resources through systematic breeding strategies and enhanced husbandry practices and thereby meeting the ever-growing demand is equally essential to ensuring the sustained supply of marketable animals.

iii) Capital shortage. Many livestock trade operators have indicated that their main constraints have to do with an acute shortage of financial resources, for it has meant that they cannot expand their businesses. All types of livestock traders were recently called to a meeting where they were informed of the availability of loans from VOCA Ethiopia and Save the Children-USA. As explained at that meeting, the amount of the loans that the former could extend to them would be around Birr 450,000.00 per person, and would have to be repaid within a period of six months. The amount of the loans that the latter could extend to them is, nevertheless, in millions of Birr, and could be repaid over a much longer period of time. At the end of the day, however, the participants were told that only two traders had qualified to benefit from the scheme. And no explanation was given as to why the loans were to be extended only to the two beneficiaries. Maybe only the two individuals were found to be credit-worthy. Or maybe that was what the lenders could extend for the time being, which means that they would be able to extend loans to more traders in the future—so long as they find them creditworthy. At any rate, if the meat industry is to flourish and satisfy domestic and export market needs, a better credit facility, which is free from bureaucratic hurdles, needs to be put in place.

b) Export Abattoirs

There are a total of 11 abattoirs in Ethiopia today. Of these, five are currently operating, whereas the remaining six are not. The five that are operating are engaged in the export of chilled shoat, cattle and camel meat to various countries—mainly those in the Middle East.
From the discussions it had held with them, the study team has found out that they are currently faced with such major problems as the following:

- Too small cargo space per trader;
- Poor animal quality, resulting in many rejects; and
- An uncompetitive price of live animals, which has gone up from Brr 3.50 to Birr 7.50 per kilogram for shoat meat over the last two years.

It goes without saying that the international market for meat is highly competitive. Yet the meat that Ethiopia exports is not so competitive—so much so that it is the least preferred. For instance, the Middle East countries that import meat prefer coming from such exporters as Australia, Brazil, India, Sudan, etc. The fact that there are no adequate animal-holding areas near the abattoirs is another problem that these traders are reportedly beset by. The Arab countries in the Middle East are also very strict about health issues. The sanitary and phytosanitary situation in Ethiopia has not, however, been able to inspire their confidence to date. Furthermore, Ethiopian meat exporters find it very difficult to access live animals that meet the requirements set for export-destined slaughter.

c) Dairy-Processing Plants

There are, at the moment, a total of five dairy-processing plants in Ethiopia. Of these, three are located in Addis Ababa, one at Dire Dawa, and the other at Kombolcha. These plants were established with the objectives of collecting, processing and marketing milk and milk products; operating their own dairy farms; providing the small-holder producers that supply to them raw milk with limited input services in the form of feed at cost.

The major constraints of the processing plants are the scattered settlement of the human population, which makes collection of milk very expensive for them, the poor milk-production capability of the indigenous breeds of cattle, the fact that most of the milk supplied to them is adulterated and of poor quality, the seasonal consumption (due to fasting) habits of a considerable segment of the Ethiopian population of animal products, including milk, the unavailability of different input services such as AI, credit and land that are needed to support the expansion of modern dairying in the dairy industry. Processing plants are now contemplating the establishment of outreach and extension programs, with a view to improving milk production at the small-holder level, which would enable them to enhance the availability of raw milk and expand their processing and marketing capacity.

d) Mixed Agro-Industry

The ELFORTA Agro-Industry Private Limited Company (PLC) is the best example of a mixed agro-industry engaged in the livestock business. This company is
associated with poultry production, abattoir operation, meat export and local trade of live animals. It imports parent stocks in the form of one-day-old chicks for its poultry operation.

From what the study team has been able to glean from the discussions it had held with the mid-level Managers of the PLC, it, too, has such problems as delay in the land-right transfer of purchased farms that it uses as holding areas. The delay has in turn caused lack of security in ownership and prevented investments on facility improvements in many of these areas. The company also has difficulty in buying high-quality animals from the marketplaces. According to the Managers of the company, the fact that unlicensed brokers are moving freely in the areas known for their huge livestock population has resulted in an escalation of prices.

Despite these problems, plans are, nevertheless, underway to modernize and expand its current operations and establish such new businesses as hatchery operations, canned-meat export, and provision of modern transportation for live animals. Once these plans are implemented, the company is confident that it will be more competitive on both the domestic and export markets.

Another company that is engaged in agro-industry and thus runs a fully integrated and an environment-friendly farming operation is the Genesis Farm. This farm undertakes a mixed operation of dairying, poultry and horticultural production on a plot of land that is only 4.5 hectares. As part of its outreach exercise, upon request, the farm gives short-term vocational training and farm-guided tours to different farmers’ groups who are interested in benefiting from such opportunities. Still, the farm has its own problems. For one thing, its attempt to enter the export market failed due to the high cost of the production of poultry, which was caused by an increase in the price of raw material for ration formulation. For another, the farm is unable to expand its operations because it lacks the plot of land that it would need therefor. It also has other problems, including inadequate supply of ingredients for ration formulation and the VAT tax. Needless to say, these problems are hampering its attempts to become a more profitable enterprise.

The other establishment that is engaged in small-scale, mixed agri-business is the Almaz Poultry and Feed Processing Plant. Its main operational problems have to do with the unavailability of raw materials, the high cost of production and low selling prices, which, according to its Managers, hardly cover the cost of production—let alone generate profits.

e) Animal Feed Plants

There are over 15 animal-feed-processing operators in the country. The objectives of animal feed plants are to formulate and process different feeds for various classes and species of livestock. The formulation and processing of
these feeds are based on the use of locally available raw materials with input importation limited only to those raw materials not available in the country. Similarly, these plants aim at selling their formulated feeds on local and export markets. Some of them have also a desire for fattening cattle at their own feedlots both for local and export markets. Reportedly, the constraints of these plants include the high cost of raw material, the low demand for formulated and processed feed, lack of knowledge and awareness on the part of farmers about the benefits of using balanced ration, and low capacity utilization of the plants. An absence of regulatory and quality control mechanism is the other problem.

f) Feedlots

There are over 200 feedlot operators engaged in fattening cattle targeted for both the local and the export markets. Two of the problems faced by these operators are their inability to get land of acceptable size at the place of their choice for operation and an acute shortage of live animals on the marketplaces as and when they are ready to do their purchasing of same. Most of the operators are at present using places that they have rented at very high rates from private owners.

Feedlot operators normally work under congested and untidy conditions due to limited holding grounds. The existing barns have small capacities. And many of them are located at places not permitted by town municipalities for such operations—either for reasons of sanitation, or because they have not been incorporated into the master plans of the towns. For example, the operators in and around the town of Adama had repeatedly lodged formal requests to the Eastern Oromiya Zone, to provide them with suitable land. They still live with this problem, though regional and zonal efforts were made to solve them. Recently, they were offered an unsuitable rocky plot of land around Adama. But the operators spurned the offer, on the grounds that it was unsuitable for feedlot operation. No action has since been taken by the authorities to solve this problem.

The fattening operation is based on oilseed cakes—that is, cotton and linseed, wheat bran, molasses and salt. The prices of oilseed cakes and wheat bran have, nonetheless, skyrocketed within a relatively short period of time. Currently, the price range of cottonseed is Birr 105.00-115.00, and that of linseed cakes Birr 130.00-140.00. Not too long ago, they fetched less than Birr 80.00. The involvement of foreign traders, particularly Arabs, in feedlot operation has resulted in a sharp rise in the prices of feed, animals and barn-rent rates.

Most operators’ plans are focused on the diversification and continuation of operations, so long as there is profit to be made in the business. The diversification plan calls for owning breeding ranches where male animals are
managed from birth to finishing ages, milk production and dairy processing—
on top of the current feedlot operation.

These plans, however, seem to be unrealistic, as trying to get involved in all
aspects of livestock operations could only make them inefficient, make it
difficult for them to specialize and entail for them loss and thereby eventually
drive them out of business. This is mainly so because the different operations
require different knowledge and expertise, which may be difficult for the
operators to mobilize and efficiently manage the business.

g) Leather Production (Tanning)

Ethiopia has a total of 21 tanneries. Of these, 17 are privately owned, whereas
the remaining four are state-owned. The few state-owned tanneries,
nonetheless, account for nearly half of all the exports of semi-finished leather.
But the tanneries are concentrated either in and around Addis Ababa, or in
and around the big towns of Oromiya and Amhara Regional States. Ethiopia’s
tanneries, on average, annually process 16 million skins and 2.4 million hides.
But that means, they are operating at 45% of their installed capacity for skin
processing, and at 81% of their capacity for hide processing. Why? Because the
supply of raw materials is way below the demand therefor. Over 80% of the
tannery output is exported as pickled sheepskin or wet blue (pre-tanning) to
the international market, while the remainder is sold locally to manufacturers
of leather goods. The volume of finished leather exports is very low. That, of
course, has limited the benefits that could accrue to the country from this
industry.

The quality of the finished leather that the tanneries produce is low, too. It is
widely believed that the main reason is that the hides and skins supplied to
them are of low quality. They are of low quality because of the ekék parasite,
the poor flaying techniques that leave cuts and marks, the putrefaction from
improper wet salting, dirt, etc. The estimate is that these problems cost the
Ethiopian leather industry close to USD14 million per year. It is, nonetheless,
hoped that that will soon be a thing of the past—now that certain measures are
being taken to address the problem, including the establishment of a training
institute.

The Leather and Leather Products Technology Institute (LLPTI) of Ethiopia,
which is a member of COMESA’s LLP, was established in 1998. The Institute
is responsible to the Ministry of Trade and Industry (MOTI). It provides diploma
and certificate courses in raw hides and skins, leather/footwear,
.goods/clothing technology, footwear design, and leather crafts work. The LLPTI
also provides short-term modular courses and industrial courses designed to
upgrade technological and managerial capacity within the industry. In addition
to receiving support from the Italian government, the LLPTI has been getting
assistance from the United Nations Industrial Development Organization
(UNIDO) through a €1.4-million project to support its mandate to provide training and services to the industry.

New, high-technology investments are also being made in the sub-sector. To mention but a few some of these are the Ethio-Italian Footwear, a Canadian investment in a new factory that is being constructed to produce strictly for export, and the Jamaica Shoe Factory. Of course, there are many who view such investment as being unrealistic and unprofitable, given the poor supply of hides and skins currently faced by the tanneries.

**h) Leather Processing (Manufacturing)**

There are about 850 leather-manufacturing small enterprises in Ethiopia. These enterprises have created employment opportunities for a total of 6,000 Ethiopians. With an average production of worth USD 25 million annually, footwear constitutes the largest consumer of all the leather products produced in Ethiopia.

Approximately seven factories, of which five are private, have a capacity of producing 1,000-1,500 pairs of shoes per day, on average, whereas another half-dozen factories have lower capacities. In total, these factories have the capacity to produce approximately three million pairs of shoes annually. They are, however, utilizing only a small percentage of this capacity due to lack of demand and a shortage of leather supply. The formal sector accounts for only half of the footwear manufacturing in Ethiopia, as approximately 700 small footwear units have an estimated cumulative production capacity of 3.5 million pairs annually and command more than half of the domestic footwear market (the other half being split between large-scale manufacturers, imports from Southeast Asia, and second-hand imports).

Leather garments are produced by approximately 15 factories in or around Addis Ababa. And most of these are operating at less than 50% of their capacity, although production is steadily increasing. These factories manufacture leather jackets, primarily for sale on the local market or for export to Italy. Leather goods—belts, purses, bags, briefcases, and other accessories—are produced by these same factories as well as by smaller factories that are targeting the tourist market. But these categories of products account only for a small portion of the leather products manufactured in the country, and for a very small fraction of the exports thereof. Currently, only the ELICO-Universal Group is exporting leather goods—excluding shoes.

In the past, the underdeveloped infrastructure had hindered the progress of the LLP industry in Ethiopia. Unreliable telecommunications and electric supply prevented the majority of the manufacturers from meeting the strict demands of international buyers for quantity, quality, timely delivery and flexibility in design.
i) **Honey Production and Processing**

Crude honey could be processed into several important marketable products. These products comprise purified honey, beeswax, propolis, pollen, bee venom, and royal jelly. Not many investors are, nevertheless, engaged in the processing of honey in Ethiopia. And the processed products of those who are are limited to purified honey and beeswax.

Modern honey production involves a wider use of paraffin wax to replace natural wax in the expanding use of modern beehives. The availability of paraffin wax at a very low price has led to a large adulteration of beeswax in Ethiopia. Shortage of good-quality crude honey arising from poor post-harvest handling of honey and from an absence of a regulatory body and a quality-control mechanism are the major problems in the honey-processing business. These problems have led to a sharp decline in the amount of the honey and beeswax being exported.

There is a plan to start a bee-farming outreach program in selected promising areas of Oromiya, Amhara and SNNP. At least one operator is planning to distribute modern beehives on credit and train farmers in the different aspects of honey production, including post-harvest management. The investor is planning to do this, with a view to solving the problem of adulteration and thereby supplying quality honey in adequate quantity.

j) **Beeswax Processing**

Beeswax processing involves the processing of beeswax for export. The major problems in this regard are shortage of good quality, unadulterated beeswax, use of paraffin wax to replace natural wax in modern beehives, availability of paraffin wax at a low price to the extent of encouraging adulteration of natural wax, the absence of a quality-control system and a regulatory body—as in honey processing. Because of these problems, the export of wax from Ethiopia has of late declined very sharply, and the country is losing its market to Tanzania. Evidence shows that, at present, the wax exported from Ethiopia is 30%-40% adulterated.

3.2.5 **Interventions by Private-Sector Institutions**

a) **The Ethiopian Live-Animal Traders’ Association**

This is a union of two associations engaged in live-animal export and domestic livestock trade. Its objectives are to establish a workable and functional market information system to provide members with up-to-date market information, advocate for the respect of their rights, help them access credit, encourage and popularize networking operations between those businesses in the sub-sector
that have complementarities. It also intends to fight against illegal cross-border live-animal trade, appeal both to the federal and regional governments to ban, or stop, repetitive live-animal taxation while the animals are en route.

According to representatives of the association, the main problems encountered by its members in the livestock trade business are the following:

- Inability to get land from the Government on a lease-hold basis for operational use, as a result of which its members are operating on plots of land rented from private owners at very high rates;
- The expensive and unaffordable feed that has been driving some of the feedlot operators out of business;
- The high cost of animal transportation;
- The shortage of animals on accessible marketplaces;
- The fact that even those that are available on the marketplaces are of low quality;
- The absence of holding areas where animals are fed and watered while en route; and
- The free movement of unlicensed brokers in all animal marketplaces due to the absence of a regulatory mechanism.

From what the representatives of the association said, these problems hamper the smooth flow of trade. The association had requested the Addis Ababa City Administration to hand over to it the Kara Allo livestock marketplace and to give it land on lease in the Akaki-Kalitti Zone of the city for use as a holding area. The city administration has, nevertheless, taken no action so far in this regard.

The Government is keen to promote livestock trade. There are also many positive proposals on paper in this regard. Not much has, however, been done to implement them. Ato Arabo, one of the interviewed cattle traders, is not a member of the Association for Live Animal Trade, since he does not expect much assistance from this association, given its weaknesses. He sees no advantage in being its member. So he is operating on his own, without any interference from any government bodies. He said that he would consider joining the association only if and when he noticed that the members of the association were benefiting from their membership in it. He added that, had any benefits been accruing to the members of the association, even the non-members would have been able to get at least some of those benefits. As it is, he concluded, he sees no advantage in being a member of the association. He rhetorically asks, “What is the point of establishing an association if it is not strongly supported by the right policy environment so that it will be able to achieve its main objective?”

The study team also assessed the opinion of live-animal traders engaged in both exporting and selling them on the domestic markets. While these traders
are apparently beset by the same constraints that the feedlot operators are reportedly beset by, they said that they were also faced with such serious problems that are particular to their business, including the following:

- Weak animal health services;
- Poor animal transportation facilities;
- Inefficient port facilities; and
- Livestock contraband trade.

National strategies need to be developed to overcome these problems and make the pastoral areas contribute to food security and export markets more productively than they are at the moment.

b) The Ethiopian Meat Exporters’ Association

The association has the objectives of working for the rights and benefits of its members through a positive dialogue with the Government—in an organized manner. In other words, it focuses on policy-related matters. It is also committed to fighting illicit and illegal activities associated with the country’s meat trade. So far, it has encountered problems of shortage of animals for slaughter, low standard of management and health care for their animals, and shortage of animal feed, including water. The additional problems that the members of the association mentioned were the following:

- Being asked to pay exorbitant prices for live animals;
- The fact that most of the marketplaces for live animals are found at inaccessible locations;
- The unchecked movement of unlicensed brokers in those areas where live animals are marketed; and
- Lack of proper livestock transportation facilities.

According to them, these problems are exacerbated by the lack of an internal quality-control mechanism and by failure to specialize in a particular aspect of animal trade. As an elaboration on that, they say that those who are in the meat export business tend to be engaged in all forms of livestock businesses—including cattle rearing, fattening and meat and live-animal export.

In the export market business, the acceptability of Ethiopian meat and the price paid for it is reportedly low. Why? Because the importers of the meat, in general, believe that it is of low quality and does not meet sanitary and phytosanitary standards. In the association’s view, this business sector has to attract people with adequate experience and relevant training, for that is the only way that the situation can be markedly improved. In addition to chilled and frozen meat, there is a felt need for processed and packed meat. So it would be wise to go into this business as well and add value. The association, however, has not as yet done any market promotion work to that end. Trade
promotion has to be undertaken both by the Government and private investors. From what the representatives of the association told the study team, the association plans to eventually get involved in trade promotion as well.

c) The Ethiopian Society of Animal Production (ESAP)

This is a professional society established in 1989. And its major objective is contributing to the advancement of animal production and productivity in the country, with a view to enhancing the role that the livestock industry could play in the overall economic development of Ethiopia. This society creates an annual forum whereby the professionals in the livestock sub-sector can come together and address a thematic issue identified relevant for a particular year. The professionals are, of course, those who do research, educate others, or work in extension. It is common knowledge that the various institutions of higher learning in Ethiopia do research on the different aspects of livestock production, breeding, feed, nutrition, health and marketing. One of ESAP’s achievements since its establishment has been the documentation and distribution of the results of these researches to its members and other interested users. These results are compiled each year in the form of proceedings of Annual Conferences. Anyway, that has been going on for the last 16 years. More recently, they have even begun to appear as journal articles of the Ethiopian Journal of Animal Production (EJAP). This journal is issued twice a year, and it is owned and run by this society. Copies of both the proceedings and journal articles are now available for reasonable prices from the society’s office. What is more, anyone interested in them can come and buy them.

ESAP intends to eventually be more than a scientific forum. Its long-term aim is to be a livestock-development-promoting society. So far, nevertheless, it has not been able to make much headway in this respect. For the society to have a greater impact on the development of the livestock industry, it should forge strong relations with the various associations established to promote the causes of the sub-sector—that is, the dairy unions and cooperatives, the live-animal-trade associations, the meat-export associations, the sectoral association units in the chambers of commerce, etc. It should also be engaged in a positive dialogue with the policymakers on the issues affecting the well-being of the livestock industry.

d) Chambers of Commerce and Sectoral Associations

These organizations were established with the following major objectives:

- Facilitating market outlets for their members both locally and on the export markets;
- Building the capacities of their members through seminars and training sessions;
• Engaging the Government in a positive dialogue so as to influence the outcome of certain pertinent policies in such a way that they will benefit their members; and
• Promoting the products and services of their members.

At the moment, these organizations are trying to establish sectoral associations in the form of cooperatives in animal (cattle) fattening, poultry production and marketing, and honey producers. For instance, the Oromiya Chamber of Commerce and Sectoral Association at Nazareth is in the process of organizing the different individual operators and cooperatives engaged in animal fattening, poultry production and marketing and honey production into unions—in response to the request that the operators themselves had lodged to it. Those investors engaged in hides and skins trade have, nonetheless, shown no interest in getting organized into an association so far. But a few of them are members of the Oromiya Chamber of Commerce and Sectoral Association.

The Chamber is fully aware of the problems that its members operating in the livestock sector are faced with. According to the Chamber, the major problems that the operators in the sub-sector are faced with are the following:

• Inability to acquire plots of land that are large enough for the planned operation and at appropriate sites;
• Difficulty in marketing finished products due to the interference of unlicensed brokers;
• Lack of adequate technical know-how in the livestock-marketing business;
• Shortage of working capital and an inability to meet the requirements of the nearby banks to qualify for loans, as they do not accept animals as collateral as a matter of principle, given the high risk involved, in that they could die; and
• The fact that membership in the Chamber is low, since many operators engaged in livestock activities operate individually, without becoming members.

e) Dairy Unions

There are two big dairy unions around Addis Ababa: one at Chancho and the other at Debre Zeit. Their objectives are finding market outlets for the milk produced by their members, capacity building, and advocacy on behalf of their members. Their daily combined production capacity ranges between 15 and 17 thousand liters. They market the bulk of their milk mainly to the milk-processing plants in Addis Ababa, although they sell a limited amount in the towns where they operate. These unions encounter the following problems in the course of their operation:

• Financial constraints;
- The absence of government-sponsored, dairy-targeted extension services;
- The inability of the association to give proper and adequate feed delivery and AI services to its members, owing to its financial constraints;
- The ever-increasing cost of transporting milk;
- The shortage of improved dairy animals for small-holders who desire to establish dairy businesses or expand their existing businesses, as well as the high cost thereof; and
- Some members refuse to deliver a portion of their daily milk produce to the union, arguing that it fetches a better price when sold to other recipients.

Union members are, of course, unhappy that they are being paid less by their unions than the prevailing farm-gate market price—that is, for the milk they deliver. The unions, however, pay them less because they need the extra money to cover their overhead cost and more. Members also want their unions to subsidize the delivery to them of improved heifers, AI and feed. The unions, for their part, say that these expectations are reasonable, but that their financial constraints have made it virtually impossible for them to meet them (their members’ expectations).

3.3 Public-Sector Institutions

3.3.1 Pastoral Commissions

These are government bodies established and entrusted with the promotion and development of pastoral areas in Oromiya and the SNNPR with the following specific objectives:

- Identifying strategic sites where there is an adequate amount of running water, electricity and roads for building slaughterhouses;
- Making animal fattening sites available for the investors that will operate the slaughterhouses;
- Identifying sites where cattle-holding areas can be constructed for the reconditioning and quarantining of export-destined live animals;
- Disseminating proper and timely market information to both producers and investors by building networks to that end; and
- Encouraging prospective investors to make proper use of the services that animal health-care workers render—especially in the selection of animals during purchase.
The current pastoral production system, which is not market-oriented, poses a major problem for the effort to increase livestock marketing. Pastoral producers will have to, therefore, be motivated into producing live animals targeted for the market. The motivational mechanisms in this regard could be the development of better infrastructure and attractive market prices. During purchase, animals with visible body marks/defects on the skin, such as branding, are not selected. Such a selection, nonetheless, ends up severely limiting the supply of animals. That in turn causes an acute shortage of marketable live animals.

According to the Oromiya Pastoral Commission, a bright future awaits investors, despite the constraints that are currently prevalent. The Commission is planning to expand and organize primary and secondary livestock marketplaces in the most appropriate lowland pastoral sites of the different zones. Efforts are also being made to make all the marketplaces in the potential livestock pastoral areas accessible by road. This plan involves the networking of all woredas in the lowlands with government financial outlay, and the potential kebeles with their respective woreda towns—with financial contribution from the community. Thus organized, the livestock marketplaces will be jointly run by a municipality, if present, and the pastoral communities.

Stock routes will be identified and run by the surrounding communities. So far five stock routes have been identified. Within a year’s time, every livestock-producing kebele will have an animal-health post through a 50:50 cost-sharing arrangement between the Government and the community. A plan has already been drawn up for building airstrips at Negelle and Yabello in the Borana Zone, or to use the Arba Minch airport as an alternative to take out finished products from the southern region of the country. Killing slabs will be built for smaller towns in which private investors can participate. There are also attempts to organize the pastoralists into unions that will be engaged in the marketing of livestock. Of the unions formed so far, 85% are constituted exclusively by female members. What is more, they have been doing a laudable job of doing everything to plan.

3.3.2 The Regional Governments

The investment opportunities and constraints in the four regional states that have great livestock potential—Oromiya, Amhara, SNNPR and Somali—have been assessed and the results thereof presented here below.

a) The Oromiya Regional State

   i) General Features

The Oromiya regional state extends from 3º 26’ N to 10º 23’ N and from 34º 08’ E to 42º 55’ E. The total land area is about 367,000km². The region’s human
population was projected to reach 26,553,000 by July 2006. Of this population, 13.3% are urban dwellers, and 86.7% rural dwellers.

Considering the climatic and geo-physical features, 88% of the land lies between 500-2500 meters above sea level. The vegetation is alpine in the highlands and woodlands, but bushy savannah and semi-arid shrubs in the lowlands. The annual temperature ranges from 14°C to 20°C in the highlands, and from 20°C to 25°C in the lowlands. Its rainfall ranges between 200 and 2600 mm per annum in a bi-modal pattern. What all that means is that there are good opportunities for livestock production.

ii) Livestock Resources

Almost 52% of the country’s total population of livestock is found in Oromiya. The region is, therefore, the most attractive to those investors who want to go into livestock-related businesses—such as the breeding and production of live animals and the processing of finished livestock products, including the operation and management of abattoirs.

Oromiya is also the major source of skins and hides in Ethiopia. As such, all prospective investors interested in establishing a tannery should give the region due consideration.

Furthermore, the region is top in Ethiopia in beehives. That, of course, makes it attractive to those prospective investors who are interested in apiculture development.

iii) Investment Opportunities

The cabinet of the Oromiya Regional State is the highest body that decides policy issues, regulations, directives and investment matters. The Investment Board of Oromiya sees to it that the policies issued by the cabinet are properly implemented. The Investment Office, for its part, serves as a Secretariat to the Board. The Office’s main function is allocating land to investors, based on their requests and the suitability of their projects.

The current livestock-related investment interventions in the Oromiya Regional State are given in Table 15 here below. About 268 enterprises are operating in various parts of the region. And their capital investment is, in the aggregate, over Birr 722 million. The enterprises’ major areas of focus are animal fattening, dairy and dairy processing and poultry. Furthermore, they have created over 10,000 jobs.

Table 15: The current livestock-related investment interventions by investors in the The Regional State of Oromiya*
<table>
<thead>
<tr>
<th>No.</th>
<th>Enterprise Type</th>
<th>Number of Enterprises</th>
<th>Investment Capital (in millions)</th>
<th>Job Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Permanent</td>
</tr>
<tr>
<td>1</td>
<td>Animal Fattening</td>
<td>100</td>
<td>274,734</td>
<td>2,155</td>
</tr>
<tr>
<td>2</td>
<td>Animal fattening and meat processing</td>
<td>6</td>
<td>52,832</td>
<td>755</td>
</tr>
<tr>
<td>3</td>
<td>Animal raising and dairy farm</td>
<td>1</td>
<td>2,000</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Beekeeping and related activities</td>
<td>5</td>
<td>9,709</td>
<td>85</td>
</tr>
<tr>
<td>5</td>
<td>Cattle and sheep fattening and dairying</td>
<td>1</td>
<td>2,991</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Cattle fattening and dairy farming</td>
<td>14</td>
<td>29,962</td>
<td>510</td>
</tr>
<tr>
<td>7</td>
<td>Cattle fattening and feed processing</td>
<td>1</td>
<td>965</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>Dairy and dairy processing</td>
<td>94</td>
<td>218,404</td>
<td>2,253</td>
</tr>
<tr>
<td>9</td>
<td>Dairy and beekeeping</td>
<td>1</td>
<td>1,285</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>Dairy and poultry farming</td>
<td>2</td>
<td>4,347</td>
<td>20</td>
</tr>
<tr>
<td>11</td>
<td>Dairy farm and meat processing</td>
<td>3</td>
<td>16,031</td>
<td>146</td>
</tr>
<tr>
<td>12</td>
<td>Dairy farm and sheep fattening</td>
<td>3</td>
<td>6,700</td>
<td>77</td>
</tr>
<tr>
<td>13</td>
<td>Dairy farm and vegetable production</td>
<td>1</td>
<td>2,900</td>
<td>50</td>
</tr>
<tr>
<td>14</td>
<td>Dairy farm and feed processing</td>
<td>1</td>
<td>255</td>
<td>7</td>
</tr>
<tr>
<td>15</td>
<td>Dairy farm and cattle fattening</td>
<td>1</td>
<td>3,097</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>Dog and Turkey raising</td>
<td>1</td>
<td>900</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>Ducks and meat processing</td>
<td>1</td>
<td>550</td>
<td>6</td>
</tr>
<tr>
<td>18</td>
<td>Pig farming</td>
<td>1</td>
<td>2,814</td>
<td>29</td>
</tr>
<tr>
<td>19</td>
<td>Poultry farming</td>
<td>25</td>
<td>71,307</td>
<td>553</td>
</tr>
<tr>
<td>20</td>
<td>Poultry farming and cattle fattening</td>
<td>2</td>
<td>1,212</td>
<td>23</td>
</tr>
<tr>
<td>21</td>
<td>Poultry and feed processing</td>
<td>1</td>
<td>61,628</td>
<td>108</td>
</tr>
<tr>
<td>22</td>
<td>Poultry farm and fishery</td>
<td>2</td>
<td>8,813</td>
<td>79</td>
</tr>
<tr>
<td>23</td>
<td>Poultry farm and sheep fattening</td>
<td>1</td>
<td>561</td>
<td>17</td>
</tr>
<tr>
<td>24</td>
<td>Poultry farm and dairy fattening</td>
<td>1</td>
<td>3,097</td>
<td>15</td>
</tr>
<tr>
<td>**</td>
<td></td>
<td>268</td>
<td>722,094</td>
<td>7,204</td>
</tr>
</tbody>
</table>

** Source: Oromiya Investment Office (personal communication in this study of 2006)**

### iv) Incentives and Constraints for Investors

Investors in the regional state can acquire land either through a lease-hold arrangement or rent, upon payment of a predetermined and specified fee per unit of land. The lease period ranges from 30 to 99 years, and the payment thereof has to be settled within 30 to 40 years’ time. Land is rented for a period of 20-45 years, and the rent thereof is paid once a year. Based on its accessibility and proximity to the major towns and cities, land-lease fee for urban land ranges from Birr 0.37 to Birr 2.33 per square meter.

Rural land rental charges for agricultural purposes are set based on the developmental status that the different zones are in and on the distance of the land from an all-weather road. Accordingly, the minimum charge is Birr 70.40 per hectare, whereas the maximum is Birr 135.00 per hectare. The criteria being their distances from asphalt roads (5km), land rental charges in the East Showa Zone for industrial purposes range from Birr 0.10 to Birr 0.34 Birr/m² per annum. An individual farmer in Oromiya may also rent 50% of the total land he or she owns to another farmer for a period of three years, or to an investor for a maximum of 15 years, based on the agreement entered into between the two parties. The comparative advantages of investing in Oromiya, in general, are the following:
- Land-rent-holding—up to four years—for the production of cash crops and other perennial crops;

- Land is granted free of charge for forestry development;

- The investor has the right to transfer his or her land-holding to another person, or to invest on it in partnership with a third party;

- The investor has a right to mortgage and/or pledge his or her land-holding and pieces of property on the land as collateral—in order to secure a loan from a bank or any other financial institution;

- There is an opportunity to acquire land at a reasonable price for fertilizer manufacturing, agro-chemicals, agro-processing, agricultural equipment manufacturing, etc.;

- An extended land lease-payment period—as long as 40 years or even longer;

- A low marginal land-lease rate (0.37-2.33 Birr/m²/year);

- Exemption from having to pay land rent for a maximum period of four years, provided that the investor has developed a plot of land that had been left fallow at least for five years, or some virgin land or an irrigation scheme, or wants to use the land for producing on it improved seeds;

- Access to basic infrastructure, local and international markets; and

- Abundant labor and large markets.

Infrastructure-wise, all zonal towns and the majority of other small and big towns have a 24-hour electric supply. The all-weather roads are, as a whole, 5,514-kilometer long (asphalt and gravel combined). Furthermore, there are motor-usable roads that are more than 3,241-kilometer long, and rural or feeder roads that are more than 3,938-kilometer long. In addition to the above, a railway line connects eight of the towns in the regional state. With regard to air transport, one needs to take note of the fact that the Bole International Airport is located in Addis Ababa, which is part and parcel of the regional state, though it is also the administrative capital of the federal Government. There are also seven airfields within the state.

In the big cities and towns, there is a relatively good postal and telephone service coverage—including cell (mobile) phones in some of the bigger towns. In the financial sector, there exist both state-owned and privately owned financial institutions. These work and serve their respective clients side by side in the
major cities and towns of the region. That, however, does not mean that all the appropriate financing schemes that are necessary for supporting livestock development are in place.

The major drawback about this region is that, although the lowland pastoral areas are the primary producers of marketable animals for both the domestic and export markets, they have not yet been able to be beneficiaries of most of the services indicated above. On the contrary, they are dogged by such problems as poor livestock husbandry, low productivity, poor market connections, recurrent drought and famine, a high prevalence of animal diseases and a chronic water shortage. They also experience seasonal feed shortages.

b) The Amhara Regional State

   i) General Features

The Amhara Regional State is located in the north central and north-western parts of Ethiopia, approximately between 90 21' and 140 0' N latitude and 360 20' to 400 20'E longitude. It occupies about 170,152 km² of land with an altitudinal zone ranging from 600 to 4620 meters above sea level. The region is divided into eleven administrative zones, which are further subdivided into 113 woredas. The eleven administrative zones are North Gonder, South Gonder, West Gojjam, East Gojjam, Awi, Wag Hemra, North Wollo, South Wollo, Oromiya, North Shewa and the Bahir Dar City special zone.

The region has a diverse topography comprising lowlands, extensive plateaus, numerous mountains, river valleys and gorges. The lowlands are mainly found in the eastern and north-western areas, bordering the Afar Regional State and Sudan, whereas the highlands are largely located in the northern and eastern parts of the region. Agro-ecologically, this region is constituted by a 48% woinadega (1500-2300 masl), a 28% kolla (below 1500 masl) and a 24% dega (2300-3000 masl). The average annual rainfall ranges between 598 mm and 1692 mm, and the mean annual temperature varies from 12.4°C in the kolla ecology to 27.8°C in the dega region.

   ii) Livestock Resources

The region is only second to Oromiya in its livestock resources. From among the bovine, caprine and equine species, cattle are the most abundant. North Gondar holds the highest cattle and poultry concentration, accounting for 18.4% and 26.6%, respectively, of the total number in the region. South Wollo, on the other hand, is endowed with the highest number of sheep and goat population. As such, it boasts 28% of the sheep and 18% of the goat population of the region.
According to a survey conducted in the region (BFED, 2004), the mean total livestock ownership per household is three animals. The households in the woredas receiving adequate rainfall own a significantly larger number of cows and oxen than those living in moisture-deficit areas. Nevertheless, the households in the latter woredas hold a significantly larger number of small ruminants than what the households in the former own. A third of the households in the region do not own any oxen; less than 30% have a pair of oxen; and about 32% own a single ox. This shortage of oxen, of course, implies that the capacity of the households to produce adequate food is severely limited. That in turn means that they are not in a position to meet the food requirements of their members.

As in the other regions of the country, the productivity of the livestock industry in the Amhara region is low. Why? Because of poor nutrition and health care and lack of appropriate genetic improvement. The mean age at first calving is 54 months, and milking cows calve at an interval of 23 months, producing 1.2 liters a day per cow over a lactation period of 234 days (BFED, 2004). And the mean age at first lambing and kidding for sheep and goats is 15 and 14 months, respectively. They produce one offspring per year thereafter. The average egg production per hen per year in the region is reported to be 68 under traditional management. That, however, was raised to 72 when the recommended management was practiced on the farms.

Currently, about 66.5% (18.6% pasture land, 36.6% shrubs and bushes and 11.3% aftermath) and 33.3% of the livestock feed requirements are met from grazing and crop residues, respectively. Improved fodder crops contribute 0.2% only. The animals in the region are about 31% deficient in their dry matter requirements for maintenance. This will have huge implications for animal production, reproduction, growth, disease-resistance and survival. Especially during the months March-May there seems to be a serious shortage of feed. There is, therefore, a need for augmenting animal feed sources through an improved utilization of crop residues, agro-industrial byproducts and improved fodder production. But less than 10% of the households in the region practice production of improved fodder. And the major reasons behind that are scarcity of land, shortage of seeds and lack of awareness. About 88% of the households have to walk up to two hours to get vet services. There are a total of 70 vet doctors (16 of whom serve in the laboratories) and 350 assistant vets in the region. The latter’s number is, however, expected to grow to over 600 soon, since many are undergoing training now. The current vet/animal ratio is 1:647,944, and the assistant vet/animal ratio 1: 99,969. But, as stated herein above, it will soon be 1: 58,341.

iv) Investment Opportunities
Information on the investment opportunities in the rural settings of the Amhara Regional State could not be obtained from the regional Investment Office, since the Office’s plans are reportedly under review and, therefore, not yet ready for use. What transpired at the discussions held with the regional Bureau of Agriculture, however, was that the region is currently promoting a strong policy of urban agriculture. This drive emanates from the region’s desire to enable selected towns to produce enough animal products and vegetables to feed themselves. Bahir Dar, Gondar, Dessie, Kombolcha, Woldia and Debre-Berhan have been selected to serve as the first places for testing the development of urban farming. The plan, of course, is to eventually expand it to the other towns in the region.

Actions have already been taken in Bahir Dar in this respect, and the Municipality Administration has allotted a part of the town for such business. So far, 100 backyard dairy producers, 60 fattening operators, 10 poultry producers have each leased 850 m², 1000 m² and 1000 m² land, respectively, at the rate of Birr 0.15/m² per year for three years. There are still more opportunities for investors who would want to start any one of the businesses. This appears to be a noble move to encourage those with the skills and necessary resources to start a livestock business of their interest. It also provides producers with an opportunity to supply themselves with highly nutritious food, augment their incomes, and create jobs for their families and the jobless urban youth. Urban consumers are also furnished with quality food within readily accessible reach. However, these efforts are being frustrated by an acute shortage of feed and the preconditions set for obtaining land.

v) Incentives and Constraints for Investors

As indicated above under Item iii of this section, the Amhara Region has not finished preparing its investment policy. So it is difficult to know what incentives are available. The existing infrastructure is, nevertheless, indicative of a promising future for prospective investors in the region.

The region has a total of 7,461.6-kilometer-long roads. Of these, 608-kilometer-long roads have been asphalted, whereas 4,883.1-kilometer-long are all-weather roads, and the 1970.5-kilometer-long ones dry-weather roads. The overall road density of the region stands at 0.44km/1,000 human population. Air transport connects the major cities and towns such as Bahir Dar, Dessie, Gondar and Lalibela with the country’s capital, Addis Ababa. Marine transport, too, is available, but only around Lake Tana.

The telephone network service in the region comprises five full automatic microwave transmission systems located in Bahir Dar, Debre Markos, Gondar, Debre-Berhan and Dessie and two semi-automatic transmission services. There are also 19 post offices and 11 departmental sub-post offices in the region. The current health-service coverage of the region is estimated at 41%. There are
about 14 hospitals, 78 health centers, 518 health stations or clinics and 371 health posts providing health services to the total population of the region.

The major investment constraints in the region are the following:

- Lack of access to credit facilities;
- An acute shortage of animal feed for the dairying and fattening business, particularly around the big towns; and
- A high prevalence of animal diseases, coupled with a shortage of medicines and vaccines.

c) The Southern Nationalities, Nations and Peoples Regional State (SNNPRS)

i) General Features

The SNNPRS is located in the southwestern part of Ethiopia, bordering Kenya to the south, the Republic of Sudan in the southwest, the Gambela and Oromiya regional states in the northwest and northeast, respectively. The region has a land area of about 112,343.19 km² and a human population of 14,992,000. That, of course, accounts for about 10% and 20% of the total land area and the population of the country, respectively.

For administrative purposes, the region is divided into four sub-regions, 13 zones and eight special woredas. The regional administrative city, Awassa, is located 275 kilometers along the Rift Valley, southwest of Addis Ababa.

ii) Livestock Resources

The region ranks third in its livestock resources. As is the case in the other parts of the country as a whole, the livestock sub-sector in this region, too, has not been accorded any development attention.

iii) Investment Opportunities

The livestock-investment opportunities in relation to the availability of land, land size and enterprise type in the SNNPR are indicated in Table 16 below. The region has set aside over 71 thousand ha of land for prospective investors in such areas as fattening, apiculture and ostrich and civet-cat farming in three zones and six woredas.

Table 16: Livestock investment opportunities in the SNNP by location, availability of land and suitability

| S.N | Location Zone | Available Land Woreda Size (ha) | Proposed Related Rent / ha / year | Livestock-Investment |
Since the year 1985 (Table 17), a total of 125 investors have started livestock businesses in the region and created job opportunities for over 2,000 people. Most of the investments are in the fattening and dairying businesses—including dairy processing. The total capital of this investment is close to Birr 66 million.

**Table 17: A summary of private livestock production investments in the SNNPR (1985-to date)**

<table>
<thead>
<tr>
<th>Investment Type</th>
<th>Number of Investors</th>
<th>Joint Total Capital</th>
<th>Employment Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle fattening</td>
<td>88</td>
<td>29,946,642</td>
<td>883</td>
</tr>
<tr>
<td>Apiculture</td>
<td>6</td>
<td>9,349,306</td>
<td>282</td>
</tr>
<tr>
<td>Cattle fattening &amp; beef farming</td>
<td>1</td>
<td>650,000</td>
<td>20</td>
</tr>
<tr>
<td>Cattle production and horticultural farming</td>
<td>2</td>
<td>1,879,000</td>
<td>116</td>
</tr>
<tr>
<td>Crop farming and cattle production</td>
<td>1</td>
<td>1,830,890</td>
<td>52</td>
</tr>
<tr>
<td>Dairy farming</td>
<td>11</td>
<td>6,162,702</td>
<td>237</td>
</tr>
<tr>
<td>Dairy farming and cattle fattening</td>
<td>12</td>
<td>13,515,583</td>
<td>348</td>
</tr>
<tr>
<td>Farm animal production</td>
<td>2</td>
<td>1,105,000</td>
<td>54</td>
</tr>
<tr>
<td>Farm animal production and fattening</td>
<td>1</td>
<td>1,401,222</td>
<td>110</td>
</tr>
<tr>
<td>Fattening, apiculture and Fruit production</td>
<td>1</td>
<td>152,000</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>125</strong></td>
<td><strong>65,992,345</strong></td>
<td><strong>2128</strong></td>
</tr>
</tbody>
</table>

**Source:** The Investment Office of the SNNPR (2005)

In addition to livestock, there are opportunities for investment in the region in other agricultural enterprises. The annual land-rent rates under rain-fed and irrigated conditions for various enterprises over a certain period of time by zone and special woredas are given in Tables 18 and 19 here below. The rates for first-grade land appear more expensive in Sidama, Guraghe, Hadiya, Kembata and Timbaro than in the other zones in the region. This is probably due to the serious shortage of land in these zones, which is brought about by the high human population density. In other words, there seems to be a scarcity of land
in these zones mainly because they are densely populated. These zones also have better infrastructure than the zones with cheaper rental rates. For no apparent reason, however, the land-rent duration for investment in livestock businesses is shorter than for mixed crop and forestry enterprises (Table 18).

**Table 18: The rural land-rent rate per year in the SNNP by zone and special woredas**

<table>
<thead>
<tr>
<th>S.N</th>
<th>Location</th>
<th>Rent in Birr/ year in ha</th>
<th>1st Grade</th>
<th>2nd Grade</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Came Goffa</td>
<td>78.00</td>
<td>47.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sidama</td>
<td>117.00</td>
<td>71.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Keffa</td>
<td>63.00</td>
<td>38.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Wolayita</td>
<td>63.00</td>
<td>38.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Awura</td>
<td>49.00</td>
<td>30.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Shekaa</td>
<td>63.00</td>
<td>38.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Southern Omo</td>
<td>49.00</td>
<td>30.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Bench Maji</td>
<td>49.00</td>
<td>30.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Guraghe</td>
<td>105.00</td>
<td>64.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Hadiya</td>
<td>103.00</td>
<td>62.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Gedio</td>
<td>86.00</td>
<td>52.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Kembata &amp; Timbaro</td>
<td>100.00</td>
<td>61.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Silte</td>
<td>105.00</td>
<td>64.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Woredas</th>
<th>Rent in Birr/ year in ha</th>
<th>1st Grade</th>
<th>2nd Grade</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Konso</td>
<td>52.00</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Derashe</td>
<td>63.00</td>
<td>38.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Amarro</td>
<td>59.00</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Burji</td>
<td>58.00</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Yem</td>
<td>63.00</td>
<td>38.00</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Conta</td>
<td>49.00</td>
<td>30.00</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Basketto</td>
<td>49.00</td>
<td>30.00</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Alaba</td>
<td>100.00</td>
<td>61.00</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** The Investment Office of the SNNPR (2005)

**Table 19: The rural agricultural land-rent per year in the SNNP by investment type**

<table>
<thead>
<tr>
<th>Land size (ha)</th>
<th>Rain-Fed Land</th>
<th>Irrigated Land</th>
<th>Rent Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crop type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>Permanen t</td>
<td>Annual</td>
</tr>
<tr>
<td>&lt; 200</td>
<td>35.00</td>
<td>30.00</td>
<td>40.00</td>
</tr>
<tr>
<td>200-500</td>
<td>40.00</td>
<td>35.00</td>
<td>45.00</td>
</tr>
<tr>
<td>&gt;500</td>
<td>45.00</td>
<td>40.00</td>
<td>50.00</td>
</tr>
</tbody>
</table>

**Source:** The Investment Office of the SNNPR (2005)

The presence of a reliable all-weather road is a prerequisite to any developmental and investment undertaking. In the SNNPRS, there are a total of 7,820-kilometer-long all-weather roads, connecting almost all the potential investment areas to the regional administrative city, Awassa, and to the federal capital, Addis Ababa.
In addition to road transport, there is one international airport at the town of Arbamintch, and five airstrips in five different towns: Jinka, Sodo, Aman, Tum and Tepi. The airstrips receive air-transport service twice a week.

Relative to the developmental stage that the country is in, the SNNPRS has good telephone and postal services. That, in and of itself, can be considered to be an incentive to prospective investors. With regard to the provision of power supply for industrial development purposes, almost all of the major towns of the SNNPRS have hydroelectric power, which is linked to the main grid.

In the financial sector, there are both state-owned and privately owned financial institutions. These work and serve their clients side by side in the major cities and towns of the region. All in all, there are 33 banks and seven insurance companies.

The major constraint to the SNNPR, as in the two other regions discussed earlier, is low livestock productivity. This is so because the feeding of animals is largely based on communal extensive grazing on unimproved natural pasture. Besides, the management practice employed is traditional. Animal disease is widespread. Yet the veterinary health service provided is neither efficient nor adequate. Why? Because of an acute shortage of skilled human resources, vehicles and different veterinary medicines and vaccine.

d) The Somali Regional State

i) General Features

Somali is physically the second largest region of Ethiopia and has a total area of about 281,900 km². It has nine administrative zones, 52 woredas and 67 urban centers. The population is estimated to have reached 4.3 million in 2006 and is projected to grow up to 4.8 million by 2010.

v) Livestock Resources

Livestock production is the mainstay of the region. Live animals are the region’s principal source of subsistence, providing milk, meat and cash income to cover family expenses for food grains and other essential consumer goods. As indicated in Table 6, Somali ranks fifth in livestock-resource ownership among the states that constitute the Federal Democratic Republic of Ethiopia.

Hay, straw and industrial byproducts, which are common feed resources elsewhere for intensive livestock feeding, are not available. So they are not in use in the region. The prime feed resource is natural vegetation. The contributions of crop residues (sorghum and maize [corn]) and the aftermath grazing of cropped lands in agro-pastoral areas are negligible. The overall
sources of feed are not, nonetheless, sufficient to support the existing livestock in the region—particularly during the dry season.

In the agro-pastoral areas of Jijjiga, Babile and Erer Woredas, there is reportedly substantial pastureland offering some opportunities for dairying and/or animal-fattening businesses. However, according to the information obtained from the Department of Livestock in the MoARD Bureau, there is a tremendous potential for the development of irrigated pasture—especially along the Wabi Shebelle River.

vi) Investment Opportunities

Huge opportunities exist for prospective livestock investors in this region, since there is ample potential in almost all spheres of livestock production, processing and trade, including the establishment of ranches and fattening ventures.

Land for investment purposes could be obtained from the regional government through a lease-hold arrangement. As to the terms and conditions of the land lease, the Somali Regional State’s investment proclamation is similar to that of the federal Government. It is, therefore, applicable in all cases.

vii) Incentives and Constraints for Investors

The incentives that are available so far in this region include total exemption from import duty and from taxes on machinery and equipment (capital goods), plus spare-part imports worth about 15% of the value of the imported capital goods. Investors are also entitled to a two-to-four-year income tax holiday, depending on the type of investment undertaken.

Communication services are relatively good in the Somali Regional State. There is a cell-phone (mobile-phone) network system at Jijjiga, Babile, and Erer. A plan had also been drawn up to extend the service to Degahabur before the end of fiscal year 1998 (E.C.). A total of 13 towns have digital telephone services, whereas another eight have non-digital telephone services. Sixty-nine kebeles in the rural areas have also small telephone-service rooms. About 40 of the 52 woredas have radio communication systems. And around 19 towns, including all the zonal towns, have postal services.

Though pack animals provide the majority of the rural population with transport services of both goods and humans, light and heavy motorized vehicles are also used on the asphalt roads currently stretching out to about 60 kilometers, the all-weather roads that are about 1,515 kilometers long, and the dry-weather roads covering about 8,904 kilometers. Railway transport, which connects Addis Ababa with Djibouti, passes through the northwest part of the Somali Regional State, providing transportation services to the Maiso,
Afdam, Erer, Shinile, and Aisha Woredas of the Shinile Zone. Air transport is available at Gode, Jijjiga, Shilabo and Kabridahar airstrips. Furthermore, the Jijjiga International Airport, which is about 12 kilometers from the center of town, is currently under construction. This region is located very close both to the Red Sea and to such Indian Ocean ports as Djibouti and Berber. That, of course, means that its location, too, makes it an ideal region for investment in live-animal and meat exports.

There are adequate financial services, too. The Commercial Bank of Ethiopia (CBE) alone has branches at the towns of Jijjiga, Gode, Degahabur, Kabridahar and Moyale. Furthermore, such private banks as Wegagen, Awash International and Nib International Bank have branches at Jijjiga. In addition, the Western Union, in collaboration with the CBE and the Wegagen Bank, provides money transfer services in six zonal towns: Dahab, Shill, Kah, Amal Musta, and kabal. Besides, from among the insurance companies operating in Ethiopia, the Ethiopian Insurance Corporation, Nyla Insurance, Global Insurance and Africa Insurance operate at Jijjiga. The Development Bank of Ethiopia, which provides credit to agricultural, industrial and other businesses, has, nevertheless, no branch in the Somali Region to date.

A few of the towns in the region get a 24-hour hydroelectric power supply. These are Jijjiga, Lafaissa, and Shinile. A total of 24 other towns such as Gode, Kabridahar, Degahabur, Warder, Dolo-adw, Moyale, Filtu, Shilabo, Kalafo, Charati, Elkare, Kabribayah, on the other hand, get power only from diesel generators—and only at night at that.

There are several livestock marketplaces in the region. Five of these—Laifessa, Hartisheke, Gursum, Fafen, and Babile—are constructed in the Jigiga Zone. The others are found at Degahabur (one), Fik (three), Gode (two), Warder (one), Liben (two) and Korahe (one). Though all of these marketplaces are fenced, they do not have adequate facilities such as watering and feeding services. In the Moyale Woreda, three marketplaces have been established by NGOs.

The only available abattoir in the region, which is located at the town of Jigiga, has the capacity to slaughter 1,000 heads of animals a day. A breakdown thereof shows that 400 of them are sheep, 250 goats, 250 cattle, and 100 camels. A plan has also been drawn up to build two export abattoirs—one at Jigiga and the other at Gode. The general expectation is that the construction thereof will be completed within a year or two. In view of the region’s large livestock population and its proximity to export ports, the potential for more export abattoirs appears feasible. Slaughterhouse (killing slab)-serving marketplaces are available only in the Liben Zone and in the Moyale Woreda, which was reportedly established by an NGO called LVIA. In short, the region offers prospective private investors in the livestock business with great opportunities.
Acquiring the plot of land needed for private investment is probably the major bottleneck in this region. That is so because land belongs to the community or the clan. This kind of holding makes it difficult to acquire suitable land within a reasonable timeframe for investment. The regional government has, however, earmarked Birr 3.5 million as compensation for the owners of the 247 ha of land that it is to set aside for industrial/processing plots in the region in fiscal year 1999 (E.C.).

The other bottleneck has to do with animal-health services. The region’s ratio of animal health personnel to tropical livestock unit is roughly 1:5,904. Similarly, the ratio of animal husbandry professionals to tropical livestock unit is in the neighborhood of 1:733,896. Actually, the number of professionals and semi-professionals working in the livestock sub-sector is far short of being commensurate with the huge livestock resources of the region. This issue has to be properly addressed in order to bring about any meaningful developmental change.

### 3.4 Domestic and International Markets

The major livestock products traded on both the domestic and international markets include live animals, meat, hides and skins, leather and leather products, honey and beeswax. The markets for dairy products and eggs are, by and large, confined to domestic trade, whereas the remaining products are sold on both export and domestic markets.

#### 3.4.1 Demand

a) Domestic

i) Meat and Live Animals

The per capita consumption of four major livestock products—cattle meat, mutton and goat meat, milk and eggs—has been assessed based on FAO’s data thereon for the years 1999 to 2004. Based on the projected human population of Ethiopia by the Central Statistical Agency for the same period, the per capita consumption of the products during the years has been calculated and is given in Table 20 below. The average per capita consumption of the products over the six years was 4.8 kg for cattle meat, 1 kg for mutton and goat meat, 21.2 kg for milk, and 0.5 kg for eggs. The figures show that there was no significant growth in the consumption of the products over the six years.

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Meat</td>
<td>4.7</td>
<td>4.6</td>
<td>4.6</td>
<td>5.2</td>
<td>4.9</td>
<td>4.7</td>
<td>4.8</td>
</tr>
</tbody>
</table>
A close look at the prices of meat and milk over the last seven years discloses that they (the prices) have been increasing. That, of course, is indicative of the fact that the gaps between the domestic production thereof and the demand therefor have not been met. Figure 1 considers the year 2000 as a base (100%) and indicates the price index until 2006. The price of meat has shown a steady increase between 2005 and 2006, more than it did during the rest of the period. The price of milk, on the other hand, tended to decline in the first two years and then picked up thereafter, until the increase got very steep between the latter two years—exactly as that of meat.

Assuming consumption to be a proxy for demand, demand projections for meat, milk and eggs for the years 2006-2010 have been made, based on the consumption averages given in Table 20. The projection shows that 360,360 tons of meat is required for consumption during the year 2006 alone, and that the requirement will have reached 400,760 tons by the year 2010. If we assume that the average carcass weight of cattle is 110 kg/head, under the traditional husbandry practice, we will arrive at the conclusion that the total number of heads of cattle required for meat will be about 3.3 million in the year 2006, and 3.6 million in the year 2010. That, of course, is about 8% and 9%, respectively, of the total cattle population projected at a 1% growth rate. The result shows

<table>
<thead>
<tr>
<th>Sheep and Goat Meat</th>
<th>1.0</th>
<th>1.0</th>
<th>1.0</th>
<th>1.1</th>
<th>1.1</th>
<th>1.2</th>
<th>1.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>16.3</td>
<td>20.7</td>
<td>22.3</td>
<td>24.1</td>
<td>22.1</td>
<td>21.5</td>
<td>21.2</td>
</tr>
<tr>
<td>Eggs</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: Estimated based on FAOSTAT Database-2005 (http://apps.fao.org/default.htm)
that even if the current level of cattle meat consumption were to be maintained, an increasing shortage of cattle would be inevitable.

On the other hand, if we assume that the average carcass weight of cattle is 160 kg/head, under an improved management, we can conclude that the total number of the heads of cattle required for meat will be about 2.2 million in the year 2006, and 2.5 million in the year 2010. That, of course, will be about 5.6% and 6%, respectively, of the total cattle population projected at a 1% growth rate—or about 60% of the total off-take of cattle, which is estimated at 10%. The result also clearly indicates the need for adopting an improved husbandry practice and for thereby improving productivity to meet the demand for cattle meat.

**Table 21: The projected demand for beef, mutton, goat meat and eggs (kg), 2006-2010**

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population/human</td>
<td>75067000</td>
<td>77127000</td>
<td>79221000</td>
<td>81343000</td>
<td>83483000</td>
<td></td>
</tr>
<tr>
<td>Per capita Cons.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle meat</td>
<td>4.8</td>
<td>360,359,774</td>
<td>370,248,822</td>
<td>380,301,087</td>
<td>390,487,766</td>
<td>400,760,854</td>
</tr>
<tr>
<td>Sheep and goat meat</td>
<td>1.1</td>
<td>78,983,157</td>
<td>81,150,625</td>
<td>83,353,867</td>
<td>85,586,569</td>
<td>87,838,210</td>
</tr>
<tr>
<td>Eggs</td>
<td>0.5</td>
<td>34,165,150</td>
<td>35,102,715</td>
<td>36,055,755</td>
<td>37,021,538</td>
<td>37,995,514</td>
</tr>
</tbody>
</table>

**Source:** Estimated using FAOSTAT Database-2005 (http://apps.fao.org/default.htm)

According to the projections made for domestic meat demand for the years 2003-2007, for pastoral areas, the country will absorb 429,210 heads of cattle, 1,081,000 sheep, 1,210,000 goats and 55,300 camels. That is, 57%, 47%, 22% and 70%, respectively, of the total projected annual off-take of the species. As such, the balance can be set aside for the export markets through both official and un-official routes (Belachew and Jemberu, 2003). Domestic beef markets for the pastoral areas consist of home consumption (minor), local consumption (towns around which live non-pastoral societies), highland areas, cross-border illegal markets, and legal exports. These areas are also known to be the source of 10%-20% of the draft oxen supply that go into compensating for the deficiencies in the highlands.

Despite the huge potential for improvement, the effort to develop the lowland beef industry has been hampered by a number of challenges—including the following:

- Inadequate knowledge about the resource base;
- The high prevalence of animal diseases that often cause mortality and export bans;
- The recurrent drought, coupled with weak prediction and coping mechanisms;

• An acute shortage of water;
• The low productivity of the rangelands;
• Low productivity and lack of market plans by producers;
• A weak extension and research back-up to improve productivity;
• Illegal cross-border trade;
• Inadequate infrastructure;
• Under-developed market structures (grading systems, market information, quarantine facilities, transport facilities);
• Little or no community involvement in development schemes; and
• Inadequate port facilities.

ii) **Hides and Skins**

Encouraged by the growing demand for leather and leather products on the world market, the Ethiopian leather industry in general and its tanneries in particular have of late been showing a steady growth. This growth in turn has fueled an increasingly rising domestic demand for hides and skins. As only an insignificant proportion of the total animals slaughtered in the country go through abattoirs, however, collecting hides and skins in adequate quantity, lack of proper storage and transport facilities and maintenance of good quality by controlling pre- and post-slaughter factors have remained to be the major bottlenecks in the trade. With regard to skins, various studies have shown that over 90% of the skins from domestic slaughterhouses come to the tanneries. So the issue is the over-capacity of tanneries, most of which were established without an adequate assessment of the availability of raw materials. These constraints, coupled with the relatively high home consumption and the poor health conditions, have contributed to the existence of a big gap between demand and supply.

viii) **Dairy Products**

Assuming that the average per capita milk consumption is 21.2 kg/person, the demand for milk in the year 2006 is estimated to be about 1.6 billion kg. That means, it will have reached about 1.8 billion kg by the year 2010 (Table 22). It is evident that if income per capita increases, the demand for milk will be much greater than the current estimated figures.

<table>
<thead>
<tr>
<th>Table 22: The projected demand for milk (kg), 2006-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Per Capita Consumption</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Population/human</td>
</tr>
<tr>
<td>75,067,000</td>
</tr>
<tr>
<td>Milk</td>
</tr>
</tbody>
</table>

**Source:** Estimated based on FAOSTAT Database-2005 (http://apps.fao.org/default.htm)
Dairy products in their various forms (liquid milk, sour or fermented milk, butter and cottage cheese) are components of the traditional diet of Ethiopian societies. It has been estimated that about 68% of the total national milk production is consumed at home. Dairy consumption patterns, nonetheless, vary with production systems. Because consumption of milk is common among the pastoral areas of the country, all family members have free access to this product. In the rural highlands, however, the consumption of milk is largely confined to children and some elderly members. Other family members’ consumption of milk is relatively high among town residents, particularly if they have relatively good incomes. At any rate, compared with their contemporaries in the rural setting, those who dwell in towns have free access to the consumption of milk. In many low-income families in the mid-altitude and highland areas where selling of milk and milk products is not taboo, dairy products—particularly butter and, in some areas, cottage cheese—are used primarily as means of generating income. Consumption at home of these products is, therefore, generally viewed as interfering with this essential function and is not encouraged.

There are several factors that influence the demand for milk. These include the size of the population, the price of the product and of its substitutes, consumers’ incomes and preference (Mohammed et al., 2004). In Ethiopia, accurate information about the national demand for dairy products is not available. But projections have been made, based on the 21.0 kg per capita consumption. And, according to these projections, the national demand for liquid milk will grow to 1.8 billion kg in 2010, and to 2.5 kg in 2025 (Getachew and Gashaw, 2001). Basing the projections on the African countries’ average consumption of 33.6 kg per capita would, nevertheless, indicate a 62.7% increase over the same period. But it takes the provision of appropriate measures in feeding, breeding, reproduction, healthcare and marketing, including processing, to increase the per capita milk consumption from its present status to the African average level. This calls for an integrated research-extension-farmer-concerted effort, supported with a strong policy backstopping.

### iii) Eggs

There is a huge poultry resource in the country. The per capita egg consumption, however, is very low. In fact, it is estimated to be only 0.5 kg (Table 21). Even this consumption level is bound to decline soon, given the annual human population growth rate of 2.9% and the stagnant, or even declining, growth rate of production. Between 1985 and 1994, for instance, egg production in the country declined by an annual average rate of 0.39% (ILRI, 2000). Invariably, every farm household in the rural setting in almost all agro-ecologies keeps five to six birds. And the per capita consumption of eggs could have been higher. Production is, nevertheless, constrained by the poor management condition and the use of a limited number of improved and more
productive birds. Poor health and predators also contribute to the problem of low productivity. Disease, in particular, is a major limiting factor to the wider use of improved breeds in the small-holder production system—due to weaknesses in preventive and treatment extension services.

v) Honey and Beeswax Production

Though there are no data that show the domestic demand for honey and beeswax, one can fairly assume that it is high. After all, only an insignificant amount of honey and wax is exported. Brewing tej, which is one of the traditional alcoholic beverages and can roughly be translated as mead, consumes almost all the honey produced. The fact that there is a shortage of honey is reflected in the rising prices of crude honey. The domestic consumption of beeswax, too, is high, since the demand therefor in the candle industry and in modern beehive-frame construction has been escalating from time to time.

b) The Export Market

i) Meat and Live Animals

The protectionist import regulations of the developed world markets have hitherto made it virtually impossible for Ethiopia to make the most of its animal and animal products export. That is so mainly because the poor health that its live animals are generally in makes it very difficult to meet these countries’ stringent regulations. Still, there are ample export opportunities in the Middle East and right here on the African continent—especially in the northern, western and central part of Africa. There are also promising but yet unexploited markets in such Middle Eastern countries as Kuwait, Bahrain, Qatatar, Jordan, Oman and Iran, in addition to those that have already been penetrated: Saudi Arabia, United Arab Emirates and Yemen. Similar opportunities prevail in the North African countries (Algeria, Tunisia, Morocco, Egypt and Libya), West African states (Ghana, Benin, Gabon and Cot’ Devoir) and Central/Southern Africa (Congo Democratic Republic, Congo Republic, Angola and South Africa).

Nine Middle East Arabian countries consumed over 3.5 million metric tons of meat over a period of seven years (Table 23) — that is, their mean meat consumption was 0.6 million metric tons per annum. These countries, on average, met 75% of their demand from domestic production and bridged the balance from imports amounting to 0.9 million metric tons of meat over the same period. The annual meat import during this period averaged 0.1 million metric tons. Of the bulk of the total meat imported by the Middle East countries, most went to Saudi Arabia and the UAE. Qatatar, Oman, UAE, and Bahrain met between 64% and 70% of their meat demand by importing it. Cattle, sheep, goats and others (poultry, camel and buffalo) contributed 3.8,
10.4, 1 and 84.8%, respectively, to bridging the demand gap (Table 24). The per capita meat consumption in 2002 for UAE, Kuwait, Quatar, Bahrain, Saudi Arabia, Oman, Jordan, Iran and Yemen, respectively, was 79.7, 75.5, 70.9, 59.9, 46.2, 37.7, 29.5, 21.8 and 11.2 kilograms. These countries, in the aggregate, spent 64.5, 185.3, 15.6 and 939.4 million USD annually on the importation of cattle, sheep, goat and other animals’ meat.

North Africa (Egypt, Algeria, Tunisia, Libya and Morocco) has a total population of 148 million. In the year 2002, these countries accounted for 90.9% of the total demand for meat. Egypt alone accounted for about 88% of the total imports of meat in the region. Over the same period, the West African countries (Cot’ Devoir, Ghana, Gabon and Benin), Central African countries (Congo Democratic Republic, Congo Republic and Angola) and South Africa imported 0.3 million metric tons of meat between them to bridge their demand gaps. This represented about 17% of the region’s total demand for meat. Beef is more required than the meat of sheep and goats by these countries. Goat is the least preferred type of meat. Other than meat from cattle and sheep, there are markets for meat from poultry, buffalo and swine and sheep and goat heads, poultry wings and shank, lamb chest, oxen heads and omenta products in the West African countries. The constraints that have hitherto held Ethiopia back from making the most of these diverse markets are the following:

- Its inadequate number of abattoirs, which has made it difficult for it to export chilled products to these markets; and
- The absence of boats/ships that sail to these countries and back in the shortest possible time, since the low prices that chilled products fetch do not justify airfreight.

Its physical location and huge resource give Ethiopia a comparative advantage to exploit these nearby export markets by developing its meat industry.

Table 23: Meat availability, import and consumption of selected Middle Eastern countries (metric ton) 1997-2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Domestic Production</th>
<th>Importation</th>
<th>Quantity (Metric Ton)</th>
<th>Domestic</th>
<th>International</th>
<th>Export</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Metric</td>
<td>% of total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ton</td>
<td>Availability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bahrain</td>
<td>14, 633</td>
<td>25, 838</td>
<td>63.8</td>
<td>40, 471</td>
<td>388</td>
<td>40, 083</td>
<td></td>
</tr>
<tr>
<td>Kuwait</td>
<td>76, 531</td>
<td>71, 891</td>
<td>48.4</td>
<td>148, 422</td>
<td>590</td>
<td>147, 832</td>
<td></td>
</tr>
<tr>
<td>Oman</td>
<td>35, 709</td>
<td>69, 102</td>
<td>65.9</td>
<td>104, 811</td>
<td>2, 532</td>
<td>102, 278</td>
<td></td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>613, 285</td>
<td>407, 559</td>
<td>39.9</td>
<td>1, 020, 844</td>
<td>21, 903</td>
<td>998, 941</td>
<td></td>
</tr>
<tr>
<td>Emirates</td>
<td>79, 469</td>
<td>146, 119</td>
<td>64.8</td>
<td>225, 588</td>
<td>8, 839</td>
<td>216, 750</td>
<td></td>
</tr>
<tr>
<td>Quatar</td>
<td>12, 569</td>
<td>29, 888</td>
<td>70.4</td>
<td>42, 457</td>
<td>846</td>
<td>41, 611</td>
<td></td>
</tr>
<tr>
<td>Jordan</td>
<td>119, 799</td>
<td>37, 053</td>
<td>23.6</td>
<td>156, 851</td>
<td>2, 074</td>
<td>154, 778</td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>1, 533, 387</td>
<td>56, 887</td>
<td>3.6</td>
<td>1, 590, 274</td>
<td>7, 729</td>
<td>1, 582, 545</td>
<td></td>
</tr>
<tr>
<td>Yemen</td>
<td>171, 159</td>
<td>52, 789</td>
<td>23.6</td>
<td>223, 949</td>
<td>1</td>
<td>223, 948</td>
<td></td>
</tr>
</tbody>
</table>
Table 24: Meat importation of selected Middle Eastern countries by livestock species (metric ton), 1997-2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goat</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>2,178</td>
<td>1,128</td>
<td>170</td>
<td>22,363</td>
<td>25,838</td>
</tr>
<tr>
<td>Kuwait</td>
<td>7,692</td>
<td>815</td>
<td>3,070</td>
<td>60,313</td>
<td>71,891</td>
</tr>
<tr>
<td>Oman</td>
<td>2,023</td>
<td>8,292</td>
<td>850</td>
<td>57,937</td>
<td>69,102</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>4,601</td>
<td>45,867</td>
<td>4,713</td>
<td>352,378</td>
<td>407,559</td>
</tr>
<tr>
<td>Emirates</td>
<td>6,496</td>
<td>18,667</td>
<td>109</td>
<td>120,957</td>
<td>146,119</td>
</tr>
<tr>
<td>Quatar</td>
<td>1,235</td>
<td>2,368</td>
<td>109</td>
<td>26,176</td>
<td>29,888</td>
</tr>
<tr>
<td>Jordan</td>
<td>838</td>
<td>10,068</td>
<td>-</td>
<td>21,148</td>
<td>37,053</td>
</tr>
<tr>
<td>Iran</td>
<td>88</td>
<td>5,728</td>
<td>-</td>
<td>51,071</td>
<td>56,887</td>
</tr>
<tr>
<td>Yemen</td>
<td>3,979</td>
<td>172</td>
<td>-</td>
<td>48,638</td>
<td>52,789</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>34,130</strong></td>
<td><strong>93,104</strong></td>
<td><strong>8,912</strong></td>
<td><strong>760,979</strong></td>
<td><strong>897,126</strong></td>
</tr>
</tbody>
</table>

Source: MoARD (2004c)

3.4.2. Supply

a) The Domestic Market

Ethiopia is endowed with large livestock resources—so much so that it is top on the African continent and ninth in the world. The country has not, however, been getting adequate economic benefits from its livestock trade due to its low annual off-take, which is estimated at 10%, 35% and 38%, respectively, for cattle, sheep and goats (Belachew and Jemberu, 2003). Low off-take, of course, is a reflection of many factors. Of these factors, low productivity, market availability and the low habit of the producers to rear animals for market are the key ones.

i) Meat and Live Animals

Table 25 below shows the projected domestic supply of livestock, based on the current CSA data and cattle meat (beef), using the carcass weight under traditional and improved management systems.

Table 25: The projected domestic supply of meat and live animals for Ethiopia, 2006-2010

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>40,380,098</td>
<td>40,783,899</td>
<td>41,191,738</td>
<td>41,603,655</td>
<td>42,019,692</td>
</tr>
<tr>
<td>Off take</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Production (heads)</td>
<td>4,038,010</td>
<td>4,078,390</td>
<td>4,119,174</td>
<td>4,160,366</td>
<td>4,201,969</td>
</tr>
<tr>
<td>Total meat at 110</td>
<td>444,181,078</td>
<td>448,622,889</td>
<td>453,109,118</td>
<td>457,640,209</td>
<td>462,216,611</td>
</tr>
</tbody>
</table>
Beef production, by and large, is traditional in Ethiopia. Of late, nonetheless, intensive and semi-intensive production systems have been put in place. The country's beef industry is the lowest productive even by African standards. Only eight kilograms of beef is produced annually per head of cattle population—compared with 11 in Sudan, 14 in Kenya, 51 in Australia, and 79 in the USA (Tesfaye, 2005). The beef produced is, in general, inferior in quality, for it comes mainly from old oxen and cows that are phasing out from draft and breeding. FAO (1995) estimated that about 2.2 million heads of cattle are slaughtered annually. The current average meat production for beef cattle in the world, Africa and East-Africa stands at 212 kg, 156kg, and 143kg/head, respectively, whereas the corresponding figure for Ethiopia is merely 110kg.

The Government of Ethiopia has been making some efforts toward revamping the industry and improving its productivity. For instance, the Second Livestock Development Project (SLDP), which was launched in 1973 and was implemented until the year 1981, was aimed at these interventions. And it had the following major objectives:

- Linking pastoral areas with surplus animals for both the domestic and export markets;
- Improving the quality and quantity of the hides produced in the country; and
- Bringing a halt to the illegal cross-border animal and animal-products trading (Sintayehu, 2003).

The project was able to achieve some of these objectives, if not all. For example, it was able to establish the Livestock and Meat Board, with a view to improving livestock management and infrastructure development. Upon its termination in 1981, the project had constructed 470-kilometer-long stock routes, comprising 10 staging points in 10 grazing areas. It had built 11 primary and three terminal markets; It had constructed 159 slaughterhouses and hide sheds as well as 12 boreholes, distributed over the grazing areas (Belachew and Jemberu, 2003 and Sintayehu, 2003). But the project was reported to have suffered from several malfunctions, including the following:

- No consultations were held with the local communities prior to launching it, which made them (the local communities) less enthusiastic about throwing their weight behind its proper implementation;
- No action was taken to stop the illegal cross-border livestock trading, even though doing so was part and parcel of the project;
- It was implemented entirely with foreign assistance, with no plans for ensuring its sustainability; and

- It lacked en-route preparation for feed, health and security services (Sintayehu, 2003).

In addition to the SLDP, the other efforts made were the launching of the Livestock Market Information System, the Third Livestock Development Project, the Fourth Livestock Development Project and the recent establishment of the Livestock Marketing Authority (LMA). These efforts were made toward improving the quality of the market information, ensuring feed supply for small-scale fattening, and toward promoting both the domestic and export markets of livestock and livestock products. As a result of these establishments, some success has been achieved in the export sub-sector in the 1980s (10, 292 head of cattle and 138,621 small ruminants were exported). In addition, following the establishment of LMA, a five-year marketing work plan was developed; and manuals on quality product-handling and export-slaughterhouse operation were produced and distributed. Other measures, too, were taken to promote the country's meat export (Belachew and Jemberu, 2003).

There are ample opportunities for the development of the beef industry, as both domestic and export markets have of late been steadily growing. But the annual off-take rates are lagging way behind the potential thereof and the demand therefor. The estimated current respective annual off-take rates for cattle, sheep, goats and camel are 10%, 35%, 38%, and 6.5%. The projections made, based on the above annual off-take rates, indicate that between 2003 and 2007 the pastoral areas had the potential to produce about 753 thousand heads of cattle, 2.3 million sheep, 5.5 million goats and 79 thousand camels for both the domestic and export markets (Belachew and Jemberu, 2003).

The greatest threat to the smooth flow of supply both to the domestic and international livestock markets, with huge negative consequences to the national economy, is the contraband trade of livestock—especially the trade that ends in the smuggling of livestock into neighboring countries. An assessment done on such trade by the Livestock Marketing Authority (2001) has shown that live animals, hides and skins estimated at 107.9 million USD (917.1 Million Birr) go illegally to neighboring countries (Table 26) annually. This, nevertheless, does not include the livestock and livestock products that are going out of the Amhara Region into Sudan through Metema. Though the exact figures of the products flowing out to Sudan are yet to be determined, the discussions held with the regional Bureau of Agriculture and Rural Development have indicated that a large number of heads of livestock—mostly cattle—are involved in the illegal trade at this frontier. It goes without saying that contraband trade has an adverse effect on the legal marketing of livestock,
both on the domestic markets and on the international markets. As such, it hurts the national economy.

The factors contributing to the involvement of pastoralists in livestock contraband trade are numerous and complex. They are, however, centered on the socio-economic circumstances of the pastoral areas and their geographical locations. The fact that livestock resources are the mainstay of pastoral societies and their entire dependence on the income they derive from them and the under-development of the domestic markets in most areas give rise to seeking market opportunities in neighboring countries. At any rate, the major contributing factors to the livestock contraband trade are the following:

- Lack of reliable domestic markets;
- The remoteness of their source areas from the central markets and other services;
- The unavailability of proper livestock transportation and marketing systems;
- The strong cultural and socio-economic ties that the pastoral societies have with neighboring countries, especially with the ethnic groups bordering Ethiopia;
- The reluctance of neighboring countries to control contraband trade (due to the benefits they obtain, in terms of domestic consumption and re-export); and
- The existence of livestock export ports in the neighboring countries.

These factors make the abolishment of contraband trade complex and difficult.

### Table 26: The estimated number of the live animals, hides and skins traded illegally from four regions of Ethiopia annually.

<table>
<thead>
<tr>
<th>Product</th>
<th>Exit Regions and Quantity Traded (Number)</th>
<th>Unit Price (USD)</th>
<th>Total Price (USD)</th>
<th>Total Price (Birr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Afar</td>
<td>Somali</td>
<td>Oromiya</td>
<td>South</td>
</tr>
<tr>
<td>Cattle</td>
<td>73,000</td>
<td>109,500</td>
<td>70,000</td>
<td>66,000</td>
</tr>
<tr>
<td>Sheep</td>
<td>36,500</td>
<td>219,000</td>
<td>4,000</td>
<td>-</td>
</tr>
<tr>
<td>Goat</td>
<td>219,000</td>
<td>657,000</td>
<td>10,000</td>
<td>-</td>
</tr>
<tr>
<td>Camel</td>
<td>7,000</td>
<td>6,000</td>
<td>3,000</td>
<td>-</td>
</tr>
<tr>
<td>Hide</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>-</td>
</tr>
<tr>
<td>Skin</td>
<td>70,000</td>
<td>130,000</td>
<td>100,000</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>107,896,800</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Belachew and Jemberu, 2003
ii) **Hides and Skins**

Ethiopia has the capacity to produce 2.4 million hides, 10.1 million sheepskins and 7.4 million goatskins a year (Girma, 2003). And the domestic leather industry has a processing capacity of 2.6 million hides and 29.1 million skins. The tanneries in the country currently operate below capacity because they collect roughly about 1.1 million hides and 14.3 million skins. These, nonetheless, are, respectively, only 46% and 82% of the hides and skins that they can process. Even at this low level of operation, the industry remains to be an important source of foreign-exchange earning for the country, exceeded only by the export of coffee. Livestock, livestock products and the byproducts thereof contributed 11% to the total export earning during the period 1997/98-2000/01, of which hides and skins alone accounted for 90%. Between the years 2000 and 2001, leather and leather products alone generated an export income worth USD 74.1 million. But there is room for improvement in this industry. The current annual growth rate for hides and skins has not been studied accurately. A conservative estimate by MEDaC (1999), nevertheless, indicates 1.1%, 2.2% and 1.4% growth rates per annum, for hides, sheep and goatskins, respectively. Production, however, is limited to holidays and festive seasons. The current trend among livestock producers to do their production on a home-needs basis, and not following a market-oriented production system, must be changed through a strengthened extension system—to avoid seasonality in the market supply of these byproducts.

iii) **Dairy Products**

The current national annual milk production has been estimated at 2.42 (2.32 billion from cattle + 95.79 million from camel) billion liters (CSA, 2006). This obviously under-estimates the production of this commodity, since the sample survey did not include Gambela, three zones of Afar and six zones of the Somali Region. Besides, the estimate covered only cow and camel milk—ignoring that of goats and sheep.

Given its rich livestock resources, the per capita milk consumption of 21.0 kg for Ethiopia is one of the lowest in the world. The corresponding average figures for sub-Saharan African countries, the developing world (Melaku, 2005) and the developed nations (Azage and Alemu, 1998) stand at 27 kg, 36 kg and 100 kg, respectively. The current consumption in Ethiopia does not compare favorably even with the levels of consumption in the neighboring countries (80 kg for Kenya, 28 kg for Tanzania, and 22 kg for Uganda).

Increasing the per capita milk consumption to 22.0 kg by the year 2004 has been targeted by the Second Five-Year Development Program of the FDRE. It does not, nonetheless, seem to have been achieved, since indications are that consumption has been declining ever since 1995. The human population
growth in general, at an annual rate of 2.9%, and that of the urban segment, at a rate of 4.4% per annum, outstripped the stagnant growth of cattle in number and productivity. Actually, cattle productivity is declining. Needless to say, major steps have to be taken in order to improve production and productivity and thereby reverse this situation. More specifically, appropriate technological, policy and development measures must be taken to improve production, processing and marketing. Producers must also be encouraged at all levels—that is, those operating in urban, peri-urban and pastoral production systems.

Although several efforts were made at different times to that end, Ethiopia lacks an official dairy policy that could guide development directions. Of the available draft policies, the most elaborate one is probably a study done by the Ministry of Agriculture five years back (Getachew and Gashaw 2001), with financial assistance from FAO. This document had a short- and long-term policy on the dairy industry development and on the utilization thereof, with a view to increasing its contribution to the social and economic benefits of the country—that is, as both food and income. The short-term policy was based on six pillars of development and had as its objective increasing milk production to satisfy the demand of dairy products in the urban and peri-urban areas. In other words, it was aimed at achieving and maintaining the supply of 22.0 kg milk per capita. The long-term policy, on the other hand, focused on the achievement of 33.6 kg milk per capita for the whole population.

**iv) Production of Eggs**

Poultry in Ethiopia is produced under three distinct systems: traditional, small-scale intensive and commercial production. The backyard traditional production system is based on the non-descript indigenous birds capable of producing from 40 to 60 eggs per hen a year (EARO, 2000a). Small-scale and commercial productions are relatively nascent businesses. Their contribution to the economy is, therefore, still negligible.

The current total annual egg production in the country has been estimated at 67.5 million per annum. Indigenous, hybrid and exotic birds account for 85%, 11% and 4% of the total production, respectively (CSA, 2006). This level of national production, however, appears to have been severely under-estimated, as the sample survey puts the number of total poultry at 32.22 million only against its recent estimate of 42.0 million (CSA, 2004) and does not include all regions. Laying hens constitute 32.4% of the indigenous, 40.2% of the hybrid and 55.2% of the exotic total bird population, whereas the corresponding non-layers are 3.5%, 3.0% and 4.2%, respectively, for the three categories (CSA, 2006).

Traditional poultry production is hampered by a number of constraints, including the following:
- Diseases;
- Poor nutrition and feeding systems;
- Improper husbandry and management;
- An acute shortage of improved breeds;
- Lack of proper knowledge about the production system; and
- Problems related to institutional and socio-economic issues.

Despite its poor performance due to the above-enumerated limiting factors, poultry production plays a significant socio-economic role in the lives of poor Ethiopians. Rural households keep, on average, about five or six birds. That, of course, is a contribution to the national effort to ensure food security—both as a food item and a means of cash income. Women and children, in particular, benefit from keeping poultry, for they seldom have access to income-generating means and are hence the most economically vulnerable to the debilitating effects of rural poverty.

There are certain areas of high technological relevance to poultry-production improvement. Some of them are the following:

- Strategies for characterizing, conserving and exploiting the country’s rich genetic diversities and variability;
- A proper description of the role of these genetic resources in the various production systems;
- Improving them through cheap and available feed resources; and
- Genetic improvement to the level that suits the various socio-economic and climatic circumstances.

Through extension services alone, rendering effective services in health, feeding and management, housing, provision of improved breeds and training in general husbandry practices could result in an increase of income from the poultry business—besides improving food security, since poultry is an affordable source of protein.

A recently drawn up development strategy for poultry and poultry products by the MoARD (2006b) indicates that there are plans to bring about improvements through five key measures. The measures are the following:

- Properly delineating potential production areas;
- Organizing producers into different specialized tasks and linking them up through market chains (e.g., fertile egg producers, hatchery and chick growers, pullet growers, broiler growers, feed producers, health care takers);
- Improving input services (increasing the production capacity of seven existing poultry-multiplication centers, establishing new parent stock farms and chick-rearing centers);

- Establishing a new distribution style of focusing on potential villages that could create easy access to such input services as improved feed and health, rather than scattering efforts thinly over long distances; and

- Motivating private-sector participation in poultry development by linking commercial farms with small-holders in a market chain.

If these strategies are successfully implemented, the poultry industry in the country could prosper and play a more useful economic role in the interest of small-holder farmers, large commercial-farm operators and the country at large.

v) Honey Production

Ethiopia is blessed with diverse agro-ecologies that are immensely rich in flora. As such, it has an environment that is favorable for honey production. About 7,000 species of flowering plants are estimated to exist in the country. And they are believed to sustain the lives of 10 million honeybee colonies that exist in the country spread over many agro-ecologies (EARO, 2000).

The annual crude-honey production in Ethiopia was previously estimated to be 24,000 tons and to account for 24% and 2% of the African and the world total production, respectively. That estimate had, of course, put the country in a leading position—compared with the other African countries. With its estimated 3,000-ton annual beeswax production, Ethiopia is, in fact, the fourth largest producer of this commodity in the world, behind only China, Mexico and Turkey (EARO, 2000c). The Ethiopian Central Statistics Agency (2006) estimated the current beehives at 4.0 million (98.6% traditional, 0.5% intermediate, and 0.9% modern), annually producing a total of 41,580 tons of crude honey. According to the estimate, the respective contribution of traditional, intermediate and modern hives to the given total is 97.8%, 0.6% and 1.6%.

One of the key agricultural business options with a tremendous potential and relevance to the poor farm households is the development and promotion of small-scale beekeeping. When directly consumed, honey is the best food, since it is a rich source of energy (303 calories per gram) and has medicinal values for various ailments. As marketable commodities, many products such as crude and purified honey, beeswax, propolis, royal jelly, and pollen and bee venom are of high commercial value. As such, they can be exploited for augmenting household incomes. So far as poor farmers are concerned, going
into this business, as opposed to other agricultural occupations, has certain comparative and competitive advantages—including the following:

- It requires little labor and does not compete with other agricultural activities, since it is done commonly as a sideline activity;
- It can be started with a minimum financial input (the major cost being that of the beehive);
- It requires little or no land; and
- It greatly contributes to ecological conservation, as the business is associated with forestation or other forms of land coverage with different plantations.

Even though there is a substantial potential in the country, the progress made so far in tapping this opportunity is not encouraging. As stated earlier, traditional, transitional and modern beehives have respective potential annual yields of 10 kg, 40 kg and 60 kg per hive. The evidence, however, shows that the current on-farm yields do not exceed 5 kg, 15 kg and 20 kg, respectively. This is a clear indication of the fact that honey production in the country is operating at less than one-third to a half of its potential. Of course, there are several complex technological, political and socio-economic factors that contribute to this low performance. The major ones are, nevertheless, the following:

- A heavy reliance on the traditional production system, resulting in low productivity;
- Insignificant commercial production;
- An acute shortage of improved implements and the high cost of even those that are available;
- A limited research capacity that has resulted in a shortage of the technologies and information that could help improve production;
- Lack of an effective extension system;
- The absence of a national development plan and strategy; and
- Poor household economy to afford improved inputs.

According to the views of Beza Mar Agro-Industry and Ghion Industrial (two export-oriented honey- and wax-producing business organizations sampled in
this study), the major honey- and wax-related problems revolve around the issues discussed herein below.

**Maintaining the quality of a product.** The quality of honey is affected at times of harvesting, storing and marketing. It is, therefore, reasonable to say that producers’ ill-act affects the quality of honey much more than environmental factors. That, anyway, is the main reason that the products collected from individual producers manifest various sorts of quality abuses and make maintenance of quality product difficult. The environmental as well as the human-made problems in this regard can, nonetheless, be remedied by training producers and raising their awareness about the need for maintaining quality.

**High price.** Because of low productivity and production of honey in the country, there currently is a shortage of honey. Employing modern, large-scale production is, however, the only solution to this problem.

**Low economies of scale.** This emerges from the low business capacity and the unavailability of the products. The Government should develop and put in place various incentive mechanisms to enable entrepreneurs to run such businesses at economies of scale. For instance, providing them with credit support at lower interest rates and developing a beehive-loan mechanism could motivate them.

**Adulteration.** Customers in Europe have reported that the paraffin included in the beeswax exported to them comprises 35%-40% of the whole item. They have, therefore, virtually banned Ethiopian beeswax from their markets.

**Lack of policy against adulteration.** The problem of adulteration emerged about three years back. Ever since it became known, various efforts have been made to bring the issue to the attention of the concerned authorities. No serious measure has, however, as yet been taken. And the country is slowly but surely being pushed out of international markets.

**Scarcity of beeswax.** The rise in the domestic consumption of honey for various purposes has adversely affected the amount available for export.

**Expansion of modern beehives.** Much of the wax produced in the country is used in frames for honey production with modern beehives. As this business is expanding throughout the country at present, the beeswax export is highly threatened. The use of paraffin wax in modern beehive frames is not only poisoning the bees but is also affecting the purity/quality of the beeswax.

The following steps must, therefore, be taken as soon as possible in order to improve the productivity and economic viability of Ethiopia’s beekeeping:
Formulating an appropriate policy that will address the above concerns and then promoting it.

Delineating the potential production areas within the different regions.

Setting quality standards and determining the quality that Ethiopia’s honey should have for various purposes.

Strengthening research and extension services, with a view to mitigating limitations to yields and meeting the required quality at the farm level.

Differentiating the prices of honey based on quality.

Encouraging entrepreneurs and/or farmers’ cooperatives to engage themselves in the modern beekeeping business by formulating attractive policies like tax holidays and free use of public or community forests, etc.

Establishing small-scale honey-processing units at strategic locations and fostering a market mechanism that vertically links small-holders, processors and exporters. That is important because better prices will encourage farmers to give more attention to the quality of their products. Processors linked up with exporters will benefit from international market information to adjust the type and quality of their products to global market demands. The improved income from sales of quality products will in turn remunerate the producers, processors and exporters. As a result of all that, the county will be able to improve its competitiveness on the world market.

b) The Export Market

i) Live Animals and Meat

The country has exported 27,789 metric tons of meat and livestock to different countries over the last five years and earned a total of Birr 376.8 million (Table 27). The earning from these has, in fact, been steadily increasing—so much so that it reached a peak of Birr 236.3 million in the year 2005. It is interesting to note that meat products generated better revenue over the years than live animals were able to.

<table>
<thead>
<tr>
<th>Product</th>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Animals and Meat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The available data indicate that Ethiopia has the capacity to export an average of 72 thousand metric tons of meat annually to the international markets valued at USD 136 million (MoARD, 2004). Cattle, goats, sheep and camel are projected to respectively contribute 61%, 22%, 10% and 7% to the total meat export. Against this huge existing export capacity, nevertheless, the country was able to send only 0.66 and 2.015 metric tons of meat in 2002 and 2003, respectively, indicating that even the performance of the latter years was below 3% of the potential in this regard.

In the livestock export business, Ethiopia faces stiff competition from a number of countries on the Middle East market. The countries that it has to compete with include the USA, France, the UK, the Netherlands, Ireland, Australia, New Zealand, India, Pakistan, Syria, Iran, Egypt, Sudan, Somalia, Brazil, and Argentina. Ethiopia faces similar competition on West African markets from India, Brazil, Argentina, and South Africa. On the markets of the Sahel countries, it has to compete with Portugal, Spain, Italy, Australia, the Netherlands and the USA. And on the markets of the Central African countries, stiff competition awaits it from France, Brazil, Argentina, South Africa, and Zimbabwe.

Each importing region and country has specific requirements that need to be fulfilled by the exporting country, in addition to the universally accepted international export standards. Details of the specific requirements of the potential livestock market areas for Ethiopia have been indicated in a MoARD (2004) document. These include tariff and non-tariff requirements. The Ethiopian Meat-Marketing Authority has, for its part, made various efforts such as the distribution of the addresses of potential importers keen to accept animal products from Ethiopia to existing exporters and prospective exporters.

Despite the efforts made, the evidence shows that the current knowledge on market structure, performance and prices is still poor and inadequate to enable the designing of policies and institutions needed to resolve the problems on the domestic and export livestock markets (Ayele et. al., 2003). Market bans by the traditional import markets of the Arabian Peninsula countries, due to disease outbreaks from time to time, have stifled the Ethiopian livestock export market.
The recent bans, which came about as a consequence of the Rift Valley Fever and the Foot and Mouth Disease, are cases in point in this respect. Regaining access to the markets of these Arabian countries is unthinkable unless Ethiopia significantly improves the sanitary and phytosanitary conditions of its livestock and is able to meet quality requirements. An in-depth understanding of the change in the preference of the consumers in these countries and the nature of the competition from other exporting countries on the market is crucially important. For the Ethiopian livestock-export market to be internationally competitive, addressing domestic market inefficiencies and improving efforts so as to be able to seize opportunities on the export market is a must. Alleviation of the constraints to the appropriate market, an improvement of the market information and the infrastructure enhances the livestock production orientation of small-holder farmers. That in turn will enable them to meet market demands and to improve their bargaining power, with a view to getting a larger share of what the consumer spends.

The slaughter capacity of the existing export abattoirs located around Addis Ababa is indicated in Table 28 below. On average, the abattoirs currently operate at a little above half their capacity (57%). That indicates that there is much room for improvement in this regard. If Ethiopia is to meet the demands of the fast-growing export market, ways and means of enabling these abattoirs to operate in a full swing as a short-term strategy, on the one hand, and to establish more abattoirs in the long-term at strategic locations close to the sources of the animals—that is, in the pastoral areas—on the other, must be found as soon as possible. The absence of adequate holding ground, slaughter rooms, cold rooms and transportation facilities appears to be the main factor that is limiting their operation capacity. These constraints in turn relate to a number of policy and socio-economic issues prevailing in the country.

<table>
<thead>
<tr>
<th>Abattoir</th>
<th>Current Capacity (Thousand animals)</th>
<th>Potential Capacity (Thousand animals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELFORA</td>
<td>540</td>
<td>810</td>
</tr>
<tr>
<td>Helmix</td>
<td>396</td>
<td>1320</td>
</tr>
<tr>
<td>Mojo</td>
<td>495</td>
<td>660</td>
</tr>
<tr>
<td>Luna</td>
<td>495</td>
<td>660</td>
</tr>
<tr>
<td>Almewashi</td>
<td>528</td>
<td>1056</td>
</tr>
<tr>
<td>Total</td>
<td>2454</td>
<td>4506</td>
</tr>
</tbody>
</table>

**Source:** Constructed through personal communication with the respective abattoirs

In order to have an in-depth understanding of the export-related issues, two abattoirs, Mojo and Luna, have been sampled, and their views are summarized here below.
The Mojo Modern Export Abattoir, which was established in 1992/93 but started operation in the year 2000, collects slaughter animals mainly from the Mieso and Yabello areas of the Oromiya region. At times, its customers from other areas, too, bring to it such animals. The abattoir’s export target markets are Saudi Arabia, the UAE and, to a certain extent, Yemen. As stated earlier, Ethiopia faces stiff competition from Somalia and Sudan for these Middle East markets. The United Arab Emirates’ market requires carcass weighing between five and eight kilograms, whereas that of Saudi Arabia prefers carcass weighing between eight and 25 kilograms. It has, however, recently revised that to carcass not weighting more than 15 kilograms. Studies done have shown that the carcass of an animal from Sudan normally weights 15 kilograms even if the animal was only six months old when it was slaughtered. In contrast to that, nonetheless, the carcass of most breeds from Ethiopia cannot reach this weight even if the animal is slaughtered at maturity. The Saudi market pays USD 2300/ton and USD 2800/ton for carcass from Ethiopia and Sudan, respectively. According to the Manager of this abattoir, the constraints discussed here below are the major reasons behind all that, so far as they are concerned.

**Shortage of cargo space.** In the UAE, meat is normally bought on Wednesdays, in the morning. So any carcass that fails to arrive on that day at that time is either not marketed or will be sold very cheaply. There, however, is a cargo-availability problem with the Ethiopian Airlines—to be able to meet this requirement.

**Shortage of animal supply.** There is a severe shortage of animals due to the weak organization of the producers. Supply largely depends on gleanings from various markets, which make the operation more expensive and uneconomical. Furthermore, most of the traders do their purchasing of animals only along the asphalt roads. Consequently, they end up having to unduly compete among themselves over the short supply.

**An absence of holding ground for animal quarantine.** A request has been lodged to the concerned authorities for adequate plots of land. So far, however, that request has not been granted. And those in the business are running their businesses on the inadequate plots of land that they have rented from farmers at very high rates.

**Inspection cost.** Abattoirs are charged Birr 1.00/head for the inspection of sheep/goats, and Birr 2.00/head for the inspection of calves. The Managers of the abattoirs, nonetheless, say that this service should have come free of charge from the Government as an incentive.

This abattoir has drawn up a plan for engaging itself in the cattle carcass business because of the existence of several markets right here in Africa and because handling larger ruminants with respect to transportation and disease
problems is easier than handling small ruminants—according to the Manager. It was initially hoped that the operation would kick off sometime in fiscal year 2006/2007. But it now seems like that was not a realistic expectation, as lots of preparations have yet to be made.

The Luna Export Slaughterhouse is at present engaged in the export of chilled meat of mainly shoats, beef and veal. It occasionally gets involved in camel-meat sale, based on pre-placed orders. Its long-term plan envisions a future engagement in the export of frozen livestock products.

Yabello, Bale, Wolayita, North Shewa and Afar are the animal source areas for the Luna Export Slaughterhouse. The abattoir has an incentive mechanism whereby purchasers who come in with healthy-looking animals with a considerably high body weight would receive Birr 1.00 per animal. Congo Brazzaville, Yemen, Egypt, Saudi Arabia and Dubai are the abattoir’s major export target markets—the first three markets for its beef and shoats, and the latter two exclusively for its shoats. The major problems it has faced so far include the following:

- The inadequacy of the cargo space available (2 tons/person).

- The fact that the prices of live animals are escalating on domestic markets due to the stiff competition between the export and domestic markets. A live goat’s price two years back was Birr 3.50 a kilogram, for instance. Now it has reached Birr 7.50. The price trend over five months in the year 2006, in Oromiya, for some classes of livestock is shown in Figure 2 below. With the exception of heifers, the prices of large and small ruminants have increased steadily between February and May 2006. The increase especially in the price of oxen, cows and bulls was unprecedentedly steep. What can be surmised from all that, of course, is that the stiff competition among animal traders has entailed an acute shortage of animal resources on the accessible markets.

Luna has drawn up a plan to establish a 200-ha holding station at Tute (East Shewa zone, in the Rift Valley). Forage development and construction activities are already underway to that end. It also plans to support customer animal producers in the pastoral areas by providing them with feed at reasonable prices during the dry season, or if and when a drought recurs.
The fact that the Arab markets have a very low preference for carcass going from Ethiopia—as opposed to that of Somalia, Sudan, India and Australia.

One of the major factors contributing to the low prices that Ethiopian livestock products fetch at certain foreign markets, apart from health and quality issues, is the non-compliance to the agreed price terms on the part of many Ethiopian traders. Usually bottom-price agreements are reached. But many traders violate these agreements to sell at lower quotations, for price deals are struck individually.

ii) Hides and Skins

Hides and skins are the most important livestock products and byproducts due to their export values. They stand second only to coffee among Ethiopia’s foreign-earning agricultural products. Between 2001 and 2005 alone, the country exported 58, 092 metric tons of hides and skins and earned a total of Birr 2.5 billion (NBE 2006).

The currently available evidence shows that there is a growing demand for leather products on both the domestic and export markets. The growth in demand in the local industry is exemplified by the steep increase in the number of industries engaged in the marketing of leather products. According
to FAO (2001), the leather market is expanding globally at an annual rate of 10.2% for hides, and at 2.8% for skins. Ethiopia has a comparative advantage to exploit this growing world market, since there is a high demand particularly for skins and hides originating from the highlands. The high demand stems from the compact nature and versatile utility quality of these commodities. Alas, this comparative advantage has not as yet been converted to a competitive advantage! Why? Because the country’s export market for these commodities is, by and large, dominated by semi-processed products that fetch lower prices, compared with the finished ones. Less than a third of the tanneries operating in the country have the facilities and skills to process hides to finished leather, and only about five percent of the finished leather is consumed by the domestic leather industries.

iii) Honey and Beeswax

Ethiopia exports more beeswax than honey. But its export of these commodities has of late shown a declining trend. The honey traded between 1965 and 1990 amounted to 246.3 (9.5 ton/year) tons, whereas only 59.8 (4.0 ton/year) tons of honey was traded during the years 1991-2005. With regard to beeswax, a total of 383, 034 (14732.1 ton/year) tons was traded during the corresponding first period. That, however, dropped to 1429.4 (363 ton/year) tons during the latter period. As disclosed earlier, in the last three to four years, Ethiopia’s beeswax has faced a serious market problem due to adulteration with paraffin wax—so much so that it now has virtually no foreign buyers.

3.4.3 Competitiveness on the Export Markets

Ethiopia is located very close to the oil-producing and high-income countries of the Middle East and Northern Africa, as well as to the EU countries. This fact alone, therefore, gives it a better competitive edge over other East African countries, for proximity to these huge markets translates into a reduced transport cost—among other things. Furthermore, the fact that its meat is, by and large, produced the traditional way makes it more organic. That and the relatively available cheap labor, too, give Ethiopia an additional advantage. The diversity in the agro-ecology also provides better opportunities for producing diversified breeds of livestock with different qualities.

It is, however, unfortunate that the competitive advantages that could have been gained from these peculiar factors are eroded by other weaknesses. The country’s export market heavily relies on commodities emerging from smallholder, low-input traditional systems. The majority of these commodities are exported in their raw forms, since the status of the agro-processing and manufacturing industry in the country is in its infancy. Health and sanitary conditions in the country are poorly developed; and feedlot and animal transport facilities operate at the lowest possible standards. It would, therefore,
be imprudent to expect the export market to be competitive under such conditions.

As indicated earlier, it is mainly in the African and Middle East countries that Ethiopia has comparative and competitive export-market advantages, as the stringent import regulations and the high product quality standard requirements are too prohibitive for it to access the developed markets of Europe, North America and Oceana. The stark reality, nevertheless, is that it has of late begun to face stiff competition even on these markets from other African countries that have better production and export environments such as South Africa, Egypt and Sudan. This situation has further been aggravated by the growing interest of Australia, New Zealand, the USA, India, China, Brazil and Argentina in the Middle East markets. Unless strong measures that could bring about fast and effective changes in the areas of production (feeding, health, breeding and reproduction), processing, and marketing (transportation, storage and packaging) are taken with a sense of urgency, there is, therefore, a high probability that Ethiopia could lose even its existing export markets—by not being as competitive as it ought to be.

According to the Sustainable Development and Poverty Reduction Program (SDPRP) that MoFED issued in the year 2002, the country’s policy and strategy provisions for promoting the development of the export sub-sector give priority to the production of high-value crops such as horticulture, including cut-flower, organic coffee and other high-quality commercial crops. The livestock sub-sector, which has a huge diversified export potential, seems to have, nonetheless, been unduly left unaddressed—with the exception of the portion where reference has been made to an intensified processing of high-quality skins/leather.

The SDPRP envisages a number of intervention strategies aimed at encouraging and promoting private-sector development, comprising the introduction of new regulations and improvement/amendment of existing regulatory implements as follows:

- Amending the Commercial Code of Ethiopia;
- Providing a legal framework for warehouse receipt systems;
- Enforcement of regulations/procedures;
- Provision of an appropriate legal framework for export brokerage;
- Encouraging small-holders by promoting out-grower and contract farming schemes;
- Introduction of modes of privatization of selected enterprises;
- Providing and promoting enabling environments for the aggregation of activities at the production and marketing levels (e.g., marketing cooperatives, strategic alliances, sub-contracting, etc.);

- Enhancement of the establishment and strengthening of industrial/trade associations, including the revision of the existing law of the chambers of commerce and the promotion of the establishment of national exporters association;

- Enhancement of public-private partnership through the provision of a forum for structured dialogue, strengthening the National Export Promotion Council, encouraging the establishment of regional export councils and the establishment of commodity-specific councils/committees; and

- Promoting the establishment of exhibition- and trade-fair centers and strengthening tertiary education in business and management.

The level to which the livestock industry benefits from these provisions depends largely on the emphasis put on the national development policy and implementation strategies formulated in close congruence with the provisions. In the absence of such a fine-tuned national act, the industry will remain marginalized, and the issue of Ethiopia’s competitiveness on the international markets would be a forgone benefit.

3.5 The Existing Infrastructure and Incentives

A rapid national economic development can hardly be achieved with single-handed public-investment efforts. The public drive must be complemented with an active participation of the private sector. That, at any rate, is the only way that sustained development can be achieved. However, for this to happen, suitable investment environments and appropriate motivation mechanisms have to be put in place.

The Ethiopian SDPRP recognizes the need for providing good-quality infrastructure—particularly telecommunications, power and logistics—if the private sector is to operate efficiently and it is to be integrated with the global market. It also underscores the significant roles that peace and stability, macro-economic stability, access to land, taxation procedures, the situations in the institutional and legal environments, the provision of investment finance and markets for input/output, and export play in the economic development in general and in the participation of the private sector in this process in particular. Sustained economic growth, generation of employment opportunities, an improved quality of life, and reduction of poverty pre-suppose a well developed, active participation of the private sector. An assessment of
the existing policies and strategies of the country that have direct bearings on private-sector investment has been done in the areas of transport, health services, energy, telecommunications and financial institutions. The findings of the assessment are discussed in the following sections.

3.5.1 Transport Infrastructure

The SDPRP (MoFED, 2002) recognizes that the success of the country's Agricultural Development-Led Industrialization (ADLI) strategy greatly depends on the available road network in the country. This is so because road network is not only the dominant mode of modern transportation but also connects the many small-holder farmers found scattered in the rural areas to the towns that are market centers for agricultural outputs and inputs. The current estimates indicate that about 70% of Ethiopia's rural areas are not served with modern transportation systems. And an expansion of road networking is usually considered a prerequisite to widening the market and to increasing the volume and efficiency of trade and economic diversification and to thereby exploit economies of scale.

Cognizant of the importance of road networking, the Government of Ethiopia launched a Road Sector Development Program (RSDP) in 1997 in two phases. The first phase, which covered the period 1997-2002, was aimed at revitalizing the road sector by introducing various policies and institutional reforms and rehabilitating critical roads that had proved to be major impediments to the attainment of economic recovery. The focus of the second phase, on the other hand, has been on the improvement of the network connections of the different regions as well as the implementation of the Ethiopian Rural Travel and Transport sub-Program that addresses transport at the village level. In addition to the provision of infrastructure to ensure economic development for the rural poor, the RSDP envisages the creation of employment opportunities in the road works as well as in the development of appropriate systems of transportation.

With a total land mass area of 1.1 km\(^2\) and a population estimated at 75 million, Ethiopia has one of the lowest sizes of road network. The current estimate of the country's road network density stands at 29 km per 1,000 square km\(^2\). The African average, however, is 50 km per 1,000 km\(^2\). Since this situation requires much improvement, government efforts are underway to bring about positive changes. A total classified road network grew by 30% between 1996 and 2001, the biggest achievement (80%) being recorded in regional roads (Table 29).

<table>
<thead>
<tr>
<th>Class of Road</th>
<th>Paved</th>
<th>Unpaved</th>
<th>Total</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1996</td>
<td>1996</td>
<td>1996</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>2001</td>
<td>2001</td>
<td></td>
</tr>
<tr>
<td>Federal Roads</td>
<td>3656</td>
<td>12113</td>
<td>15769</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3924</td>
<td>2467</td>
<td>16391</td>
<td></td>
</tr>
<tr>
<td>Regional Roads</td>
<td>-</td>
<td>-</td>
<td>8043</td>
<td>14480</td>
</tr>
<tr>
<td>---------------</td>
<td>---</td>
<td>---</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>Total</td>
<td>3656</td>
<td>3924</td>
<td>20156</td>
<td>26947</td>
</tr>
</tbody>
</table>

**Source:** Ethiopian Road Authority cited in the SDPRP (2002).

Given the country’s rugged topography, scattered settlement and a huge resource requirement, it is not feasible to assume that high-standard road networks will be built throughout the country in the short run. The current estimate indicates that only 30% of Ethiopia’s area is connected through a modern road-transport system. Hence, the road network strategic approach should focus on low-level roads built with an active participation of the community to reach the rural population in the short and medium terms.

Rural transport burdens are at present met by walking, head- and back-loading and by using pack animals. The Village-Level Travel and Transport Study, a component of the second phase of the RSDP, has disclosed that domestic transport in and around the village accounts for more than 70% of the trips, for about 60% of the travel time, and for 93% of the transport effort in the rural areas. Fetching water and fuel wood alone account for about 90% of domestic travel and transport. Since these are exclusively their duties, women are, therefore, denied the opportunity to participate in a more productive activity. The Village-Level Travel and Transport sub-Program is, hence, designed to provide rural villages with infrastructure for transport and other services that could reduce travel time.

An equally important function to the construction of roads is its maintenance. Timely and proper maintenance is necessary to prevent the pre-mature dilapidation of roads. The Government appears determined to address this issue. And its indicative revenue planning shows a progressively increasing funding derived from user charges to be channeled through the Road Fund for the operation of such purposes.

The country, at present, has an underdeveloped domestic construction capacity, particularly in the road sector—which has secluded an effective participation of the private sector. Capacity building efforts both at the federal and regional levels in this respect are underway through training and technical assistance. Plans have also been drawn up for assigning 40% of the road maintenance works to domestic private-sector contractors in the short-term, with provision for increasing the level to 100% within 10 years.

### 3.5.2 Animal Health Infrastructure

According to the draft Veterinary Service System Document (MoARD, 2004b), no standard livestock quarantine facilities for export market exist in the country. These services are, therefore, at present rendered under sub-standard situations at the animal-holding areas in Dire Dawa, Nazareth and the Afar Region. Cognizant of the fact that the country covers a vast land mass, has
huge livestock resources, exhibits a high prevalence of a number of important diseases, experiences uncontrolled movement of animals domestically and internationally, and has an expanding export market, efforts are now underway to build appropriate quarantine stations. These stations are planned to be placed under the auspices of the federal Ministry of Agriculture and Rural Development at the above three holding locations. Similarly, no appropriate public animal-holding areas (places where animals purchased from different marketplaces are kept and provided with feed, rest and health inspections before they are transported to quarantine stations) exist in the country. The existing facilities are privately owned, and do not meet the required standards.

Exit and entry ports are essential animal-health components, for it is at these sites that the dissemination of diseases through the movement of animals, their products and byproducts could be controlled by sovereign states and regions within a country. Efforts are being made to establish exit and entry ports at the Bole International Airport, Moyale and Aisha Dewelle. A proclamation—Proclamation No.267/2002—on animal-disease prevention and control, which stipulates animal-movement systems within the country, has been promulgated in order to control the transmission and spread of communicable animal diseases from place to place. But the effective implementation of this policy is yet to kick off.

The livestock marketplaces in the country are, by and large, open and equipped with no sheltering, feeding, watering and inspection facilities. More than 90 slaughterhouses of varying standards, catering for domestic services under the management of the municipalities, in addition to the nine, which are export-oriented and privately owned, are under operation at present. Two private slaughterhouses also render services in Addis Ababa (at Burayu and Kara Allo at Kara).

Throughout the country, there are 1,587 veterinary clinics and animal health posts (MoARD, 2004b). Staffing these clinics and posts with adequate personnel has, nevertheless, remained to be a serious challenge. The current national personnel and future needs categorized by profession have been identified as shown in Table 30 below. The existing human resource is deficient by 65% of the requirement.

### Table 30: Number and type of human resources presently available and planned for the future in animal health, 2006

<table>
<thead>
<tr>
<th>Type of Professional</th>
<th>Available</th>
<th>Total Requirement</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinarian</td>
<td>483</td>
<td>1620</td>
<td>70</td>
</tr>
<tr>
<td>Animal Health Assistant</td>
<td>800</td>
<td>6320</td>
<td>87</td>
</tr>
<tr>
<td>Senior Laboratory Technician</td>
<td>47</td>
<td>179</td>
<td>74</td>
</tr>
<tr>
<td>Laboratory Technician</td>
<td>55</td>
<td>194</td>
<td>72</td>
</tr>
<tr>
<td>Senior Meat Inspector</td>
<td>50</td>
<td>734</td>
<td>93</td>
</tr>
</tbody>
</table>
Ten regional veterinary laboratories and one national animal-health reference laboratory at Sebeta provide animal health laboratory services at the moment. The existing and additional labs and personnel of the regional vet labs are indicated in Tables 31 and 32, respectively. As can be seen from Table 31, there are plans to build five more labs at Afar, Somali, Benishangul and Gambela. With the exception of those in the Amhara Region, vet labs seem to suffer from an acute shortage of veterinarians. The National Tsetse and Trypanosomosis Control Center (NTTCC) located at Bedelle and the tsetse-flies-rearing and sterilization facility built by the Southern Tsetse Eradiation Project (STEP) at Kalitti for the application of the sterile insect technique (SIT) deal with the control of tse flies and Trypanosomosis.

Table 31: The current and planned regional veterinary laboratories in the country

<table>
<thead>
<tr>
<th>S.N</th>
<th>Region’s Name</th>
<th>Available</th>
<th>Planned</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Afar</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Tigray</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Amhara</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Oromiya</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Somali</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>SNNP</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Gambela</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Benishangul</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Dire Dawa and Harar</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Addis Ababa</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>10</strong></td>
<td><strong>5</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Source: MoARD, 2004b

Table 32: The current human resource (Technical) status of veterinary laboratories in the country by region

<table>
<thead>
<tr>
<th>S.N</th>
<th>Name of Laboratory</th>
<th>Region of Location</th>
<th>Veterinarian</th>
<th>Animal Health Assistants</th>
<th>Animal Health Technicians</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bedelle</td>
<td>Oromiya</td>
<td>5</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Assella</td>
<td>Oromiya</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Harma</td>
<td>Oromiya</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Kombolcha</td>
<td>Amhara</td>
<td>10</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Bahir Dar</td>
<td>Amhara</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Sodo</td>
<td>SNNPR</td>
<td>5</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>Mizan</td>
<td>SNNPR</td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Mekele</td>
<td>Tigray</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
For the future, animal-health activities will be made to focus on disease-prevention and control and the establishment of disease-free zones. Those diseases against which preventive measures were taken through total vaccinations have been identified.

The prerequisites to putting in place effective disease-prevention and control mechanisms in the country include the following:

- The development of a strong and effective national veterinary information system;
- The strengthening of quarantine and inspection services;
- The construction of more slaughterhouses; and
- The enhancement of vet clinical services.

A veterinary information network that enables a better link-up of the regional and district services with those provided at the federal level, as well as an improved efficiency, has been built. Plans for strengthening quarantine services have also been drawn up by establishing 11 quarantine stations and 24 exit and entry posts. Inspection, too, is envisaged to be significantly improved by rendering effective services at the municipality slaughterhouses, export abattoirs, marketplaces, as well as by revising the current service charges. The establishment of separate stock routes with control posts for animal movement has been indicated as a component of the quarantine and inspection efforts. To that end, the necessary provisions have been made for the construction of 23 high and uniform standards of regional and municipality slaughterhouses, 50 slaughterhouses of medium standard in the municipalities of zonal capitals, and 570 slaughterhouses of lower standards (slabs) in the various districts throughout the country. Plans have also been drawn up for staffing the existing slaughterhouses, as well as those that will be established in the future, with an adequate number of animal-health professionals. According to these plans, one Animal Health Assistant and an Assistant Meat Inspector will be posted in each district, two Animal Health Assistants and one Assistant Meat Inspector at each zone, and a Veterinarian, two Animal Health Assistants and one Assistant Meat Inspector at the regional level.

Preparations are underway to enhance clinical services and control the spread of diseases, so as to significantly reduce their ill-effects on the health of animals. It will not, therefore, be very long before a total of 5,630 clinics and health posts are established, equipped with all the essential components. Both public- and private-owned health-services-rendering institutions will

<table>
<thead>
<tr>
<th></th>
<th>Dire Dawa</th>
<th>Dire Dawa</th>
<th>6</th>
<th>11</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Addis Ababa</td>
<td>Addis Ababa</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>52</td>
<td>46</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: MoARD, 2004b
participate in a cost-recovery system and thereby maximize coverage and mobile services. Provisions are also made for pastoralists. One Animal Health Assistant will be assigned to serve three kebeles (sub-Districts). The services that this professional will provide are clinical, vaccination and awareness-raising about animal-health activities. In addition to this professional, an Artificial Insemination Technician will be assigned to each of the districts in the pastoralist areas. Para-Vets will be selected and given courses in the basic animal-health sciences so that they will be able to render services at the village level. The national human-resource requirement to do all these has been calculated. According to this calculation, a total of 1,260 Veterinarians, 6,260 Animal Health Assistants, 3,000 Animal Health Technicians, and 630 Artificial Insemination Technicians will be required. Each regional Bureau is presumed to have five Veterinarians.

3.5.3 Energy

About 13% of the population is estimated to have access to electric power in Ethiopia. According to the SDPRP (MoFED, 2002), the major constraints in this sector are insufficient and unsatisfactory supply as well as poor quality and customer service. The energy industry, of course, has plans for making the most of the country’s rich hydropower resources and addressing these constrains, as well as rendering customer-friendly services. It also plans to increase its power-supply capacity from 327MW to 663 MW, and to provide a total of 458 to 651 towns with electric power by the end of fiscal year 2004/05. The plan provides for private-sector participation in the generation and distribution of power from off-grid, mini-hydro and other renewable sources like solar, wind, etc.

3.5.4 Telecommunications

The Ethiopian Government recognizes the relevance and importance that ICT has for the economic development of the country—as expressed in its pertinent policy. Accordingly, it has drawn up short- and medium-term development alternatives. These include capacity building for the regulatory agency and engaging strategic partners in the operation and development of telecommunications infrastructure and management. The capacity building programs are, of course, aimed at enabling the agency to undertake pertinent studies and to properly implement the recommendations therein. Accordingly, plans have been drawn up and implementation thereof are in progress—to extend services to 300 rural towns—in addition to improving the reliability and quality of the existing services. A total of Birr 1.5 billion has been allocated for investment in telecommunications, and Birr 0.5 to cover the operational expenses toward extending telecommunication services in Ethiopia from the year 2002 to 2005. The move will have a significant contribution to the agricultural and other socioeconomic development drives in the country.
3.5.5 Financial Institutions

Enabling small-holder farmers to have access to credit facilities improves their agricultural productivity. That in turn helps them extricate themselves from poverty. And the opportunity to use adequate extension technological packages is closely associated with the availability of credit-providing rural financial institutions. In the Ethiopian context, such institutions will most likely be public and private banks as well as cooperatives. At the moment, the high cost of transaction makes it prohibitive to give loans directly to individual farmers engaged in agricultural business under a scattered situation. Farmers’ cooperatives can secure loans and lend in turn to individual farmers for investment and marketing services. Through this type of arrangement, cooperatives could then play an intermediary role between banks and farmers and thereby help overcome the existing commercial hurdles. Strong linkages should, therefore, be forged between cooperatives and banks, given their importance to agricultural and rural development.

The Government of Ethiopia has been reforming the financial sector since 1992/93, with a view to making it more responsive to the market-based economic development policy. The promulgation of Proclamations No. 84/1994 and No. 86/1994 is a noteworthy measure in this regard, for they have opened up the banking and insurance businesses to the private sector as well. The fact that these Proclamations have also forced the state-owned banks to restructure themselves in such a way that they will have a market-based economic orientation is another laudable measure taken as part and parcel of the reformation process. The process has also benefited by the promulgation of yet another Proclamation—Proclamation No. 40/1996—as it has laid the legal framework necessary for the establishment of pro-poor micro-financing institutions. As a direct result of that, there are now a total of 19 micro-finance institutions, according to the country’s SDPRP.

There, however, is a cause for concern with regard to the financial sector: although there is a huge demand for credit, it is characterized by excess liquidity. The factors that are contributing to this situation are the following:

- The low level of credit information;
- The banks’ insistence on almost always holding collateral as a prerequisite to extending loans;
- An acute shortage of skilled human resources with adequate technological know-how;
- Conservative and stringent lending procedures;
- An absence of lending facilities that cater especially to small- and medium-sized enterprises; and
- Inadequate competence to do a proper analysis of financial statements and business plans.
The medium-term macro-economic strategy of the country focuses on the promotion and diversification of export markets, in light of the need for reducing Ethiopia’s hitherto reliance on coffee alone. Still, despite the fact that coffee is constantly exposed to high price-volatility and sluggish world-market growth problems, it may remain an important export item for a while. The export-market diversification efforts will, however, be expanded to include meat, finished and semi-processed leather items, horticultural products and textile garments.

In a bid to deepen the decentralization process and promote it, the Government has empowered the woredas in the regional states to take up expenditure and revenue assignments within their competence. Accordingly, a woreda could be entitled to an untied block grant from its respective Regional State and decide on the utilization of the proceeds based on local priorities and needs. The communities in each woreda are responsible for the identification, delivery and sustenance of locally determined priorities for public goods and services. And the woreda can retain the greater portion of the revenue that it has generated.

### 3.5.6. Other Investment Incentives

#### a) Access to Land

It goes without saying that an expedient access to land at a reasonable rate of lease range serves as an incentive to a private investor. It is, nevertheless, common knowledge that impediments exist in the acquisition of land. These impediments comprise mainly the following:

- Very high lease rates;
- Bureaucratic hurdles;
- Lack of infrastructure in the remote areas that have great potential in agriculture;
- The fact that the political stability and security in a few remote areas leave much to be desired;
- The fact that the policy has no provisions for land ownership;
- Lack of guarantee that the resources invested under a lease-hold arrangement can be reclaimed by the investor as and when necessary; and
- Lack of sufficient policy support to the development of large-scale commercial farms.

True, some of these limitations have since been addressed through the dialogue that the private sector was able to have with the Government at various times. Still, an efficient and attractive land-access system has not as yet been put in place.
There currently is much talk about the readiness of the regional states to attract private investment, including in livestock-related activities and projects. An assessment of the land acquisition systems of four sampled regions—Oromiya, Amhara, SNNP and Somalia—that this study team did, nonetheless, shows that these regions are found at different stages of preparedness. Details on each region have been given under Item 3.3.2 in this report.

A few of the regions, like the SNNPR, are at an advanced stage where land is available for investment, besides relevant information such as location (zone and woreda), size, grade, rate of lease and enterprise suitability (Table 33). About 71,554 ha of land has been set aside for investment with a lease rate varying from Birr 49.00 to Birr 78.00 for first-grade land, and Birr 30.00 to Birr 47.00 for second-grade land. Many of the other regional states are yet doing a study toward availing such information (e.g., the Amhara Region), or they are yet collecting the information necessary to undertake such a study from the various woredas and regions (e.g., Oromiya).

In the Somalia Regional State, land is the property of the community, or of the clan. And access to land for investment purposes is possible only for a reasonable period of time—and on a lease-hold basis at that. Many prospective private investors, however, express their fear that the communal land-holding system might prohibit easy access to land. But on paper, the terms and conditions for land lease in this region are similar to that of the federal Government. The potential investment areas in the livestock industry include ranch operation, cattle fattening, dairy farming, meat production (cattle, sheep, goat, poultry and camel), beekeeping, fishery, ostrich farming, crocodile farming, forage seed production and distribution, veterinary clinics, drugstores, live animal and meat export, and processing of livestock products and byproducts (milk, butter, meat, honey, hides and skins). Although such potential areas have been clearly indicated by the regional Investment Bureau, details on exact locations, sizes and others are not available.

Table 33: Land availability for livestock investment by location and enterprise suitability in the SNNP

<table>
<thead>
<tr>
<th>Location</th>
<th>Available Land*</th>
<th>Livestock Enterprise Suitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone</td>
<td>Woreda</td>
<td>Size (Ha)</td>
</tr>
<tr>
<td>Keffa</td>
<td>Beta</td>
<td>12,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Omo</td>
<td>Hammer</td>
<td>15,000</td>
</tr>
<tr>
<td>South Omo</td>
<td>Selamago</td>
<td>37,854</td>
</tr>
<tr>
<td>Gamo Goffa</td>
<td>Daramallo</td>
<td>1,000</td>
</tr>
<tr>
<td>Shekaa</td>
<td>Andiracha</td>
<td>5,200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>71,554</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: SNNPR Investment Office, 2006
*In addition to livestock, this investment land has been indicated to suit different other enterprises.

b) Taxation and Tax Holidays

The taxation system existing in the country used to be full of loopholes. As such, it enabled tax evasion and non-payment of taxes. Several reform measures have, nonetheless, of late been taken, with a view to broadening the taxation base and improving the capacity of the tax administrative organs. As a result, taxation rates have fallen from 40% to 35% for individuals and single-proprietor businesses, and from 35% to 30% for companies. And in January of 2003, Value Added Tax (VAT) was introduced, to replace sales tax. But all exports of goods and services have been exempted from VAT. One of the major focus areas in the tax reformation effort has been capacity building aimed at maintaining proper books of accounts through the introduction of Tax Identification Numbers (TINs).

The country’s market-oriented economic development strategy covers wide reforms with inducements to both domestic and foreign private investments. The major national reforms aimed at motivating investors embrace exemption from customs import duty, export customs duty, and provision for income tax holidays. Accordingly, all investment capital goods—such as plant machinery, equipment, etc. and spare parts worth up to 15% of the value of the imported capital goods—have been exempted from import customs duties. Ethiopian products and services destined for export, with the exception of coffee, too, are exempted from the payment of export tax and other taxes levied on exports.

The Council of Ministers Regulation No. 84/2003 grants profit-tax holidays for new manufacturing and agro-industrial activities, as well as for the expansion or upgrading of such industries. Under a situation where at least 50% of the products are for the export market, investment will be exempted for five years. With regard to any investment made in relatively under-developed regions, the duration of the exemption could even be prolonged for six years. If 75% or more of the products of the industry is utilized as an input for the production of export items, the investor will also enjoy a tax-exemption right for five years. In a situation where less than 50% of the products of the investment project are destined for export, or are destined for local markets in their entirety, the duration of the tax holiday will be reduced to two years only—or to three years when the investment is in any of the under-developed regions.

Based on the above, the regional states have also developed their own respective incentive mechanisms. The SNNP, for instance, grants the following incentives (SNNP 2005):

- Exemption from paying customs duties and income tax;
• Swift investment services;

• Introduction of low rural-land-rent rates, ranging between a minimum of Birr 30 and a maximum of Birr 117/ha/year; and

• Reasonable lease rates, ranging from 0.10 to 0.80 cents/sq. meter in the major towns of the region.

There is no denying the fact that the introduction of an attractive taxation system and tax holidays is an appropriate mechanism for the promotion of private-sector investment. In and of itself, however, it is not a sufficient incentive to prospective private investors. For an investment to be a productive venture, it must also be complemented with other appropriate conditions like security, land availability, infrastructure (road, telecommunications and electricity) and other efficient and encouraging administrative support services.

IV. MAJOR FINDINGS

4.1 Major Development Gaps

4.1. 1 Production

a) Feed

Shortage of animal feed due to seasonality, diminishing pasturelands, overstocking, poorly developed conservation methods and little or no utilization of improved fodder crops are the main factors that have limited livestock production in Ethiopia. The major sources of animal feed in the country fall under three main categories: natural pasture, crop residues/byproducts and agro-industrial byproducts.

With regard to natural pasture, there are certain problems—including the following:

• Shrinkage of grazing land;
• Overstocking;
• Encroachment by weeds and shrubs; and
• An acute shortage of water.

Shrinkage is the consequence of an aggressive expansion of crop land in the high- and mid-altitude areas where the human population that is depending exclusively on agriculture is growing at a fast rate, which in turn has led to a big increase in the demand for crop lands. The evidence shows that pasture lands in the country are diminishing by about one percent a year. Improving productivity per hectare for both crop and livestock productions and mobilizing
the surplus human population into non-agricultural means of survival is one way of getting out of this problem. Non-agricultural occupations could include such small-scale rural cottage industries as blacksmith, pottery, trade, etc.

Overstocking causes overgrazing. As such, it is another serious problem in both highland and lowland ecologies, though its level of severity may be higher in the highlands. The problem could, nevertheless, be remedied through education on proper animal husbandry. Such education can, of course, be given through the Extension Program. But it must be designed in such a way that it will result in raising public awareness about improved pasture productivity.

Pasture overgrazing results in the disappearance of palatable species and in the dominance of unpalatable ones. In the past, a weak quarantine system led to the introduction of exotic weed seeds with food-aid grains. These, coupled with the banning of the use of fire for bush control in the highland and lowland areas, have caused a deterioration of pasturelands. Particularly in the pastoral areas, this problem has been further aggravated by severe weed and shrub encroachments that not only limit the availability of grazing material but also give rise to inferior pasture quality.

Shortage of water, especially during the dry season, is a severe constraint to the livestock production and productivity in the country. This shortfall is more critical in the lowlands where rivers, springs and ponds dry up and animals have to depend entirely on deep wells that are thinly distributed over the rangelands. And where there are no such water wells, the animals will have to trek for a number of days in a stretch, in search of watering points, and thereby end up losing much body weight.

With the exception of haymaking, feed conservation is not widely practiced in Ethiopia. Actually, even haymaking is confined to a few central and northern highland areas. Animal feeds can be conserved in the forms of hay and silage, and their use can be prolonged through utilization. If and when properly preserved, surplus feed during the rainy season, in the case of a pastureland, and following crop harvest, in crop residues, could make for the shortfalls during lean periods. Strong extension services aimed at promoting feed conservation methods and developing and availing appropriate small-scale equipment/machinery for undertaking such operation is essential for a better and efficient use of available feeds. Strengthening the capacity of regional small-scale farm machinery development and promotion centers and improving the participation of private investors will play an important role in alleviating the shortage of implements that improve conservation activities.

Reliance on crop residues and byproducts such as straws, stubbles and aftermath grazing is increasing from time to time in mixed crop/livestock and agro-pastoral production systems, as a result of the growing crop-farming
practices brought about by the increase in the demand for food. These feed sources, nonetheless, have little or no nutritional value, besides being so bulky that they entail transportation problems. The low protein-content and poor digestibility of these stuffs make them feeds of low nutritional value. That could, however, be improved through mechanical, chemical and biological treatments such as chopping, urea treatment, molasses treatment, conversion into multi-nutrient urea-molasses block, ensiling, etc.

Agro-industrial byproducts cover flourmill byproducts such as wheat bran and middling, oilseed cakes (Niger seed cake, linseeds, sesame seeds and rapeseeds), brewers’ grain and sugarcane byproducts like molasses and bagass. Though the contribution of these byproducts is proportionally low, they play a crucial role in the ration formulation of a balanced concentrate feed. Such feed is important for meeting the nutritional requirements of ruminants kept for high production levels and in non-ruminant feeds. But the major constraints with regard to flour byproducts and oilseed cakes are their escalating prices. Animal-feed processing plants are at present beset by an acute shortage in the supply of raw materials as well as by their exorbitant prices. Furthermore, the demand for concentrate feed in the country is falling due to the high cost of raw materials.

The utilization of cultivated fodder crops is, by and large, limited to federal and regional research centers, university/college farms, private commercial farms with adequate land holdings and a few public livestock farms prior to their privatization. The major causes for the limited use of these feed types are the following:

- An absence of a public and/or a private organization mandated with the production and distribution of seeds of such forage crops;

- The high prices quoted by the different sources whenever such seeds are locally available or imported from abroad;

- The reluctance of some farmers to allot part of their plots of land for this purpose, in view of the critical shortage of land for crop production; and

- Lack of awareness among many farmers about the existence of these crops, despite their availability in several federal and regional agricultural research centers.

Gearing research efforts toward the development and promotion of forage species suitable for under-sowing, inter-cropping and relay-cropping will help address the land shortage for feed production. Increasing the farm capacities of research and universities/colleges, enhancing investors’ involvement with provision for linking them up with many farmers in their vicinities in an out-grower production scheme will improve the seed-shortage constraint. These
efforts must be complemented with adequately prepared extension services to raise farmers' awareness about the importance of cultivated fodder and about their utilization methods.

b) Animal Health

There is a high prevalence of animal diseases and parasites in Ethiopia. These, needless to say, are among the major causes of the mortality and morbidity of the animals; they also have huge implications for the public health and export-market operations. In addition to causing high mortalities, the animal diseases and parasites result in huge production losses. Worse yet, they often cause several communicable human-health hazards. These are the major reasons behind the market bans that certain Arab countries and the developed world impose on the live animals from countries of low animal-health development status.

In spite of the existence of many types of animal diseases and parasites, animal-health services in Ethiopia are inadequate. This inadequacy has in turn made it difficult for the country to make the most of its huge livestock resources. The underlying causes for the inadequacy are the following:

- Poorly developed health facilities for the surveillance, prevention and control of important diseases;
- An inadequate number of trained human resources;
- A short supply of drugs and vaccines;
- Widespread reliance on traditional medicines with unknown dosage and effectiveness;
- An absence of a permanent vaccination program for epidemic diseases;
- The free movement of live animals to bordering countries and back; and
- The under-developed road infrastructure, which has made many remote livestock keepers inaccessible.

Given the large size of the country and the complexity of the prevalent animal-health problems, public animal health services alone do not suffice. Instead, a strategy that will complement them with private-sector animal-health services must be drawn up. Such a strategy will have to, of course, be designed as a short-term solution to the problem. In the long run, however, all animal health services will have to be rendered exclusively by the private sector—the role of the public sector being nothing more than regulatory (the mode in which the private sector can complement the efforts of the public sector in this regard is
detailed in Annex I-1). A few of the regions have already drawn up plans for tackling their respective animal-health problems. According to these plans, some people will be selected from among the communities and trained to serve as Para-Vets. These will be rendering animal health services in collaboration with the private investors in the area. Needless to say, such plans are practicable. But they must be translated into action as soon as possible and replicated by all the other regions—with a view to improving the animal health services coverage of the country.

c) Genetics and Breeding

One of the productivity-limiting factors in the livestock industry is the use of indigenous breeds that have been naturally selected for their adaptability to the various harsh environmental conditions they have been forced to survive in. This adaptability, as governed by “the law of the survival of the fittest,” is, in most instances, achieved at the cost of lost productivity, for it is the better performing animals that at first succumb to harsh environments.

Though productivity variations are known to exist within and among the livestock species of the country, the majority are generally characterized by their poor production traits of economic importance—with the exception of adaptability. Age at first calving/lambing/kidding and intervals between subsequent parturitions are long; growth rates, carcass and milk yields are low; and lactation lengths are short. These limitations are further exacerbated by poor husbandry practices, including reproduction and health services. Selection from among indigenous breeds and genetic improvement through cross-breeding for better production of various livestock commodities is recommended to bring about changes in the genetic make-up of animals of different species of economic importance in the country. One of the drawbacks of selection within breeds is the long period required for bringing genetic improvements in traits with low to medium heritability.

A quick and recommendable alternative to selection is improvement via crossbreeding. Challenges in this type of improvement revolve around the choice of breed to import for the exercise—that is, an optimum level of exotic blood required to bring about the desired improvements and fear that important indigenous traits would be diluted due to the crossing exercise.

Breed choice is determined by the introduction of exotic blood. There are internationally renowned breeds developed for milk, meat and draft power, or for multi-purpose uses, in the case of cattle, for instance. If the target of improvement is milk, for example, the concern in breed selection then could be either for improvements in liquid milk output or fat and protein yields and/or both. Such focus gives a hint as to which breed should be chosen from among the available world-famous ones.
Determination of the inclusion of exotic blood level is largely governed by the production environment. The better the level of management, the higher the proportion of the exotic blood could go. But as a rule of thumb, 50%-62.5% exotic blood is the level widely recommended by research results for small-holder management in most tropical production systems. A problem that still remains unresolved in this respect is the simple method of stabilizing the blood at this recommended level under small-holder farmer conditions.

Dilution, or loss, of important indigenous traits is protected by a carefully planned crossing program that encompasses breed conservation and a utilization program. Indiscriminate breeding can be a big threat to the genetic wealth of the country. Care has to, therefore, be taken in designing an improvement program through crossbreeding.

The breed improvement attempts made in the past, in Ethiopia, have been constrained by lack of improved genotype multiplication and distribution components. The shortage of such genotypes and their exorbitant prices when available, the absence of reliable on-farm performance records and poor on-farm performances due to lack of appropriate inputs (feeds/nutrition, health, breeding and housing) have remained to be impediments to the development of the industry. Most improved genotypes owned by small-holder farmers have either ended up in death or have remained unproductive throughout their lives. Animals that are inappropriately fed and handled hardly recycle. And even if they do, they often miss the chance of mating due to silent heat. The inefficient public-managed artificial service system under operation further complicates the animal breeding system.

The free-herd grazing system prevailing in the country where un-castrated males of commonly inferior genetic make-up run with mixed grazing of unimproved and improved genotypes makes the genetic improvement effort a futile exercise. While policy attention addressing free-grazing practices in the country is an essential component, the need for an animal breeding policy cannot be over-emphasized. The active participation of the private sector in the production and multiplication of improved animal genotypes and AI services with appropriately formulated public regulatory role is of paramount importance. Methods for the participation of the private sector and the role the public sector should play for increased AI use are described in Annex I-2. Massive production of improved genotypes through the privatization of existing ranches and on-farm contractual agreements with small-holder farmers will create adequate national capacity for their dissemination and use. An increased use of improved genotypes by small-holder and commercial producers across the country will have immense implications for the national productivity improvement.

d) Research and Extension Linkage
The poor linkages among research-extension-producers prevailing in the country have led to low on-farm productivities. This emanates from farmers’ dependence on their ages-old traditional production practices, whereas several important technological inputs have remained shelved at their centers of generation. Dissemination of technological inputs has, by and large, been limited to the outskirts of research centers—without any coverage whatsoever of the more distant places.

Over the last two decades, Research-Extension-Linkage Committees (RELC), lately renamed as Research Extension Advisory Councils (REAC), were established around the main research centers to improve linkage mechanisms. Members of REACs were drawn from the woreda Bureaus of Agriculture, research center(s), institutions of higher learning, if present at the zonal level, and representatives of farmer institutions. REACs were organized at zonal and national levels. These councils have shown varying strengths. In some zones, linkages have been encouraging with an active leadership of the council, whereas in others the councils existed in name only—with no apparent impact. The existence of a weakness in such a council at the national level has greatly contributed to failures in several of the zones due mainly to lack of budgetary and technical backstopping.

A more recent technology-transfer approach followed by the Ethiopian Institute of Agricultural Research (EIAR) is a participatory innovative mechanism that looks at the whole spectrum of technological chain from the production to the consumption of commodities. In this process, promising technologies are demonstrated on a few farmers’ fields. Then, those that got acceptance are pushed further for scaling up and scaling out through a joint venture of research, extension, producers, traders/exporters and factories, each with defined roles and responsibilities. This approach has improved the technology take-up by farmers with commendable increases in the yield and quality of targeted commodities, resulting in a substantial household income for small-holder farmers. Nevertheless, some grievances appear to exist over the mandate and boundary of responsibilities between the research and extension system in the process. A genuine move to iron out differences by the concerned bodies is essential if the beneficial indications of this approach are to be maintained in the future.

Another area of concern under this topic is the currently envisaged main extension program in the country. Two issues that raise some concern in this respect are the linkage mechanism between the federal MoARD and regional Bureau of Agriculture and the assignment of DAs graduating from ATVET colleges.

Concern about the former issue arises from the fact that regional extension activities are planned independently and the mechanism to mesh them up with national extension plans is not in place. The plans at the national level can be
applied only with regional compliance. Unless the programs at the two levels are synchronized adequately, it would be difficult to achieve useful results. Hence regional plans will have to serve as a foundation ground for federal extension service plans. For this to happen, however, an agreed-upon timeframe for the formulation of a nationwide extension plan of action, with in-built regional interests and plans is required. The MoARD is expected to render technical support to build regional capacities to deliver required extension services appropriately. This presupposes a needs- and a gap-assessment at the regional level, which will serve as a building block for the formulation of federal plans. Fostering a well-integrated extension package system is more of a necessity than an option, given the current traditional agricultural production system and the urgent need for modernizing the sector to feed the growing human population.

Kebele-level agricultural extension activities were initially envisaged to be based on the provision of a three-person team trained at the existing ATVET colleges that would be placed at the farmer training centers (FTCs). This team is composed of crop, livestock and natural resource disciplines, which were thought to be complementing each other in rendering a complete extension service. Later on, training modules and assignments of DAs violated the initial assumptions and shifted to the all-in-one mode—that is, a single person is assigned to do all the extension activities at the kebele. Nonetheless, the former approach seems to be more practicable.

4.1.2 Processing

a) Dairy

Dairy processing in the Ethiopian context involves the collection of liquid milk from production sites—largely from small-holder producers—and processing it into different products like pasteurized and fat-adjusted whole milk, butter, cottage cheese and dry modern cheese. Given the scattered demographic distribution nature of the producers and their remoteness from the town-based processing plants, collection of liquid milk and transporting it to the processing plants is a formidable task.

Most production locations are not served with road networks, and the milk produced in such places is consumed at home with only some marketing opportunity for butter. In many such areas, production from the indigenous breeds is very low, and liquid-milk trading is taboo. The marketing of milk is not, therefore, an important issue. In some areas within close proximity of milk collection services, coverage is limited to places along the main road route. That, of course, leaves much to be desired in terms of extended coverage. Encouraging the establishment of more private milk-processing plants to improve the service coverage to areas with no access to collection is important. New plants could be established in the central highlands to expand services to
new areas, even if they are not close to Addis Ababa or to any of the big towns in any corner of the country where a high demand for milk and milk products exists.

Under the current scenario, liquid milk is collected by farmers’ cooperatives and unions, private processors and a public processing plant, in the case of the central highlands of Ethiopia, whereas processing and distribution of products are done only by the latter two. There is an unhealthy competition among these three entities. Instead of getting engaged in complementary functions that would enforce their efforts for the formulation of a more integrated chain in the process, each party is seen trying to be a stumbling block to the progress of the other. Farmers’ cooperatives and unions, in particular, seem to dislike private processors. Since these cooperatives and unions are, nevertheless, at their infant stage and do not own milk-processing plants, they face a number of challenges.

The adulteration of milk, lack of proper market outlets, competition from public and private collectors and processors, lack of proper (collection, cooling and transporting) facilities, a limited collection-coverage capacity to potential producers, an absence of reliable sources for improved animal genotypes and forage seeds and low capacity to render efficient services like AI and health to members are the major drawbacks facing the cooperatives and unions. The fact that the number of private processors is limited and they are confined to areas within 40 kilometers of Addis Ababa is, in general, a prominent limitation to the national dairy development of the country.

b) Hides and Skins

The existing 21 tanneries and about 850 leather-manufacturing enterprises function below capacity due to shortage of raw materials. While tanneries are operating respectively at 45% and 81% of their skins- and hides-processing capacity, leather-manufacturing factories function at about a half of their capacity. That is so not only because of the shortage of raw materials but also because of the poor quality of the hides and skins. The hides and skins that come into these factories are, in general, defective because they have been inflicted by diseases, poor flaying methods, branding practices and inappropriate storage and transport methods. The concentration of tanneries and leather-manufacturing factories far away from most production sites of hides and skins is also a drawback. Furthermore, the low export volume of finished leather products and the heavy dependence on semi-finished items denies the country an opportunity of getting higher values for the traded commodities.

c) Honey
Honey is produced in its crude form. And it is consumed domestically largely by those engaged in the brewing of traditional *tej*, which can roughly be translated as mead. The remaining small portion that goes into the marketplace is converted into different products—mainly purified honey and beeswax. The problems that are associated with the processing of honey are the following:

- Low yields of traditional beehives;
- Adulteration of honey with other similar products;
- An absence of policy against adulteration;
- Inappropriate handling (collection, storage and transportation) facilities;
- An absence of product quality standards and quality control;
- High domestic prices;
- Very few processing plants—with a high concentration in Addis Ababa at that; and
- An acute shortage of beeswax and the fact that even that which is available is for the most part adulterated with paraffin wax.

d) **Meat**

Meat processing either for domestic or export markets is still an underdeveloped industry in the country. Almost all export of meat depends on the export of live animals, for very few abattoirs are engaged in the cold-meat business. The export of live animals, however, diminishes the value-addition advantage, since it denies the use, as raw material for industry, of meat, hides and skins, fiber and horns separately for domestic and export markets. In the trading of live animals, such items are not valued and go for free with the price consideration given to their meat alone.

4.1.3 **Marketing**

a) **Domestic Market Information**

A systematic market information network has not yet been developed in the country at the level that connects primary, secondary and terminal markets effectively. But some efforts are underway to furnish information through the mass media, and plans have been drawn up by some regional governments to introduce network services. These efforts must, however, grow into the development of a systematic information database that can be easily accessed by the public.

b) **Animal-Health Services**

As stated under Item 4.1.1 above, the animal-health services that are currently available are being provided by a public organization. The traders involved in the livestock marketing do not, nonetheless, seem to be satisfied with its
performance. Adequate quarantine services are not rendered at marketplaces, en route between primary markets and holding places, at quarantine stations and at exit ports. The problems stem from the limited financial support for operational costs, poor facilities, the poor sanitation of the holding stations, shortage of personnel and drugs and vaccines. Though it has now been quite a while since the government began pondering the establishment of a disease-free zone and a law for the regulation of animal movement has been enacted, nothing has as yet materialized.

Establishing a disease-free zone in poor countries such as Ethiopia could be an expensive venture. And it might face a number of the practical problems that other countries encountered. On the other hand, its absence has huge economic implications that the country can hardly afford to bear, as exporting countries with a well-developed economy use it to keep Ethiopia out of international livestock markets. The simplest way to get around this problem, at least in the short and medium terms, therefore, is establishing holding places adequately equipped with animal-health services and other amenities for animals destined for export. Long-term visions will have to focus on identifying locations with appropriate natural barriers, preferably in the highlands, suitable for the establishment of disease-free zones. Considerations that need to be made in suitability assessment in this respect would be operational-cost reduction, possible impacts on wildlife movement and proximity to marketplaces (domestic source markets and international export outlets).

c) **Ranches and Feedlots**

One of the major factors limiting the availability of good quality animals on the marketplaces is the fact that many animals coming directly from the producers do not meet the stringent requirements of these marketplaces. The variations in producers’ management of animals and the poor husbandry of the traditional practices result in animals of varying body conditions. Private ranch operation has not yet been developed in the country, and feedlot operators depend on animals purchased from pastoralists and small-holder producers. It is, therefore, difficult to get animals that will be able to suit the market under such circumstances.

It is indisputably important to make improvements in the production environment of the pastoralists and small-holder producers by employing better feeding practices, health-care provision and breeding and reproduction, with a view to producing good animals to start with. But these animals should also be purchased at more reasonable prices and get tailored to the market requirements at feedlots and ranches. For that to happen, there is a need for production stratification where pastoralists produce the bulk of the marketable animals in good body conditions for further improvements and finishing by feedlot operators to meet the varying requirements of the different market niches.
At present, the linkage between producers and feedlot operators is loose. Since it is not convenient to deal with individual producers in the chain of the market process, livestock producers must be more organized into market cooperatives fostering a strong linkage with feedlot operators and livestock exporters. The manner in which the livestock market operates now does not allow a complementary chain whereby producers optimize the value of their produce through a direct link either with feedlot operators or export-trade operators, without having to go through middlemen.

The few private ranches that currently exist in the country are not being operated appropriately. They either lack adequate land to avoid overgrazing and poor performance of animals, or are deficient in proper feeding, watering, health care and handling facilities. Furthermore, they suffer from high mortalities.

4.1.4 Institutions

The institutions that are associated with markets in the livestock industry constitute the Live Animal Traders Association, the Tanners Association, Dairy Cooperatives and Unions, Pastoral Live Animal Marketing Cooperatives, the Meat Exporters Association, the Beekeepers Association, Chambers of Commerce/Sectoral Associations and the Livestock Marketing Authority.

The main purpose for which cooperatives/unions and associations were established is to benefit their members through an organized move—as opposed to individual efforts that are seldom effective. Depending on the strengths and weaknesses of their leadership and their experiences, the various associations are found at different stages of development and face varying constraints.

The Live Animals Trade Association complains about the lack of land for feedlot operation, though it has reportedly exerted much effort to acquire it through the lease-hold system. The association’s members are, therefore, compelled to operate on land rented from private owners at very high prices. That, the association says, has entailed for its members a big loss. The other problems of high importance in this area include the following:

- Unaffordable feed cost;
- Inappropriate livestock transport facilities and the high cost thereof;
- An acute shortage of quality animals on the market;
- The absence of appropriate en-route facilities for feeding, watering and animal health care; and
- The unlawful interference of unlicensed brokers who are creating all kinds of problems for animal producers and traders.
The Exporters Association, too, has been facing the same problems that the Live Animal Association has been beset by. In addition to these problems, they encounter certain problems on the international markets for their products. The problems that are particular to them are low prices for animals from Ethiopia and the absence of any market-promotion effort.

Dairy cooperatives and unions, for their part, are faced with the following problems:

- Serious financial constraints;
- Very low prices for the products their members produce;
- An absence of proper extension services;
- The inability of the association to give to its members proper and adequate services—such as improved forage seeds, crossbred heifers and AI;
- The, high transport cost for marketing milk; and
- Stiff competition with public and commercial milk processors resulting from the absence of a regulatory body.

There is no interaction among the different associations established around the various livestock components to form the necessary sub-sectoral synergies for more effectiveness. It is true that these associations represent different components of the sub-sector. Still, while strengthening the associations, with a view to making them better service providers to their members, it is essential to create a common forum whereby the different associations can come together and discuss cross-cutting issues of common interest. For instance, the live animal and export animal associations deal, more or less, with similar and closely-related components of the livestock market, but they have failed to forge good working relations between them.

The strengths of the associations depend on the support they get from such public organizations as the pertinent line Ministries. The Livestock Marketing Authority, which has spearheaded the development and promotion of livestock markets in this country over the last few years, has now been relegated to a department with a new structural setup. In light of the growing livestock market in the country and the emerging improvements in this regard, one would logically expect such an organ to be further strengthened rather than being diminished and made to undertake limited activities. Marketing and extension are, at present, under the mandate of two different State Ministers in the Ministry of Agriculture and Rural Development. Unless a strong functional linkage is maintained, this structure could also create some problems. In short, there appears to be an urgent need for the revision of this scenario.

4.1.5 Domestic Livestock Trade
As has been highlighted under Item 3.4.2 above, the domestic livestock trade faces a number of bottlenecks—including the following:

- There is a critical shortage of animals in the pastoral markets, caused by limitations of marketplaces at easily accessible areas;
- There are no road connections to many potential source areas;
- The animals available on the accessible marketplaces are, in general, of inferior quality as a result of the poor husbandry practices of the pastoralists;
- Much remains to be done to make the pastoralist communities produce suitable animals for the market, instead of selling animals of poor body conditions just to meet their household’s immediate financial requirements;
- Extension activities must be enhanced to orient the producers to a market-based production system;
- Transportation facilities for animals from production areas to secondary and terminal marketplaces are not only poorly developed, but are also highly expensive;
- Trucks meant for lifeless goods are in use for transporting animals; and
- There are no en-route facilities for health care, resting, feeding and watering.

The livestock trade in the country is generally considered to be an area that does not require any training. Accordingly, untrained and inexperienced traders are licensed. They, nonetheless, find it difficult to stay in business for very long. That, of course, has huge socio-economic consequences for the country. It is, therefore, imperative that licensing is restricted to those who are able to meet certain required standards.

### 4.1.6 Export Trade

Since livestock export traders operate in a similar environment to that of domestic traders, they have, more or less, the same constraints. In addition to the domestic problems, the export market is, however, beset by the following problems:

- The traders in this business operate under high market risks;
· Linkages and market arrangements are made with individual agents rather than with companies;

· The business is not transacted by opening export letters of credit, but is entirely dependent on the trustworthiness of the agents in the foreign countries;

· The traders purchase animals either for live animal or meat export and send over the commodities, trusting that the agents will honor their word;

· There is, therefore, no basis for seeking legal recourse in case the agents decide not to make good on their promises; and

· The traders have no choice—other than accepting what the agents wish to pay them—since they do not participate in the price deal.

Even though the domestic prices for animals are constantly increasing and the cost of transporting and feeding them is steadily going up, the products sent from Ethiopia fetch lower prices on Middle East markets than those sent from Sudan, Somalia and other countries. According to the discussions held with the Manager of the Modjo Abattoir, for instance, the Saudi Arabian, the UAE and the Yemen markets pay USD 2,300, USD 2,500, USD 2,700 and USD 2,800 per ton of mutton from Ethiopia, Somalia, Pakistan and Sudan, respectively. The main reasons that Ethiopian products fetch lower prices on these markets are poor product quality and weak health services. These, nevertheless, are excuses that importing countries use to down-grade the products. It is, therefore, important that this problem is given due attention by the policymakers, so that the export of livestock, too, will enjoy the legal protection that the export of crop commodities enjoys. That might be easier said than done, since it has to do with the exportation of something that has life. But whatever it takes, appropriate measures must be taken to address all the constraints that are particular to the sub-sector, if the business is to be run in accordance with the principles of modern trade. To that end, lessons ought to be drawn from the experiences of other countries.

The other problem that the export market has been dogged by is its financial constraint. Many exporters that are beset by this problem have to wait for sales proceeds to come into their hands before they are able to send another consignment. This makes it difficult to do business in a sustainable manner—that is, with no sudden interruption. Of course, the best way that this problem can be solved is by making it possible for the exporters to have access to credit facilities.
Transportation, quarantine, port and shipping facilities for live-animal markets are under-developed. Animals are transported from quarantine stations to the port of Djibouti on inappropriate trucks that are not at all meant for livestock. These trucks are not equipped with feeding and watering facilities and are inconvenient for loading and unloading animals. The holding grounds for quarantine purposes and the shipping at Djibouti leave much to be desired—in terms of sanitation. They are, in general, untidy and lack proper feeding, watering, health and loading facilities. It has been reported by exporters that the shipment of animals from Djibouti to the importing countries is done with boats inappropriately designed for livestock transportation. Why? Because the appropriate freighters seldom come to Djibouti to do business, for it does not offer the advantages that are attendant to economies of scale. Improving the necessary facilities in these areas requires the participation of both the private and public sectors.

a) Export Market Information

Like the domestic markets, there is no efficient information network system aimed at improving the export market. Exporters rely on individual-based communication efforts to link up themselves with their international market partners/agents, and on internet browsing for digging up the market information they need. An adhoc move was started by the then Livestock Marketing Authority to gather information on the meat demand of the various potential import markets for Ethiopia. And, to that end, a team of experts was formed and made to visit the markets and do an assessment thereon, with a view to furnishing the available information to the trade operators.

Given the dynamic nature of the international markets, a step far beyond an adhoc effort needs to be taken to develop a user-friendly information data bank on emerging market opportunities and challenges, bans, tariffs, regulations, price trends, change in consumption patterns, etc. with a regular provision for updating and easy access to the public. The development and operation of such a facility must be done by an appropriate public organization, preferably the Livestock Market Promotion Authority/Agency or a Department under the Ministry of Foreign Trade. The external market information needed includes the following:

- Regular information on local production, market trends, attitudes, GDP, the changing habits of the consumers, the changes in distribution channels, substitute products, demographical changes, etc.

- Obtaining timely information on the tariffs, rules, regulations and trade restrictions imposed by the importing countries and the need for complying with such requirements.
Knowing what the competitors are doing is important, as suppliers are employing a variety of marketing strategies to reach the different market segments (stratified by income, ethnic group, age, religious beliefs, etc.) in the Gulf. Many EU countries, Egypt, Thailand, China, India, Australia and New Zealand are active in offering different forms of promotional assistance to local importers to increase sales. These include: i) subsidies; ii) price and payment terms such as credit facilities and price discounts on bulk buys; and iii) promotional activities such as advertising.

b) Shortage of Cold-Chain Facilities and Cargo Space

Inadequate cargo space and cold-chain facilities at the Bole Airport are among the major constraints affecting the operation of the meat-export markets in Ethiopia. Cold meat is exported using available cargo space on scheduled passenger flights. When cargo space is not available, exporters are forced to take back the consignments to their own cold-chain facilities. Exporters complain that freight costs, too, are high. Chartered flights are even more expensive, since exporters are charged for a round trip. Furthermore, chartered flights are, at times, canceled, thereby entailing to the traders a huge loss. Increasingly growing markets need to be matched with parallel improvements in facilities which are at present developing at a slow pace that does not encourage progress in the market process. Negotiations between exporters, the Ethiopian Airlines and civil aviation authorities appear appropriate to resolve the current service shortage.

c) Conditioning Live Animals for Export

Gulf importers complain that livestock from Ethiopia arrive in poor physical shape. This happens due to a variety of reasons. Livestock are transported in vehicles and boats that are not specifically designed for this purpose. Overcrowding and suffocation, lack of feed and water during the voyage, including lack of attention, and the immediate transfer of livestock from land to sea without any acclimatization are some of the reasons.

On the other hand, despite a sea voyage involving some 17-21 days, livestock from Australia and New Zealand arrive in good physical shape. Exporters from these countries use large vessels specifically designed for this purpose (with capacities to carry up to 140,000 sheep at a time). Ample feed and water is provided during the voyage. Livestock are checked regularly for any kind of disease symptoms, bruising or physical injury. Then those that are not deemed fit for the markets are disposed of into the sea. More importantly, livestock are conditioned for about five days close to, or at, the port of embarkation before they are boarded onto the vessels. This is done to acclimatize them with the feed while they are still on land.
Exporters from Australia and New Zealand emphasize that conditioning animals at, or close to, the port of embarkation is a key factor to maintaining good physical shape at destination markets. In Ethiopia, however, animals are transported on Lorries, without any provision for feed and water. That, naturally, results in deteriorated physical conditions, in the case of the animals, and in a degraded quality with regard to the meat. The need for drawing lessons from those countries that Ethiopia competes with, in the proper handling of export animals, could not be overstated.

4.1.7 Human Resources

The livestock sub-sector is not as yet staffed with appropriate professionals both at the federal and regional levels—especially with those who have the requisite expertise in development and research. Though there are several reasons behind that, two of them stand out. These are discussed herein below.

Many professionals serving in the regional livestock development bureaus spend much of their time engaged in non-livestock-related activities such as fertilizer selling and credit collection, or in supporting professionals assigned to crop development. Because these professionals have no job satisfaction, they grab any alternative job opportunity that is offered to them and leave.

Secondly and probably more importantly, the salary scale of some regions puts livestock professionals at one level lower than those professionals that are working for other sub-sectors. That is also the reason that the top students in the universities and colleges do everything they can not to be assigned to the Department of Animal Sciences. The current graduates from this Department are, therefore, students who were not able to go into the Department of their first or second choice due to their relatively low ESLCE grades. The fact that the salary scale for these professionals is lower than for other professionals, coupled with the fact that the professions are seldom chosen by the top students in the institutions of higher learning, has made the professionals in the field unenthusiastic about what they are doing. That in turn is seen interfering with their performance. As this situation is bound to have long-term negative implications for the sub-sector, remedial measures need to be taken with a sense of urgency.

4.2 Potential Areas for Intervention

4.2.1. Public Sector

a) Policy and Related Issues

- The need for formulating a strong livestock policy. As stated earlier, Ethiopia ranks top on the African continent, and ninth in the world, in
terms of livestock wealth. Yet many of its neighbors—notably, Kenya, Sudan and Tanzania—that own far less livestock than it have made better use of these resources. Why? Because they were able to give more attention and support to the development of the sub-sector. These countries have organized their livestock at the Ministry level with appropriate production, health and marketing services put in place to ensure better production efficiency. In stark contrast to that, the livestock industry in Ethiopia has consistently been suffering from lack of strong institutional organization and a well-designed policy support. Frequent changes in the organizational arrangements, policy bias toward the crop sub-sector development, poorly developed policies (in a non-participatory manner at that) and lack of a follow-up and feed-back mechanism in the implementation of the very few existing proclamations, rules and regulations have contributed to the stagnation of the industry. As in a few other African countries, the livestock industry in Ethiopia should be organized at the Ministry level. If it is to be kept under the current Ministry, however, it should at least be led by a State Minister of its own. More policies—for instance, a breeding policy, genetic conservation and utilization policy, animal-handling and management policy, policy for minimum standards of running livestock business, etc.—should be enacted and supported with functional implementation strategies and monitoring and evaluation mechanisms.

- **Livestock-holding areas for export animals.** Creating a disease-free zone could be expensive for Ethiopia, though it is essential for the promotion of the livestock export market. Developing holding places, at appropriate locations, sufficiently equipped with all the health and feeding amenities for animals destined for the export market is also crucially important. The establishment of a disease-free zone is, of course, prone to entail certain controversial issues, since it is associated with several socio-economic and political issues. Besides, it is too formidable a task to achieve. But, as it will have to be created at least in the long run, learning from such countries as Botswana will help—for they were able to do so successfully.

- **Honey and beeswax adulteration.** The absence of a policy move to halt the problem of adulteration, especially of beeswax, is pushing Ethiopia out of the world market where it used to have a strong grip. Urgent actions aimed at developing standards and quality control and their effective implementation would help to reclaim this grip, given the economic advantage that beeswax would bring to the country.

- **Live-animal transportation.** The unhealthy and inhumane livestock transportation system prevailing in Ethiopia appears to have failed to draw any policy attention so far. It is, nonetheless, difficult to expect any
progress in the development of the livestock trade with this scenario left unabated. Appropriate policies will have to be formulated in order to replace some of the systems that are currently put in place—with a provision for proper facilities.

- **Protection and support for livestock-based cooperatives and unions.**
  The growing importance of the livestock trade on the emerging international market and the hitherto neglected important social and economic role that live animals have played in the lives of many poor farmers make it imperative that the sub-sector is given a special policy support. Focusing policy support more on strengthening producers’ institutions is a better approach of ensuring that the benefits that accrue from national positive actions trickle down to the producers. Producers’ institutions have been requesting for access to credit facilities and technical support, so that they will be able to establish and run effective cooperatives and unions.

b) **Infrastructure**

Developing marketplaces, roads, telecommunications, electric power and other essential facilities that are necessary for the development and promotion of the livestock sub-sector, with a view to attracting private-sector investment, lies, more or less, in the public domain. The efforts made in the past in this respect had left much to be desired, though some positive changes have started to be seen recently. A more coherent and strong action is required if better economic benefits are to be obtained from the sub-sector.

c) **Extension Services**

A commodity-based development strategy has recently been drawn up for the livestock industry. An effective implementation of the strategy is, nevertheless, contingent upon making adequate preparations at the regional level to that end—in terms of facilities, human and financial resources. The incorporation into the implementation process of the extension strategy of integrated health, breeding, feeding and genetic-improvement components is crucially important, too.

4.2.2. **The Private Sector**

a) **Production and Processing**

- **Forage-seed production and distribution.** No public organization is engaged in this activity. Yet the ever-increasing demands of those who are engaged in small-holder dairying, commercial dairying, small-scale
backyard fattening, feedlot operations and abattoir business at both the federal and regional levels are unsatisfied. Improving the availability of improved forage seeds would assist in widening and strengthening the source base of hay production in the country, which currently is dependent on natural pasture alone coming from specific locations like the Selale plain. This will have to be supported by enhanced extension activities, or by out-grower’s schemes, or by the private sector. Raising awareness about the wider use of improved forages, with more nutritional value than natural pasture, as silage or hay, for increased animal productivity, should be the focus of the extension activities. An adequate provision of quality seeds must, however, be part of the awareness-raising campaign.

- **Multiplication and distribution of improved animal genotypes (heifers, bulls, rams, bucks, and cockerels).** Addressing the acute shortage of improved genotypes for increased animal productivity is an area of high private-investment potential, for the demand therefor is far from being satisfied. The limited supply that comes from the existing ranches, research centers and private commercial farms is nowhere near meeting the huge demand.

- **Dairy processing.** The involvement of the private sector in the processing of dairy is highly limited, and the few existing investors are found within a 40-kilometer radius of Addis Ababa. Milk collection is limited to the locations along the main roads. And the competition for liquid milk among the producers’ cooperatives/unions, the public and private processors is so stiff that it has resulted in an acute shortage of this commodity. Private investors in this area could be attracted to uncovered potential locations by developing road connections and other necessary support facilities through government development programs.

- **Meat processing.** The animal export trade in the country is dominated by live-animal marketing. In light of the stringent import regulations of many countries and on the basis of value addition, future strategies need to focus on the export of processed meat. This venture is at present unsatisfactory and, therefore, attractive to prospective investors.

- **Diversification.** The potential increase in meat consumption has been affected by the lack of diversified value-added meat products at affordable prices. The proportion of the value-added meat products sold is negligible, compared with the volume of the raw meat available on the market. Value-added meat products could be expensive due to low economies of scale, psychological attributes of marketing strategies (packaging, etc.) and technological/management constraints. As a result, only a small portion of the population can afford to buy such products.
In other parts of East Africa, including Sudan and Kenya, nonetheless, value-added beef and chicken products such as sausages, burgers, ground meat, and mortadella are produced and sold. In Ethiopia, such products are mainly imported, though smoked beef is beginning to get popular. The market potential, however, is available, if more of these products are processed from cattle, shoats and poultry and sold at affordable prices. Still, there is a need for encouraging investments in this area and thereby diversifying into value-added meat products. Such meat products could, of course, include meat prepared in accordance with the *Halal* specifications, with Muslims as the end users thereof. Another thing that should be given due focus is the need for processing such products with economies of scale, so as to make them affordable by a significant portion of the population.

- **Hides and skins.** Tanneries and leather-manufacturing industries are concentrated in and around the towns and cities, particularly Addis Ababa. Very few industries with finished leather products exist in the country. But plenty of opportunities exist for establishing new tanneries in close proximity to the production areas where the infrastructural development situation justifies doing so and for increasing the number of the leather industries that produce finished leather products. These opportunities, nevertheless, presuppose improvements in the collection, storage and transportation of hides and skins. One advantage of establishing tanneries close to the production areas is that it solves the problems arising from transportation constraints. It is also presumed that the tanning and leather-manufacturing businesses will be upgraded through subcontracting schemes. Such arrangements are determinant to attracting investment and to promoting technological upgrading at the firm level—in addition to expanding the international market for Ethiopian leather products by exploiting existing markets and identifying new markets for leather products as well as through the promotion of clustering, branding and forming a unified leather sub-sector.

- **Honey processing.** Regardless of the immense potential for honey production in the country and the growing trend in the expansion of modern apiary throughout many of the regional states, only an insignificant number of investors are engaged in this business. Even those that are already in the business are concentrated in Addis Ababa. But a balanced distribution of private-sector participation in potential production areas is essential.

**b) Livestock Trade**
- **En-route facilities.** In the domestic livestock trade, the provision of en-route facilities such as resting grounds with feeding, health and watering equipment at cost is a possibility for private-sector investment.

c) **Services**

- **Artificial insemination (AI).** As stated earlier, AI services in Ethiopia are provided exclusively by the public sector. It is, nonetheless, widely believed that these services are inefficient, disorganized and limited in their coverage, seldom keeping proper records. A few private technicians in Addis Ababa had recently begun rendering the services, but they were not able to perform better because of the absence of a well-organized regulatory system. Almost all those concerned have, therefore, reached a consensus that the best option is the partial privatization of these services with a strong regulatory mechanism to ensure adherence to a given operational standard. Private and public services should complement each other in the short run. In the long run, however, total privatization is the *sin-non-qua* measure, so long as those who would eventually shoulder the responsibility make it a point to gain the relevant experience by working in collaboration with those in the public sector. It might be helpful to evaluate the private and public performances if mandate zones with a clear demarcation are allotted to the two service-rendering institutions.

- **Veterinary services.** As in the case of the AI services, the public-sector-operated animal-health services are inadequate in the delivery of vaccination and in the rendering of quarantine and clinical services. Here, too, it seems like the best arrangement is for the private and public sectors to work complementing each other in the short term, and a total privatization in the long term. At any rate, no argument has been forwarded against such an arrangement to date, for it is widely believed to be the best approach to improving the animal-health coverage in the country. Also, linking Para-Vets with the private sector for efficient delivery of drugs, vet equipment and vaccines will create further opportunities for improvements.

- **Abattoirs and slaughter services.** These services are offered at distant locations from the production centers, but in the major towns—that is, in the lowland pastoral areas. If the Government makes it a point to improve the road and air transportation facilities and ensures security, private investors can be attracted to these locations to put up abattoirs and slaughter services.

- **Transport services.** Appropriate facilities for transporting live animals from production centers to quarantine stations and from these stations...
to export ports are not available in the country. This is an area with a promising investment potential for private investment. Under the present scenario of carrying animals on trucks unsuitable for the purpose, a demand for modern trucks may not exist. The Government should, therefore, make the utilization of inappropriate vehicles to transport animals illegal, so as to create sufficient demand for modern and appropriate trucks and encourage the involvement of the private sector in this service.

4.2.3 Private-Sector Institutions

- **Trade associations.** Ethiopia has a Livestock and Meat Exporters Association and a National Tanners Association. The Exporters Association, as its name implies, does not comprise domestic livestock traders. The association suffers from a dwindling of the number of its members and is handicapped by financial constraints, as members’ contribution is minimal. The Tanners Association does not have the relevant facts concerning its industry. There is a need for the Livestock and Meat Exporters Associations for developing strategic alliances with the respective domestic livestock traders associations or for supporting the formation of new ones. They also need to make a distinction among their immediate, short- and long-term objectives. The immediate objectives should focus on consolidating the associations, recruiting more members, lobbying government, donors and NGOs on issues affecting their business, capacity building, and so on. The associations should get involved in improving the productivity of the producers through appropriate market interventions by advocating for the use of live weight scales and for the provision of veterinary drugs through approved distribution channels. The associations should also look into alternative ways of raising their incomes, instead of relying only on their members’ contributions. Providing livestock transport services for members at reasonable costs could be one potential area for income generation. They should also strive to train and educate their members in such disciplines as international rules and regulations governing livestock and meat trade, accounting systems, trade forecasts, the use of promotional materials, etc.—in collaboration with pertinent national, regional or other international institutions.

- **Tanners Association.** Advocating for the protection of locally produced leather goods and articles through tariff and non-tariff barriers on undersold imported products of similar nature. And, at the same time, improving the quality of their products and streamlining their production costs so as to be more competitive on the market. They need to forge alliances with their main suppliers, slaughterhouses, butcheries, and skins and hides traders to improve the quality of supplies, forming a strong advocacy group and increasing income. They may also need to
invest in the training of primary producers (such as rural slaughterhouses and butchery owners) to improve the quality of hides and skins production—in collaboration with the pertinent local, regional and international institutes.

4.2.4 Bilateral Agencies

There are several areas in which bilateral agencies can intervene and contribute to the development of the livestock sub-sector in Ethiopia. These are areas in which international experiences and technology transfer can take place. Such areas could be domestic livestock-market-information-system development, external livestock-market-information-system development, value-chain improvement in the production and processing of livestock and livestock products for both the local and the export markets. These are areas that need both financial and technical assistance from bilateral agencies.

4.2.5 Non-Governmental Agencies (NGOs)

Domestic or international NGOs can build the capacity of pastoral and other communities to increase their incomes through an improved livestock marketing, increased access to finance and income diversification. NGOs can also assist in cooperative development and management, and can transform them into effective private organizations that provide marketing, input supply and/or savings and credit services to their members. NGOs can also encourage these community-based organizations (CBOs) to forge relations with rural financial service providers and expand income-generating activities. Training community members and the professional staffs that are managing the cooperatives can ensure greater prosperity for pastoralists and other small-holder producers—especially when it is bolstered by effective linkages to wider markets and expanded trade opportunities to the private business sector.

V. CONCLUSION AND RECOMMENDATIONS

Ethiopia has a diverse agro-ecology with altitudes ranging between hot depressions below sea level and cold mountainous peaks over 4,000 meters above sea level. In fact, it is this spectrum of climatic variations that gave rise to the existence of a mosaic animal, crop, forest, soil and other natural-resource endowments in the country.

The country is blessed with rich livestock resources distributed over the highland, with mixed crop/livestock and lowland pastoral production systems—the former accounting for over 80% of the total resources, and the balance contained in the latter system. Region-wise, Oromiya, Amhara, SNNPR and Tigray hold about 95% of the total tropical livestock unit of the national animal resource. Lack of accurate resource knowledge is a prominent problem in the sub-sector.
Livestock play a significant socio-economic role in the lives of the many poor producers residing in the various agro-ecologies of the country. They provide inputs for crops in the forms of draft power and organic fertilizer that are essential components for sustainable farm use—in addition to serving as direct providers of nutritious foods like milk, meat, eggs, honey and blood, in the case of some societies. Hides, skins, live animals, meat, beeswax and honey, to a lesser extent, do not only constitute important export items that earn the country a substantial amount of hard currency but also serve as raw materials in the domestic industries, thus saving much of the earned foreign currency that could have been spent on importing these materials.

Producers utilize livestock for wealth accumulation, as a bank on-hoof with much better interest-rate gains than from modern banking. They are considered as insurance bond-hedging against crop failures and major incidental expenses such as weddings, burial ceremonies, school fees, fertilizer credits, improved seeds and consumer-goods purchases and social penalties for certain offensive acts.

In spite of the substantial livestock resources the country possesses and the various important cultural and economic functions these resources fulfill, the contributions of the sub-sector to the total agricultural output and to the GDP are only 35% and 18%, respectively. This level of performance is not commensurate with the existing potential. Nor is it justifiable. This study has focused on a situation analysis with a view to undertaking an assessment of existing qualitative and quantitative data and identifying what went wrong and where, as well as the measures that should be taken to reverse the situation and make the sub-sector more productive to the keepers and the nation. The major factors that are accountable for the low productivity of the sub-sector are discussed herein below.

**The Subsistence Production Orientation of Farmers**

The majority of farmers keep livestock for subsistent livelihood. And they have neither the money needed to purchase technological inputs nor the skills necessary to improve productivity. They rely on ages-old traditional production practices enabling their animals to produce just enough for the family’s consumption. And most of the time, most households, in fact, find it difficult to meet their food demands—especially under poor production environments. Quite often, therefore, there is no room for surplus production and concern about market needs under such scenarios. The producers thus find themselves in a vicious circle of abject poverty. It is, therefore, imperative that they are capacitated to orient their production goals beyond subsistence requirements and be able to produce not only surplus for markets but also commodities for which there is a demand on the market. Lack of such an attitude on the part of producers, an absence of a strong extension support to enable them to develop
market attitudes, and the under-developed market and infrastructure have so far kept producers in their traditional mode of production.

**Low Production and Productivity**

Herd and flock compositions in the traditional production system are dominated by indigenous animals of generally low genetic potential for economically important traits, with the exception of their adaptive trait to harsh climates. Nonetheless, variations are known to exist among the populations of the different species, leaving room for further improvements through selection. Less than 1% of the cattle, sheep and goats as well as only 6% of the poultry in the country are improved breeds at the moment—but none of the camels. The use of transitional and modern beehives represents less than 2% of that which is available nationwide.

The indigenous livestock genetic materials have slower growth rates; they first breed at a late age and reproduce at longer intervals thereafter; they have lower yields and shorter lactation lengths than improved breeds. Wider use of improved animal breeds and modern beehives in this country is severely constrained by lack of and/or limited public and private organizations/institutions responsible for multiplication and dissemination. And whenever these animals are available, their prohibitive prices, weak adaptability to the poor traditional husbandry practices and an absence of marketing channels for increased yields resulting from the use of modern inputs are also serious problems. Private-sector investment in commercial livestock farms is limited. While the strengthening of focused livestock extension is crucial for private-sector participation, it is also determinant to overcoming the problem of the low productivity of this industry. As part of a recommendation to improve private-sector participation, this team has developed project profiles for dairy farming, improved dairy stock production and forage seed production to guide interested entrepreneurs who wish to make an investment in these areas (see the commercial project profiles attached herewith).

**Under-Developed Processing Opportunities**

Several livestock commodities are, by and large, consumed in their primary product forms customarily—without much consideration for processing them for value-addition, unless compelled by environmental circumstances to prolong shelf-life. The processing of dairy, meat, honey and hides and skins into a variety of products, however, helps diversify utilization options and optimizes value addition. But the adequate exploitation of such opportunities in the country is frustrated by the under-developed processing units, the limited coverage of production areas and poor storage and transportation facilities.
Reversing the problem of poorly developed processing facilities requires a strong private-sector role in the economic development process. This study has recommended three important areas—abattoir operation, milk-processing units and honey and beeswax processing—for the consideration of the private investor and developed project profiles for the same (see the commercial project profiles attached herewith).

**Weak Technological and Extension Support**

Problems of low production and productivity result from the complex interactions of the low genetic capacity of indigenous genotypes, poor husbandry practices and lack of proper technological support and enhanced extension activities. In general, there is a shortage of relevant technologies to go to the small-holders in the country. And, more importantly, the available appropriate technological inputs are quite often underutilized. This limited use is a consequence of the weak linkage between research and extension, the inappropriateness of the technologies under certain situations, the unawareness of the producers of the existence of technologies, lack of technology multiplication units for wider distribution and the weak financial circumstances of the producers to acquire available technologies compounded with the inadequate provision for credit to bridge financial gaps.

Extension services in production, artificial insemination, veterinary input, abattoir and slaughterhouse operations and marketing are not sufficiently provided to users. This contributes negatively to the increased productivity of the sub-sector and requires the concerted efforts of research, extension, policy and the private sector to improve the situation.

One of the contributing factors to the prevalence of a weak extension system is, among other things, its monopoly by the under-staffed public institution—with the exception of the insignificant involvement of NGOs. In light of the vast number of producers distributed over a range of climatic locations with complex development challenges, it is hardly possible to render effective services with reasonable coverage, unless some services are made open to the private sector under some guiding regulations.

Since the private sector in the country lacks the pertinent experience in this regard, a better option appears to be using a private-public services-rendering method in a complementary manner, at least for the short run. In the long run, nonetheless, these services will have to be rendered exclusively by the private sector—the role of the public sector being strictly regulatory. At present, there is little or no private-sector participation in such services. Privatizing the veterinary and artificial insemination services has been suggested in this study. And, to that end, the duties and responsibilities of the public and the private sectors have been delineated (see Appendix I, Numbers 1 and 2).
Poorly Developed Infrastructure

The status of the infrastructure development in the country with respect to serving the livestock-rich lowland pastoral areas is generally unsatisfactory. The roads, the marketplaces, the livestock-transport facilities, the telephone and electric power services in many of these remote areas are not yet developed enough to deliver reasonable support to the growing market demands. The fact that some public efforts are currently being exerted, however, indicates that it will not be too long before everything is put in place.

The structures for the proper delivery of such services as artificial insemination and veterinary care, too, are in poor conditions. It goes without saying that the development of infrastructure is a prerequisite to all the other improvement interventions. The regional states will have to, therefore, throw their weight behind all the efforts that are aimed at bringing about positive changes in the provision of such support services.

A Restrained Livestock Market

Constricted by the ever-growing domestic and international demands, the Ethiopian meat industry is under severe pressure. Problems emanating from an inadequate supply of high-quality animals, the escalating prices for animals, an absence of roads and other communication facilities that connect the remote livestock-rich areas with the towns and the cities and lack of proper livestock transportation facilities are prominent constraints in this industry.

The industry is further constrained by lack of efficient market-information services, an absence of a systematic market chain with the resultant unhealthy competition between domestic and international markets, a shortage of holding/quarantine stations and insufficient health services at the marketplaces, and en-route and quarantine stations. The problems of the export market are more aggravated by lack of sufficient working capital, a risky operation system that leaves exporters at the discretion of their foreign-trade agents without adequate market information and official trade arrangements through export letters of credit or other legal trading options, frequent trade bans due to poor domestic health situations, lower price offers for Ethiopian products than for those from neighboring countries and under-developed cargo, cold chain, port and shipping services.

Lack of market information, in particular, is a critical limitation. And the establishment of national and livestock export market information centers is suggested in this study (Annex I) as an intervention to address the information gap.

Lack of Effective Policy Support
Even though it has a huge potential for supporting the economic development endeavors of the country, the livestock sub-sector had been a neglected agricultural component in the past. But it has of late been getting due policy attention. Still, much remains to be done in order to realize better economic returns from this sub-sector. For instance, the legal framework necessary for the development of the sub-sector has not yet been put in place—with the exception of the discrete current market efforts being tried here and there. Even the minor efforts made in this regard are only responses to export-market pressures more than domestic initiatives targeted at the intended development plans to exploit the existing potential for a sustained economic growth.

Though the importance of creating ample market opportunities for encouraging production is indisputable, failure to bring a corresponding positive change on the production side by taking appropriate steps in feeding, health care, genetics and breeding, housing and a production orientation of the producers will not lead to a sustained productive industry. In fact, an isolated market focus alone could be even counter-productive, since it would lead to a quick resource over-exploitation with an eventual consequence of resource drainage.

Tangible policy actions, with well-developed implementation strategies addressing the chain from production to consumption, need to be put in place. The improvement efforts under progress in the livestock industry have hardly made their way to the grassroots level and have remained suspended on papers, indicating that a lot remains to be done with regard to the development of effective policy-implementation strategies. In fact, it is cogently argued that the livestock sub-sector warrants a much more organizational arrangement than it has at the moment. It should grow to a Ministry level, from its current status as a mere Departmental under the MoARD, if it is to play a greater national economic role than what it is playing today.

**A Weak Private-Sector Participation**

The diverse climatic conditions and farming systems prevailing in the country present specific development challenges and opportunities. The fact that the livestock sub-sector is dealing with living objects makes the challenges all the more complex and formidable. This fact is probably one of the major reasons behind the limited participation of the private sector in the industry. Cognizant of this situation, there is a need for going the extra mile on the part of policymakers to specifically develop attractive mechanisms, with a view to ensuring a meaningful private-sector participation in the industry.

As it stands now, the involvement of entrepreneurs in the sub-sector is minimal. But a few potential areas such as abattoir operation, dairy farming, improved dairy stock production, forage-seed production and milk and honey processing have been recommended and project profiles developed in this study for the participation of the private sector (Annex I). Identifying the areas that
the private sector could invest in and profile-preparation alone will not, nonetheless, create the necessary conditions for the private sector to make investment decisions, unless there are attractive policies and secure situations. Regional governments are expected to play an active role in the creation and publicity of such remunerations. The SNNP has made a commendable progress in this respect. But the other regions must follow suit.

In addition to appropriate policy incentives aimed at inducing private-sector participation in the livestock industry development, the formation of a “lobby group” is essential. The functions of such a group include the following:

- Identifying flaws in livestock policies and taking steps to bring them to the attention of policymakers;
- Forging working relations among trading communities, development organizations and policymakers; and
- Creating forums whereby policy dialogue can take place with relevant bodies on all issues related to improving the participation of the private sector in the livestock industry development process.

The members of this lobby group could be drawn from pertinent GOs, NGOs, chambers of commerce, as well as the professional and business associations operating in the country. The Addis Ababa Chamber of Commerce and Sectoral Associations should spearhead the work of organizing and running the group.

A summary of the recommended actions that must be taken to address the aforementioned limitations to the livestock industry by the responsible public and private institutions are given as matrix of constraints, their rankings and solutions in Table 34 below.
Table 34: A Matrix of Major Constraints, Priorities and Proposed Solutions in the Livestock Sub-Sector of Ethiopia

<table>
<thead>
<tr>
<th>Constraint to the Small-Holder Livestock Industry</th>
<th>Priority of the Problem</th>
<th>The Solution to the Constraint</th>
<th>The Action Required from the Responsible Body</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The Action Required from the Responsible Body</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Government/Extension</td>
<td>Research</td>
</tr>
<tr>
<td>1. Subsistence production orientation</td>
<td>8</td>
<td>Render strong extension services to farmers, and avail appropriate technological inputs at reasonable prices</td>
<td>Pack and timely deliver proper inputs</td>
</tr>
<tr>
<td>2. Low production and productivity</td>
<td>7</td>
<td>Improve the productivity of the livestock industry by increasing the use of modern inputs such as improved breeds, feeds and health care by small-holder farmers and entrepreneurs</td>
<td>Focus on improving production environments, including incentives to increase outputs per unit of animal, land and labor resource</td>
</tr>
<tr>
<td>3. weak technical and extension support</td>
<td>5</td>
<td>Improve the extension service coverage through an integrated public-private sector service delivery</td>
<td>Privatize some of the appropriate services and strengthen the delivery of those under the public domain and put in place a regulatory system for those under the private sector</td>
</tr>
<tr>
<td>4. Poorly developed infrastructure</td>
<td>6</td>
<td>Improve the connectivity of potential livestock producing areas to marketplaces</td>
<td>Improve road and air transport, communication, energy and water facilities through public and community participation</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5. Underdeveloped processing opportunities</td>
<td>4</td>
<td>Promote value-adding ventures by encouraging the processing of the livestock products and byproducts traded raw at present</td>
<td>Pool regional and federal government’s effort to create an attractive environments for investors</td>
</tr>
<tr>
<td>6. A restrained market situation</td>
<td>2</td>
<td>Strengthen market linkages both at domestic and international levels via communication networking</td>
<td>Establish efficiently working information service that could systematically link national and international markets</td>
</tr>
<tr>
<td>7. Lack of effective policy support and of follow-up of the proper implementation of policies</td>
<td>1</td>
<td>Support the development of the sub-sector through an effective implementation of existing policies and well-formulated new policies and strategies with an in-built monitoring and evaluation system for their implementation. Supportive policies are required to uplift the industry from its current status</td>
<td>Complete the livestock development master-plan and the associated strategies still under study soon. Clear and effective integration of the Federal and Regional efforts at the implementation level is crucially important. Place the industry at an appropriate</td>
</tr>
<tr>
<td>Institution</td>
<td>Description</td>
<td>Action</td>
<td>Stakeholder Involvement</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>--------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>8. A weak private participation</td>
<td>Encourage the participation of the private sector by making production, processing and marketing environments more attractive to investors</td>
<td>Remove all investment hurdles, including problems of land acquisition and issues relating to security, in collaboration with regional states and investment bureaus.</td>
<td>Should develop interest to exploit growing demands for livestock products by investing in production, processing and marketing ventures</td>
</tr>
</tbody>
</table>
The ability of the country to make the most of its immense livestock resources depends on the commitment and concerted efforts of the public institutions, the private sector—including the institutions that represent it—and the policymakers. Neighboring countries with far less livestock-resource endowment have been able to achieve commendable economic gains from the sub-sector. There is, therefore, no reason why Ethiopia cannot do the same, as long as all the conditions necessary for it to do so are facilitated.
References


CSA (Central Statistical Agency). 2005 Agricultural sample survey. vol. II


Oromiya Investment Bureau. *A Bird’s Eye View of Investment Opportunities in Oromiya*.


ANNEX I: NON-COMMERCIAL PROJECT IDEAS

1. PRIVATIZATION OF VETERINARY SERVICES

1.1 Summary

The subsistence nature of the livestock industry in the country, market failure problems, transhumance production systems and the threat of serious outbreaks of contagious diseases are the problems that need to be confronted in designing the privatization process.

In Ethiopia, there is ample scope for the privatization of some functions of the federal Government and of the regional states. At any rate, there is a need for developing private veterinary services. Para-veterinary technicians can play an important role in the privatization process.

1.2 The Nature of Veterinary Services

Veterinary services fall into the following four main categories:

- Clinical services (treatment of diseased animals and control of production-limiting disorders);
- Preventive services (avoiding the outbreak of diseases);
- Provision of drugs, vaccines and other products (such as artificial insemination); and
- Human health protection (inspection of marketed animal products).

Clinical health services and the provision of veterinary drugs are the closest to being pure private goods. However, there can be positive externalities in treatment, particularly in the case of infectious diseases, that may justify some form of government intervention. It can be argued that preventive health services also justify either public provision, or at least financing by the affected livestock owners, because of the externalities involved and the "free-rider" implications of charging individual farmers for services that others, too, will benefit from.

There are also morality problems in the marketing of veterinary services, especially in the area of drug provision and hygiene inspection. These require the Government to maintain a role in the provision of these types of services.

1.3 Division of Responsibilities between the Public and the Private Sector

Important functions which should remain within the public sector's domain are the monitoring system and the evaluation of the impact of such activities, including beneficiaries'/clients' assessment.
1.3.1 Services that should fall under public-sector responsibility

- Formulation of national livestock policies (the creation of an enabling environment for private-sector activities);
- Elaboration of regulations governing animal production, processing and marketing activities and the activities of the private veterinary and para-veterinary professions;
- Ensuring the health of the national herds (surveillance, compliance monitoring, quarantine, quality control of drugs and vaccines, emergency planning, reporting to international agencies and neighboring countries);
- Inspection and control of livestock products for food-safety purposes;
- Import and export certification; and
- Accreditation and monitoring of private suppliers of animal-health services.

1.3.2 Services that should fall under shared public and private responsibility

- Disease diagnosis and reporting;
- Compulsory testing;
- Tick and tsetse fly control;
- Food hygiene and inspection;
- Continuous education and training;
- Disease control;
- Disease emergency response;
- Research; and
- Animal management advice and extension.

1.3.3 Services that can be rendered by the private sector

- Clinical diagnosis and treatment;
- Production and distribution of drugs and vaccines;
- Artificial insemination;
- Management of herd health and production programs; and
- Marketing of livestock products.

1.4 The Need for Updating Legislation

Government veterinary authorities are empowered by law to control the movements of animals, to inspect the production, processing and marketing of animals and livestock products, to destroy dangerous animals and/or products as part of the enforcement of the application of animal-health protection practices. In the interest of service users and of consumers of livestock products, legislation is also required to regulate the exercise of private enterprises in the delivery of veterinary services and in the supply of veterinary materials.

Furthermore, legislation needs updating from time to time in keeping with the development of the livestock sector, the technological progress, the requirements of international agreements and the need for encouraging private professionals in the veterinary and para-veterinary professions.
Updating legislation involves drafting new laws for approval by Parliament and formulating the administrative regulations and implementation procedures associated with the approved laws. Conventionally, these functions have been centralized in the Department of Livestock of the central government’s Ministry of Agriculture and Rural Development or in a separate Ministry of Livestock.

In a more advanced system, a Veterinary Board may be established with regulatory functions, with the representatives of different categories of service users and consumers’ organizations as its members.

1.5 Private-Sector Participation in Setting New Rules

Drafting proposals for new legislation and elaborating on the regulations governing the application of the laws approved is a normal function of the federal Government. Under a decentralized administration, participation of voluntary-sector organizations is in the process of being formulated, and proposals thereon have already been submitted for approval. With respect to veterinary services, the organizations that could play a role include the national veterinarians’ association and the association of para-veterinary technicians. At the village level, agents and livestock owners’ associations and associations of para-veterinary technicians, too, could play a role. The Government thus has a role to play in promoting an enabling environment to develop such associations with a view to fully representing diverse interests.

2. ARTIFICIAL INSEMINATION (AI) SERVICE DELIVERY

2.1 Summary

Modern dairy development is at its highest stage because of strategic and wider usage of artificial insemination, which is based on reliable records and pedigreed animals. The AI technique brings to the farmer a choice of bulls, which he would not normally be able to have access to. If and when properly used, the technique is known to result in faster genetic improvement, resulting in higher milk production per cow per lactation at successive generations, provided the cow is kept in an environment that allows it to express its full genetic potential to produce milk. In other words, much of the improvement obtained in increased milk production is attributed to better management practices such as feeding, housing, health care and general care of the animals that are factors that could affect milk production.

Artificial insemination services in some developing countries such as Ethiopia are seen as unilateral government developmental activities as they are practiced at present. However, several countries have proved that active private-sector intervention, or participation, is more efficient with appropriate rules and regulations in place. The participating interventionists could be such professional associations as cooperatives, unions, societies or federations affiliated to dairy operations or businesses, or any other investor willing to organize a center and offer quality and reliable service at cost.
2.2 The Current State of the Services

As it stands now, the National AI Center of the Ministry of Agriculture (MOA), which is located in Addis Ababa, is the body that has the following countrywide mandates:

- Train and retrain AI technicians;
- Produce and store liquid nitrogen used for preserving semen;
- Collect, process and distribute semen to the ultimate users in all the regional states; and
- Monitor field AI services to establish efficiency in relation to the work.

At the moment, the center is engaged only in collecting, processing, storing and distributing the frozen semen of cattle. To facilitate its national functions and responsibilities better, it has different sub-stations at strategic places of the country that have better dairying potentials. The sub-stations are intended to produce liquid nitrogen and serve as storage and distribution centers for semen and other inputs related to the service. However, the observed AI service efficiency at the regional level, as assessed by the national AI center, is poor, but reflects the status that the country’s AI service is in.

2.3 Private-Sector Participation

According to the information obtained from the Agricultural Bureau of the Addis Ababa Regional Administration, in order to encourage private-sector participation in offering AI services, the activity at the technician level has been privatized throughout Addis Ababa. The license to the private individual AI technicians is given by the Trade and Industry Development Bureau, with no control mechanism thereafter. The technicians do not have unions or any other umbrella organization, or a reporting-back mechanism to any recognized body, which makes it very difficult to control, monitor and evaluate the services they are rendering to their clients.

2.4 Policies, Regulations and Standards

To avoid inbreeding and the subsequent regression of the little genetic gain obtained in average lactation milk-yield of crossbred cows, be it in a very limited area of the country so far, the proper keeping of good records is an absolute necessity when it comes to using AI. But this is where the program seems to be failing in this country. Records are important to take the appropriate steps to initiate and start standardized recording and data analysis procedures to generate productivity indicators for future bull selection and herd improvement. Implementing it will have the following results:

- It will help facilitate the improvement of both the biological and economic efficiency of the dairy herd;
- Assist in the herd’s genetic improvement program; and
• Provide viable data bank for extension, training, research and planning purposes.

However, to make the recording scheme a reality, the pre-conditions discussed herein below have to be met.

An appropriate dairy development policy has to be formulated and implemented. The development policy to be adopted should be specific enough to give proper direction for future genetic improvement. In this regard, what is to be remembered is that AI, as it relates to dairy development, is not an end in and of itself, but a means to attaining the set goals. What are conspicuously absent in Ethiopia at present are defined dairy developmental directions or goals. Their absence in turn makes the AI service offered highly ineffective for the following reasons:

• Inefficient government interventions without sufficient human and financial resources;

• Centralization of the services;

• Using frozen semen without supplementing it with fresh semen; and

• Poor infrastructure, mainly poor transportation, roads and telecommunication systems.

Because of the above limitations associated with the existing AI services, natural breeding, using bulls, remains to be the most predominant method of breeding today in Ethiopia. So the following measures have to be taken:

• There has to be an adequate organizational structure and institutional setup to start and sustain the recording scheme;

• There has to be adequate resource allocation in terms of finance, trained human resources, equipment and facilities;

• There has to be adequate data processing and feedback mechanism aimed at benefiting farmers; and

• A proper linkage among extension, the recording scheme and the farmer has to be established and strengthened.

In line with the above limitations, it is hoped that better services can be offered to farmers and that the desired genetic gain in terms of the milk productivity of cows can be obtained within the shortest possible time if the sector is opened for private intervention.

2.5 Delineation of Institutional Duties and Responsibilities
If the private sector is to participate in the delivery of artificial insemination services, the licensing and monitoring government institutions must be separated. In other words, the regulatory body must operate independent of the technical body. To that end, they must be entrusted with different duties and responsibilities with regard to the delivery of AI services. More specifically, the Ministry of Trade and Industry is the most appropriate organization to give or revoke the licenses, whereas the Ministry of Agriculture and Rural Development is the most appropriate to monitor the technical aspect of the service delivery.

2.6 Monitoring Standards, Equipment and Indicators

Monitoring standards and indicators need to be developed, so as to let all concerned know the minimum requirements with regard to the professional competence that an individual needs to have in order to be given the certificate that he or she needs to render the services. The type of breed to be used in the provision of the service, the breeding practice, the health issues, the importation and/or local collection of semen as well as the genotype, too, must be specified unequivocally.

2.7 Organization of the Service

The mode of organization or the legal form of the private sector interested in providing the service will have to be determined by law. That is how the private sector should be organized to provide such services. Put differently, clear answers must be given at the outset to such questions as the following:

- Can the private sector provide such a service on an individual basis?
- Does it have to be organized into a primary cooperative, a union, a federation, or private limited company, or a share company?

3.3 The NATIONAL LIVESTOCK MARKET INFORMATION SYSTEM (NLMIS)

3.3.1 Summary

National livestock market information is an integral part of livestock-market development and helps track changes in prices and in the supply of animals to different selected marketplaces in each region of the country as well as trends in production. The information system will provide information about the prices and volume of the livestock available on most of the major livestock markets in the country.

NLMIS is a mechanism through which collection, analysis and dissemination of information needed to help producers, middlemen and traders can be organized and systematized. The system can provide market information upon request via various media, including the Internet.

3.3.2 Justification
The livelihood of the vast majority of people in Ethiopia is partially dependent on income from livestock and livestock products. Livestock are a store value and a means for risk mitigation—particularly in the rural areas of the country. They are becoming one of the important sources of foreign-exchange earning for the country. The development of reliable and timely livestock information is, therefore, vital for the economic growth of the country. It will also provide a basis for livestock producers and traders to make marketing decisions.

### 3.3.3 The Selection of Livestock Markets

The major aims of the NLMIS are to determine the application and usefulness of an integrated spatial information and communication technology in improving livestock market information infrastructure in Ethiopia. The spatial information and communication toolkit may include a global positioning system (GPS), mobile phones, radio station, computing analysis and web-based platform. Integrating of these tools may make it possible for the system to carry out market chain analysis indicating the where and how much/many of the associated costs to get desired goods and services.

### 3.3.4 The Type of Market Data to Collect

Livestock prices and volumes are collected through interviews with traders (usually buyers due to security reasons) during the peak hours of a market day. A trained livestock-market Monitor interviews five cases of each of the dominant breed, class and grade combination on that market day. Average prices by animal kind, breed, class and grade are then calculated along with the total volumes of livestock by animal kind. Following that, the information is coded and sent into a database system, using e-mail or fax, or by posting it directly on the web.

### 3.3.5 Kind, Class and Breeds of Livestock to Monitor

Most of the major economically important livestock kinds in Ethiopia (cattle, sheep, goats and camel) with their corresponding breed and classes can be monitored. However, the system should be flexible enough to accommodate any additional kind of livestock that might be of interest to the potential users of the system.

### 3.3.6 The Grading System

In almost all parts of the country, livestock are commonly bought and sold through a visual assessment of the animal’s body condition rather than through weighing as practiced in other countries. A grading system which consists of a combination of the visual assessment of the body condition (fatness) of a given breed and class of an animal should be designed. Such a grading system is a compressed version of the body scoring system for zebu cattle. This grading system allows a practical separation of livestock into more uniform groups to reduce heterogeneity within breeds and classes to reflect the expected difference in prices. The system is based on a scale of 1 to 4, depending on the visual assessment of the body conditions of the animals.

### 3.3.6.1 Kind
Different domestic animal species such as cattle, sheep, goats and camel may be included.

3.3.6.2 Breed

This refers to breeds of domesticated livestock such as zebu. In Ethiopia, cattle are classified as Borana, Fogera, Guji and etc. . . . Therefore, it might also be necessary to use this approach for more practical purposes.

3.3.6.3 Class

Livestock gender and age combination such as mature male, mature female, young male and male castrated can also be used.

3.3.7 Livestock Marketing Monitoring

NLMIS monitors may be drawn from collaborating national institutions of each major livestock market locations in the country. Market monitors should adequately be trained in the use of livestock market-data-collection formats. They should also be given adequate instruction and guidance on the proper ways of approaching sellers, brokers and traders to collect reliable data in an effective way. The monitors may be provided with mobile (cell) phones to enable them to send the collected data to the database system established either at the regional or the national level.

3.3.8 Sources of Finance

As this is an important element of the livestock sector development, the Government may allocate for it an annual budget, or request funding from partner organizations or bilateral agencies.

3.4 THE LIVESTOCK EXPORT-MARKET INFORMATION CENTER

3.4.1 Summary

The Livestock Export Market Information Center provides regular information on local production, market trends, attitudinal changes, GDP, the new habits of consumers, changes in distribution channels, development of substitute products, demographic changes, the market requirements of the importing countries. As such, it helps to know what competitors are doing regarding their exports of livestock and livestock products.

3.4.2 Justification

Currently there are external-market-information gaps in the country. There is lack of interest and capacity to collect regular market information from livestock-importing countries. Ethiopia is highly disadvantaged in this regard, as no one is engaged in this activity. The effort made by the now-defunct Export Promotion Agency to access
export information via the Internet facility that was established on its own premises was not utilized to the desired extent.

However, regular information on local production, market-trend changes in consumer behavior, market requirements, competition, and demands for new products in the importing counties are essential for export planning. Some knowledgeable individual exporters may exert some effort in browsing information available on the Internet, but not all livestock exporters have such capacity. Therefore, the establishment of such a center, probably by the specialized associations, is believed to be important for the facilitation of information flow to members for planning their export businesses.

3.4.3 The Selection of Prospective Importing Countries

Prospective importing countries can be identified depending on the type of livestock products they normally import. In general, however, the countries of the Middle East, North Africa and West Africa might be selected for live animals and meat, whereas the EU and the USA may be selected for related products such as leather and leather garments. Past export data may be used as a basis for selecting potential countries for the appropriate product.

3.4.4 The Type of Data to Collect

The regular and systematic information sets that should be collected are the following:

- Regular information on local production, market trends, attitude, GDP, changing habits of consumers, changes in distribution channels, substitute products and demographic changes;
- Timely information on tariffs, rules, regulations and trade restrictions by importing countries and the need to comply with such requirements;
- Information on what competitors are doing;
- Information on new markets for product diversification; and
- Changes in preferences to revise strategies and to design new promotional tools.

3.4.4.1 Methods of Data Collection

These data can be collected as follows:

- By making use of the Internet, after the pertinent websites have been identified;
- CIA Fact Book;
- On country websites; and
- From the periodic publications of the countries and the regional associations and the like.

3.4.4.2 The Facilities Required
Up-to-date computer facilities and an information expert may be required to manage the center. The information gathered from different sources needs to be compiled by country or by region for communication to members periodically through leaflets or any other media preferred by them.

3.4.5 Location

The center should be located in the office of a specific sectoral association or in a chamber of commerce—depending on what the members choose.

3.4.6 Source of Funding

Bilateral or non-governmental organizations interested in the promotion of the sub-sector could be approached with a request to fund the establishment and running of such centers at the initial stage. In the long run, nonetheless, the associations themselves should be able to do that on their own.

ANNEX-II: A LIST OF THE PERSONS CONTACTED

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Position Held</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ato Tamerat Edjigue</td>
<td>Meat Exporters Association</td>
<td>General Secretary</td>
</tr>
<tr>
<td>Ato Sahilu Tekele</td>
<td>Ethiopian Live Animals Professional Traders Association</td>
<td>Manager</td>
</tr>
<tr>
<td>Ato Akriem Metena</td>
<td>Kalitti Feed Processing Plant</td>
<td>Finance and Property Administration Head</td>
</tr>
<tr>
<td>Ato Ashenafi Tefera</td>
<td>Genesis Farm Ethiopia</td>
<td>Senior Accountant</td>
</tr>
<tr>
<td>Ato Negussie Fassil</td>
<td>Genesis Farm Ethiopia</td>
<td>Head, Poultry Farm</td>
</tr>
<tr>
<td>Ato Girma Gette</td>
<td>Genesis Farm Ethiopia</td>
<td>Head, Dairy Farm</td>
</tr>
<tr>
<td>Ato Taddesse Meretu</td>
<td>Adaa Milk Producers Association</td>
<td>Board Chairman</td>
</tr>
<tr>
<td>Colonel Kassahun Bekele</td>
<td>Adaa Milk Producers Association</td>
<td>Board Secretary</td>
</tr>
<tr>
<td>Ato Abebe Teem</td>
<td>Modjo Modern Abattoir</td>
<td>Technical Manager</td>
</tr>
<tr>
<td>Dr. Reta Negatu</td>
<td>Luna Export Abattoir</td>
<td>Technical Manager</td>
</tr>
<tr>
<td>Ato Yirdaw W/Senbet</td>
<td>Almaz Poultry and Feed Processing Plant</td>
<td>Farm manager</td>
</tr>
<tr>
<td></td>
<td>Akaki Feed Processing Plant</td>
<td>General Manager</td>
</tr>
<tr>
<td>Ato Abdurahamn</td>
<td>Live Animals exporter</td>
<td>Owner Manager</td>
</tr>
<tr>
<td>Ato Sahilu Tekele</td>
<td>Shag Import Export Enterprise</td>
<td>Manager</td>
</tr>
<tr>
<td>Ato Batacha Muleta</td>
<td>Local Cattle Trader</td>
<td>Owner manager</td>
</tr>
<tr>
<td>Ato Gezahegne Taddesse</td>
<td>Ministry of Agriculture, Livestock and Fisheries Department</td>
<td>Honey and Wax Team Leader</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
<td>Position</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Ato Haile Giorgis Demmissie</td>
<td>Beza mar Agro Industry</td>
<td>General Manager</td>
</tr>
<tr>
<td>Ato Melaku Berhun</td>
<td>Sebeta Agro Industry</td>
<td>General Manager</td>
</tr>
<tr>
<td>Ato Tekle Mariam G/Egziaber</td>
<td>Dairy Development Enterprise</td>
<td>Planning Head</td>
</tr>
<tr>
<td>Ato Fesseha W/Gabriel</td>
<td>Dairy Enterprise</td>
<td>Finance Division Head</td>
</tr>
<tr>
<td>W/ro Mebrat Alem</td>
<td>Dairy Enterprise</td>
<td>Quality Control Head</td>
</tr>
<tr>
<td>Ato Teshome W/Mariam</td>
<td>Oromiya Chamber of Commerce and Sectorial Associations</td>
<td>Finance Head and Acting Secretary</td>
</tr>
<tr>
<td>Ato Arebo Aylele</td>
<td>Feedlot Operator</td>
<td>Owner manager</td>
</tr>
<tr>
<td>Ato Habtamu</td>
<td>Oromiya Pastoral Commission</td>
<td>Commissioner</td>
</tr>
<tr>
<td>Ato Lepta</td>
<td>Oromiya Investment Office</td>
<td>Senior Expert</td>
</tr>
<tr>
<td>Ato Teshome Teferi</td>
<td>ELFORA</td>
<td>Livestock Marketing Senior Director</td>
</tr>
<tr>
<td>Ato Zerihun Worku</td>
<td>ELFORA</td>
<td>Livestock Director</td>
</tr>
<tr>
<td>Ato Alemu Wosenyelt</td>
<td>ELFORA</td>
<td>Livestock Export and marketing Head</td>
</tr>
<tr>
<td>Ato Alemayehu</td>
<td>Addis Ababa Agricultural Bureau</td>
<td>Team leader and Poultry Expert</td>
</tr>
<tr>
<td>Ato Tefera</td>
<td>Addis Ababa Agricultural Bureau</td>
<td>Team Leader and Dairy Expert</td>
</tr>
<tr>
<td>Ato Tesfaye Cherinet</td>
<td>National Artificial Insemination Center</td>
<td>Center Manager</td>
</tr>
<tr>
<td>W/ro Tsehay Reda</td>
<td>Land O’ lakes</td>
<td>Deputy Chief of part Ethiopia</td>
</tr>
<tr>
<td>Ato Ergete W/Senbet</td>
<td>SNNPR, Livestock Production and Health Services Department</td>
<td>Senior Livestock Expert</td>
</tr>
<tr>
<td>Ato Demmissie Kelemu</td>
<td>SNNPR, Livestock Production and Health Services Department</td>
<td>Senior Livestock Expert</td>
</tr>
<tr>
<td>Ato Sisaye Terefe</td>
<td>SNNPR, Livestock Production and Health Services Department</td>
<td>Veterinary Assistant and Livestock Expert</td>
</tr>
<tr>
<td>Ato Yesitila Saifu</td>
<td>SNNPR Investment Promotion and Study Department</td>
<td>Department Head</td>
</tr>
<tr>
<td>Dr. Alemu Kumbi</td>
<td>SNNPR's Marketing Agency</td>
<td>General Manager</td>
</tr>
<tr>
<td>Ato Hailemariam Zora</td>
<td>SNNPR's pastoral Development Coordination Commission</td>
<td>Department Head</td>
</tr>
<tr>
<td>Ato Kibret</td>
<td>Selalle Milk Producers</td>
<td>Secretary</td>
</tr>
<tr>
<td>No.</td>
<td>Participant's Name</td>
<td>Company</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>1</td>
<td>Dr. J. Greiling</td>
<td>SNV-BOAM</td>
</tr>
<tr>
<td>3</td>
<td>Ayalew Kassaye</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dr. Kassa Demissie</td>
<td>Addis Abattoirs</td>
</tr>
<tr>
<td>5</td>
<td>Sileshi Bogale</td>
<td>ACDT/VOCA-ETH</td>
</tr>
<tr>
<td>6</td>
<td>Berhe G.egziabher</td>
<td>National Veterin Institution</td>
</tr>
<tr>
<td>7</td>
<td>Kassahun Bekele</td>
<td>EMPPA</td>
</tr>
<tr>
<td>8</td>
<td>Sahlu Tekle</td>
<td>ELTPA</td>
</tr>
<tr>
<td>9</td>
<td>Tefsaye Kumsa</td>
<td>EIAL</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Company/Position</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>10</td>
<td>Gebeyehu Tebeje</td>
<td>ITAB</td>
</tr>
<tr>
<td>11</td>
<td>Asrat Hailu</td>
<td>ORABD, Senior Exp</td>
</tr>
<tr>
<td>12</td>
<td>Yohannes Agonafir</td>
<td>ACABT, G. manager</td>
</tr>
<tr>
<td>13</td>
<td>Yayehyirad Abate</td>
<td>EHBPEA, G. manager</td>
</tr>
<tr>
<td>14</td>
<td>Tesfaye Besna</td>
<td>Dire and Modjo, A/Manger</td>
</tr>
<tr>
<td>15</td>
<td>Eyerusalem Tuji</td>
<td>Shoa Tannery, Commer. Manager</td>
</tr>
<tr>
<td>16</td>
<td>Asnake Sahlu</td>
<td>Ethio Leather PLC, D/manager</td>
</tr>
<tr>
<td>17</td>
<td>Begashaw Wukaw</td>
<td>TAM consuet, IAM. Co-ordinator</td>
</tr>
<tr>
<td>18</td>
<td>Desta Beyera</td>
<td>Send a cow, Prod. Manager</td>
</tr>
<tr>
<td>19</td>
<td>Dagnachew Admasu</td>
<td>DDE, Executive Officer</td>
</tr>
<tr>
<td>20</td>
<td>Tamrat ejigy</td>
<td>Eth.Meat Pro. Exp., Certef. Expert</td>
</tr>
<tr>
<td>21</td>
<td>Samson Tadesse</td>
<td>Quality and standards Auth. Economist</td>
</tr>
<tr>
<td>22</td>
<td>Asfaw Negassa</td>
<td>ILRI, Veterinarian</td>
</tr>
<tr>
<td>23</td>
<td>Tusuba Jergefa</td>
<td>OARDB, D/manager</td>
</tr>
<tr>
<td>24</td>
<td>Abiy Felleke</td>
<td>BEZAMAR, C/director</td>
</tr>
<tr>
<td>25</td>
<td>Desalegn Begna</td>
<td>Holeta Bee res.</td>
</tr>
<tr>
<td>26</td>
<td>Solomon Mengistu</td>
<td>Ministry of trade and Ind., Expert</td>
</tr>
<tr>
<td>27</td>
<td>Moti Cheru</td>
<td>MOARD, Expert</td>
</tr>
<tr>
<td>28</td>
<td>Sisay Yemenu</td>
<td>ELFORA, Expert</td>
</tr>
<tr>
<td>29</td>
<td>Muluneh Taffessie</td>
<td>SDD PLt.Co, D/manager</td>
</tr>
</tbody>
</table>
ANNEX- IV: A CHECKLIST OF ISSUES AND QUESTIONNAIRE

Part A

INFORMATION TO BE GATHERED FROM DOCUMENTS AND RESEARCH OUTPUTS

1. Livestock Resources by Type, Zone and Region

2. Livestock Productivity

2.1 Under the Traditional Management System

2.1.1 Breed Type

2.1.2 Meat

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
<th>Chicken</th>
<th>Camel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live weight at maturity (Kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily weight gain (Gram)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dressing Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearling weight for small ruminants (Kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at first laying (Months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of eggs per year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carcass weight at maturity (Kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.1.3 Milk

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Camel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily milk yield (lts)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual milk yield (lts)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lactation length (day)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Reproduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at first calving (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calving intervals (month)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breeding age for males (years)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.1.4 Honey

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield/hive/year</td>
<td></td>
</tr>
</tbody>
</table>
2.2. Under the Improved Management System

2.2.1 Breed Type

2.2.2 Meat

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
<th>Chicken</th>
<th>Camel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live weight at maturity (kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily weight gain (gram)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dressing percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearling weight for small ruminants (kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at first laying (month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of eggs per year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carcass weight at maturity (Kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2.3 Milk

1. Production

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Camel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily milk yield (lt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual milk yield (lt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lactation length (day)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Reproduction

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at first calving (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calving interval (month)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breeding age for males (year)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2.4 Honey

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield/hive/year</td>
<td></td>
</tr>
<tr>
<td>Wax/year</td>
<td></td>
</tr>
</tbody>
</table>

3. Input Use (Requirement) per Unit of Product

3.1 Under the Traditional Management System

<table>
<thead>
<tr>
<th></th>
<th>Meat</th>
<th>Milk</th>
<th>Egg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2 Under an Improved Management System

<table>
<thead>
<tr>
<th>Meat</th>
<th>Milk</th>
<th>Egg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PART B**

**QUESTIONNAIRE FOR REGIONS**

Region............................................

Bureau/Agency......................................

1. Where are the highest potential livestock resources in the Region?

<table>
<thead>
<tr>
<th>Type</th>
<th>Zone</th>
<th>Accessibility by Road (a) All-weather road</th>
<th>Distance from the Regional Town in Kms</th>
</tr>
</thead>
</table>

---

ITAB-CONSULT PLC  Page  20
2. Indicate the known livestock markets in the Region

<table>
<thead>
<tr>
<th>S.N</th>
<th>Market</th>
<th>Distance from the nearest town (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Indicate the number of the available abattoirs in the Region

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Capacity by Livestock Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Number of slaughterhouses (killing slabs) serving the local markets in the Region

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Capacity by Livestock Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Animal products consumption pattern in the Region

<table>
<thead>
<tr>
<th>S.N</th>
<th>Product Type</th>
<th>Consumption /H</th>
<th>Consumption/H/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Indicate purpose-related land availability

<table>
<thead>
<tr>
<th>S.N</th>
<th>Purpose</th>
<th>Size in Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Maximum (Ha)</td>
</tr>
<tr>
<td>6.1</td>
<td>Ranching</td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td>Feedlot operations</td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>Processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Milk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Meat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Honey</td>
<td></td>
</tr>
<tr>
<td>6.4</td>
<td>For livestock marketplace</td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td>For dairy farming</td>
<td></td>
</tr>
</tbody>
</table>

7. How can interested investors obtain the allocated land?

7.1 Lease from the regional government?

7.2 Rent from farmers?

7.3 Rent from peasant associations?

8. What type of livestock feed are available in the Region?

<table>
<thead>
<tr>
<th>S.N</th>
<th>Feed Type</th>
<th>Quantity in Tons/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>Hay</td>
<td></td>
</tr>
<tr>
<td>8.2</td>
<td>Hay/straw</td>
<td></td>
</tr>
<tr>
<td>8.3</td>
<td>Industrial products</td>
<td></td>
</tr>
<tr>
<td>8.4</td>
<td>Cultivated fodder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>•</td>
<td></td>
</tr>
</tbody>
</table>

8.4 What is the pastureland’s potential for dairying?

8.5 Is there any possibility for pasture irrigation?

8.6 Is there any surplus grain that can be used as livestock feed?

9. Indicate potential milk-producing areas (Zones/Woredas) in the Region
10. Indicate the potential honey-producing areas in the Region.

<table>
<thead>
<tr>
<th>S.N</th>
<th>Zone</th>
<th>Distance from the Nearest Town</th>
<th>Type of Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Indicate the different services available in the region for interested investors

11.1 Animal Health

**VET: TLS**

\[ \text{Ratio} : \text{...} \]

**Animal Husbandry: TLU**

\[ \text{Ratio} : \text{...} \]

11.2 Electric power sources: ........................................

11.3 Communication:

- Telephone
- Postal services

11.4 Financial services available in the Region

12. What incentives are available from the regional Government for investors interested in the development of the livestock sector?

**PART C**

**INFORMATION TO BE GATHERED FROM ENTERPRISES**
1. Name of Respondent
2. Position of Respondent
3. Name of Enterprise
4. Type of Enterprise

5. Investor’s Opinion
   
   4.1 What problems were encountered during start-up?
   
   4.2 What problems were encountered in terms of inputs?
   
   4.3 Are there problems related to marketing?
   
   4.4 What supports have been received during investment and operation?
   
   4.5 Have there been any improvements in government policies with respect to livestock development since the beginning of the enterprise?
   
   4.6 If yes, what are the improvements?
   
   4.7 Are there disincentive situations that discourage investment in livestock development?
   
   4.8 If yes, what are the Disincentives?
   
   4.9 What are your expectations?
   
   4.10 How did you overcome the problems encountered in the investment operation processes?

6. Market situation

5.1 Domestic market
   - Supply of animals
   - Price of livestock
   - Competition on the supply side
   - Prices of finished products
   - Problem of demand
   - Taxation Problems
5.2 Export Market
- Supply and competition from other countries
- Price of livestock
- Competition on the supply side
- Prices of finished products
- Problem of demand
- Taxation Problems

PART D
SPECIFIC INFORMATION REQUIRED FOR PROJECT PROFILE

8.1 General Information
- Type of project
- Products produced for the market
- Quantity produced/ month/year
- Estimated annual revenue generated
- Capacity utilization

8.2 Input Requirements
- Land required
- Buildings
- Machinery and equipment
- Raw materials
- Skilled human-resource requirement
- Unskilled human-resource requirement
- Utilities
  - Water
  - Power

8.3 Market
- Sources of raw materials
- Market for the products
  - Domestic
  - Export

8.4 Government regulations concerning the project

8.5 Threats in the environment that affect the project.

_________________ *************** ___________________