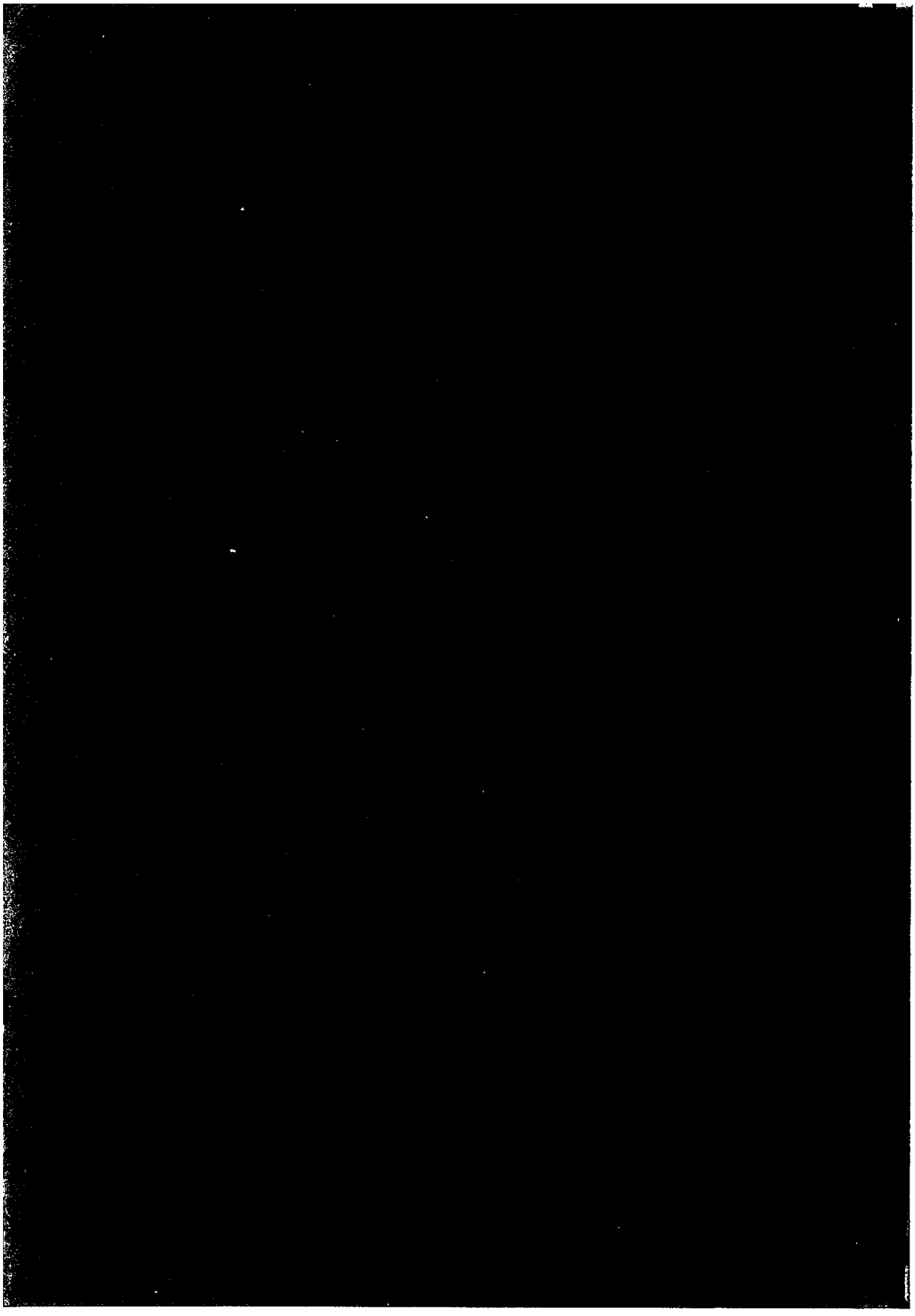
BASELINE STUDY ON ANIMAL HUSBANDRY AND FORESTRY IN ETHIOPIA

FEBRUARY 1995
ADDIS ABABA

JAPAN INTERNATIONAL COOPERATION AGENCY
ETHIOPIA OFFICE



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I General

1. Introduction

1.1. Objectives of the survey

1.1.1 To provide information and analyses on the status, relative significance within the overall economy, potentials and constraints of the forestry and animal husbandry sub-sector of the Ethiopia agriculture.

1.1.2 To provide general assessment of development activities taking place through domestic and external resources, the state of policy environment, the strategies adopted and the relevant institutional and organizational structures in the sub-sectors.

1.1.3 To make recommendations and identify areas of potential cooperation for participation by the government of Japan in schemes that will address critical problems, obtain high impact, be sustainable and complimentary to existing government, external and community efforts.

1.2. Background of the survey

Japan International Cooperation Agency (JICA) and the Corporation of Ethiopian Entrepreneurs (CEE) have entered into agreement to undertake Baseline study on Animal Husbandry and Forestry in Ethiopia. JICA has commissioned CEE to have the study prepared by appropriate consultants. Three consultants a coordinator consultant, a Forestry consultant and an Animal Husbandry consultant are engaged to undertake the study.

Accordingly, this survey document on forestry and animal husbandry, the two important arms of the agricultural sub-sectors, deals with their relative and respective importance in the over all national economy, addresses the major problems and constraints, (both the technical and non-technical) of the sub-sectors, the policy environments, incorporating measures that should be taken including proposals on the possible areas of intervention by the Japanese Government.

2. GENERAL BACKGROUND

2.1. THE ECONOMIC AND SOCIAL SITUATION

2.1.1 The socio-economic situation of Ethiopia is characterized by sharp contrasts between the prevailing conditions and the potentials. It has a land

mass of about 1.1 million Km.^{2} and a population of 50 million. 60% of the land mass is arable while only 15% of this is exploited. The country's livestock is the largest in Africa, but chronically suffer from poor husbandry, low quality stock and widespread diseases. Mineral surveys and studies indicate the existence of a wide range of mineral resources including metals, hydrocarbons and other mineral deposits while the present level of exploitation (0.3% of GDP) is insignificant. The hydropower potential is estimated at 30,000 MW, providing a highly adequate potential energy base with export possibilities to neighboring countries. On the other hand the present installed capacity that does not exceed 400 MW places the country as one of the lowest energy consumer in the world ranking it far below many African countries whose sizes and populations are half that of Ethiopia.

2.1.2 The structure of the economy is dominated by agriculture where 40% of the GDP, 85% of the employment and export originate. The Industrial Sector that contributes 12% of the GDP in largely agro-based manufacturing industries oriented to the internal market . The public enterprises in industry contribute 70% of the value added. Foreign trade accounts for about 20% of the GDP. The major export crop coffee generates up to 60% of the total foreign exchange earnings. Services make up 35% of the GDP mainly due to the government's heavy investments in the sector.

2.1.3 Despite the potentials, Ethiopia's social and economic indicators portray a very low level of development that ranks it among the poorest countries in the world with a per capita income of 120 USD per annum. The economy is characterized by low productivity and structural rigidities in almost all sectors. The performance in the last two decades has been particularly disappointing. The overall economy grew at an average rate of 4% per annum over the period 1965-75, declining to 1.5% during 1976-90 and further deteriorating to negative growth in 1991/92.

2.1.4 Agriculture, the main stay of 80% of the population has remained generally stagnant over the past two decades in face of accelerating rate of population growth that reached 3% per annum. Industry, infrastructure

and foreign trade exbhited low level of development and structural rigidities generally as a reflection of agriculture. The main sectors depend on agricultural productivity and surplus for raw materials, the foreign exchange required for investment and imports.

2.1.5 The situation in the social sector also exbhited consistency with the poor performance of the overall economy. Half of the population is categorized as poor with 35% of this as chronically poor. Less than one-third of the population has access to clean water while the percentage of the rural population is only 6. The physician/population ratio of 30 per thousand and the primary and secondary school enrollment are 36 and 18% respectively. The situation with respect to mortality (137 per thousand) and life expectancy of 47 depict an equally dismal picture.

2.1.6 At the time of the change of Government in 1991, the social and economic situations had deteriorated to very low levels as a result of the combined and cumulative adverse effects of the policies of the past regime, the draught that was recurring in shorter cycles, and the protracted internal strifes that devastated the social and economic infrastructure services of the country. During the Derge regime, the rise in expenditure reached 45% of the GDP, budgetary deficit that averaged 7% during the period peaked to 16% including grants in 1991, inflation that also averaged around 4% during the 80's topped 45% in 91. The external accounts similarly registered deterioration, the most conspicuous being the debt crisis when arrears started to accumulate in 1989 with the debt service ratio reaching 82%.

2.1.7 One of the first moves of the TGE when it assumed power was to enact an economic policy- the NEW ECONOMIC POLICY (NEP), that set the prime objectives of the transition as reducing the role of the state in the economy, instituting market based economy by replacing central planing, promoting the private sector, mobilizing external resources and involving regional organs in economic management. This was followed up by the implementation of the Emergency Relief and Rehabilitation Programme (ERRP) to cope with the famine situation and revive the economy as a prelude to the longer term reform programme.

2.1.8. The longer term economic programme undertaken in three phases has the objectives of fiscal and monetary stabilization and structural reform, stimulation of supply response and creation of an enabling environment for the private sector. Among the measures taken within the context of the stabilization and reform programme, the following are prominent.

- Devaluation of the birr, introduction of the forth-nightly auctioning of foreign exchange, bringing interest rate to real levels,

- Liberalization measures of setting minimum prices of major exports, elimination of export taxes and export subsidies, deregulation of transport tariff and elimination of zonal system, reduction of personal income tax,

- Civil service structural reform, public enterprises antonomy,

- Proclamation of investment and labour laws to attract domestic and foreign investment as well as to give greater authority to management.

2.1.9. The results achieved through the stabilization and reform programmes have been found encouraging by several international institutions. In 1992/93, GDP grew by 12.3%, agriculture by 6.4% respectively. Greater capacity utilization by producting units (increase from 25-70%) have been recorded. The high figures are largely due to the low base in the previous years. The 1993/94 performance reveals this and the fact that agriculture is determinant. In 1993/94, agriculture showed negative growth due to bad weather which reflected in overall growth of the economy of only 1.35%.

2.10. Overall good results are obtained in containment of inflation, improvement in the balance of payments situation, narrowing of the budgetary deficit and reduction of recourse to domestic financing of deficit. It is hoped realistic programming and deepening of the reforms would bring to the realization of the major objectives.

2.2. GOVERNMENT STRUCTURE

2.2.1 The year 1991 was a turning point in Ethiopia's history. A redefinition of its international boundaries, a resetting of its internal administrative boundaries on the basis of nation/nationality criteria, a devolution of power to regions with federal structure , a shift from a highly centralized system of state dominated economic management to a decentralized system that broadened the role of the private sector, are among the radical changes that came about following the fall of the Derge regime. The powers that defeated the military government in may, 1991, a month later, mapped out the National Charter- the supreme legal document - that defined the political, social, economic, judicial and administrative policies of the period of transition, at a National Conference constituted by political parties ,Organizations and representatives of various sectors of the Ethiopian society. The transitional period is to last until the formation of an elected government . This was followed up successively by the setting up of regional self governments, a National Representative Council that constituted the national legislative body, election of regional councils and the drafting and approval of a National Constitution.

2.2.2 The structure of the Transitional Government is thus composed of :

- the Council of Representatives which is the sate supreme authority of 87 seats allocated to national liberation movements, political parties and organizations. It is vested with powers of electing the head of state, proclamation of legislations, ratification of treaties, agreements and proclamations. The Council has issued and ratified over 100 pieces of legislations over the past three and half years since its establishment. With the impending national elections , it is to give way to an elected national assembly;

- the Council of Ministers headed by the Prime Minister that is nominated by the President and endorsed by the Council of Representatives. The cabinet is composed of 18 members with

portfolio, selected on nationality balance, competence and subscription to the National Charter criteria;

- the Judiciary, made up of hierarchical courts at Central and regional levels and the Office of the attorney General;

2.2.3 The regional self governments are federally structured with extensive legislative, executive, judicial and administrative powers. Currently there are 14 self governing regions. They constitute the major political administrative changes instituted by the Transitional Government of Ethiopia. Five of these regions have voluntarily formed the coalition of the Southern Peoples of Ethiopia. The National/Regional Councils and the National Executive Committees are the most important bodies in the structure of the regional self governments. Other than matters of defense, foreign affairs, economic policy, currency, citizenship etc., they have full powers over taxes, legislations, development programmes, budget, administration etc. within their own territories.

2.2.4 Currently, a National Constitution has been drafted by a specially formed Constitution Commission and approved by a constituent assembly directly elected by electorals in all regions. Preparations are underway to conduct a national election for the formation of an elected Government to replace the TGE.

2.3 Development Policy

Modern governments coming to power and operating under normal stable environment would endeavour to pool both human and material resources to tackle the economic problems of their countries and raise the quality life of the people. In order to undertake these complex tasks, it has been found necessary to map-out the basic policy directives that should be followed by the government machinery. The policy framework shall, therefore, serve as a guiding principle for elaborating overall economic and sector strategies including the priority work-programs to be followed. Generally, some aspects of the development policy may require adjustments with changing socio-economic environment.

In the case of Ethiopia, one of the immediate task bestowed on the Transitional Government of Ethiopia(TGE) upon taking power was to draw the

Economic Policy for the transitional period. This was issued in November 1991. In general, the policy elaborates not only the root causes for the economic failures of the previous regime which was command-oriented and centrally guided economy, but also addresses issues to be tackled by the TGE by defining and limiting the role of the state. It also highlight the core priority areas for intervention in each sector.

Quite divergent to the policy directives of the previous regime, which gives the government substantial power in ownership and management of the economy, the TGE has limited the role of the state to five areas. These areas are by-in-large regulatory and facilitation by their very nature. The role of the state in the economy are the following:

a) To draw development strategies, issue legal instrument to foster economic development;

b) To participate in essential strategic economic ventures and in areas in which the private sector is not willing to go into;

c) To undertake infrastructural development including that of human resources development and research.

d) To create enabling environment for the private sector to actively participate in economic activities.

e) To protect the producer and consumer by issuing regulatory legal instruments.

In line with the above basic tenents of the role of the state in the economy and the emphasis given to the promotion of private investment it dwells on community participation in development. It also attempts to delineate functional relationship between national and regional administrative organs in economic management of the country.

More important, the need for tackling basic macro-economic policy issues and legal instruments required to restructuring which is highlighted in the policy document. These macro-economic policy issues and legal instruments include fiscal and monetary policies, investment and labour laws, population and technology policies.

The economic policy of November 1991 highlights and identifies priority policy issues to be addressed on sector by sector basis.

Agriculture being the back bone of the Ethiopian economy, it is given special attention in the policy document. More than 90% of the agricultural

production being generated by the peasant small-holder, special emphasis has been given to the need to assist the peasant agriculture. Special support are to be given by way of allocating greater share of the state budget and human resources in order to accelerate growth in production and productivity of the peasant farmer. Aside from free access to the market, the peasant is to be supported by provision of access to feeder roads, fertilizers and improved seeds-appropriate application of the above being assisted by qualified extension service workers.

One area which has been touched upon and which still remains contentious issue is the rural land ownership. There are schools of thought that propagate the idea for the need to legalize the sale and mortgaging of land in order to realize a vibrant and self-generating economy. There are others which have strong view to keep rural land in the hands of the state with guaranteed users right. Eventhough the economic policy states that the matter is to be resolved by a public referendum, the constitution recently issued by the constituent assembly adopted that land is to remain under state ownership by entitling the peasant to usage right and the right to lease, pass it to kins and be compensated when expropriated.

The policy on agriculture also addresses the need for expansion of modern farms. The expansion and development of large-scale modern farms are to be taken care of by private foreign and domestic capital. For large-scale farming ventures, the state is to facilitate the provision of land in areas outside the domains and interest of the peasant and nomadic farmers.

The interrelationship between environment (natural conservation included) and economic development being such intertwined fields, integrating the two in the overall planning frame-work has been found to be of importance. The economic policy of the TGE highlights the importance and priority given to the conservation and development of forestry, livestock and water resources. It state the need for issuing policies and strategies that will guide future development in the area.

In the areas of industry, transport and communication, construction and trade, the policy largely dwells on defining and limiting the role of the state. Even in areas where the state continues to own factories and other enterprises the policy states the need to management reform and autonomy. The management is to be accountable for its operation without any direct or indirect subsidy.

The economic policy document winds up its policy framework by stipulating and identifying the priority areas of intervention for the transitional period. These are;

a) creation of an enabling or conducive environment for enhancing the role of the private sector in the economy.

b) rehabilitation of regions affected by war and drought and given special attention to infrastructural development of neglected areas.

c) completion of ongoing projects.

d) undertaking limited infrastructural works and restructuring the administrative machinery to suit the implementation of the new economic policy.

2.4 Overview of the Agricultural Sector

The agricultural sector has been the predominant and leading sector of the Ethiopian economy. It accounts for about 48% of the GDP, employs 85% of the labour force generates 85% of export earnings and provides for about 70% of the countries agro-based large and medium size industries. Crop production is estimated to contribute to about 60%, livestock around 30%. Forestry, fishery and other sub-sectors account for the balance.

About 96% of the agricultural output emanates from small-holder peasant engaged on an average total farming area of about 7 million hectares. The methods of farming have been largely traditional and rudimentary. With total dependence on seasonal rain and with low application of appropriate soil nutrient, the per hectar production and productivity have been very low. The post-harvest wastage is also high. As a result, only 20-30% of the cereal production is brought to the market - the rest being consumed by the peasant family.

The performance of the Ethiopian economy in the last 18 years has been low averaging only 2.2%, while the agricultural sector growth averaged only 1.1%. Moreover, the area under crop production remained stagnant. The land productivity has also been so low averaging only 1.2 tons for food grain and 0.6 tons and 0.5 tons for pulses and oilseeds respectively. These results are almost half the size attainable when compared to what has been obtained at research stations. With the higher population growth, and poor performance in agricultural/production, the food deficit situation of the country has been aggravated.

The causes for poor sectoral performance can be summarized as follows:

a) Production technology being at a rudimentary and primitive level,

b) Heavy dependence on seasonal rain and very low application of (only 3% or around 100,000 hectares) irrigation schemes,

c) Declining vegetative cover and therefore declining soil fertility and incessant soil erosion,

d) Inadequate research and extension support,

e) Poor access to improved seed fertilizer, soil nutrients and other inputs,

f) High post-harvest wastage.

It has been estimated that about 60-67 million hectare of the total 113 million hectares is arable land of varying degree. The distribution of land put to various uses is here below shown.

The distribution of land put to various uses

	Area in hectares in '000	Percent of total
• Intensively cultivated land	12,597	10.3
• Moderately "	15,288	12.5
• Vegetation areas not for cultivation	243	0.2
• High forest	5,381	4.4
• Woodland and shrub land	3.791	3.1
• Bush land and "	26,171	21.4
• Grass land	37,301	30.5
• Water bodies	611	0.5
• Others	20,300	17.1
Total	122,300	100

Source: Ethiopian Mapping Authority

2.4.1. Economic Development Strategy with Special Emphasis on the Agricultural sector

Based on and emanating from the Economic Policy, the Development Strategy was formulated and issued in September 1993. The strategy envisages 20 years period making it a long-term strategy. The fundamental long-term objective of the development strategy is the structural transformation of the economy from the existing low and weak performance to one which is vibrant and self-generating. Three complementary objectives are underscored in the document:

a) sustainable economic growth
b) equity, including regional equity
c) self-reliance on national resources etc.

As highlighted in the Economic Policy, the development strategy stresses the need to focus on higher growth rate of agriculture with particular attention given to the peasant agriculture, pasturalist and large-scale farms. The agricultural sector takes the lead and shall be the basis for higher growth of the industrial and service sectors, which through time are

envisaged to have higher share of the GDP. As a result of the linkages and the mutually supportable development of agriculture and industry, the strategy is given the name Agricultural Development-led-Industrialization (ADLI). The strategy also stresses the importance of export-led development as an engine for development.

The development of agriculture as stipulated in the strategy document, has three phases: The first is improvement in traditional agriculture by provision of improved seeds. The second phase include introduction of small-scale irrigation, provision of fertilizer and expansion of agricultural infrastructures. The third phase is the off-agricultural employment of the rural labour force thereby increasing the size of rural land holding.

The strategy also under-pins the need for expanded and strengthened application of agricultural research. It also highlights the internationally accepted principle of conservation based agricultural development strategy.

2.4.2. The Forestry Policy Objectives and Principles

The detailed policy and strategy issues are well enterained in the forestry Chapter. This is just to highlight some of the key issues addressed in the policy document. To conserve forest ecosystems and genetic resources and to increase production on a sustainable basis the following guiding principles are established.

a) Recognizing the complementary roles of communities, private enterpreneurs and the state,

b) Creating an enabling environment for the private sector and the communities for their active participation in forestry development.

c) Assisting all actors in the development through research and extension, provision of infrastructure... etc.

d) Establishing sustainable forest management.

II ANIMAL HUSBANDARY

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ANNEXES

1. THE PRESENT CONDITION OF LIVESTOCK HUSBANDRY IN ETHIOPIA

1.1 Animal Resources

The livestock sub-sector contributes about 30% of the agricultural GDP and about 16% of the total GDP, excluding the value of animal transport and manure. The contribution of of hides and skins between 1984-88 were 12% and 16% of the value of exports; Live animals' share of the export earnings comprised 5% in 1987/88.

Ethiopia posseses the largest livestock population in Africa, with 30 million cattle, 23 million sheep, 18 million goats, 7 million equine, 1 million camel and 56 million poultry.

The highlands, with altitudes above 1500 meters above sea level, constitute 36.3% of the total land area and supports 88% of the human population and 70% of the TLU[1]. If this is considered by species, cattle comprise 72%, sheep 75%, goats 28%, equine 80% and poultry over 70%. Livestock form part of the mixed farming system where crop husbandry is the principal economic activity of peasant farmers. (Annex I)

The lowlands below 1500 masl which is about 63.7% of the total land area of the country, support 30% of the livestock population and the balance of human population. All the camels and 75% of the goat population are found here. Livestock is kept for subsistence by pastoralist and agro-pastoralist in the arid and semi-arid lowlands.

About 1.2 million ha of land area in the sub-humid zone in the south and south western Ethiopia is tsetse infested (Putt, 1992), and as a result of the

[1] Tropical Livestock Unit (TLU) is a standard unit of 250 kg live weight by which livestock of different species can be compared, and is equivalent to for cattle = 0.8; sheep and goat = 10; equine = 0.7; camel = 1;

trypanosomiasis it transmits, this vast and fertile area cannot be for agriculture production.

1.2 The Role of Livestock

The role of livestock to the national economy can be broadly divided into three categories - outputs, inputs and others. The main outputs obtained from domestic livestock consist of milk (from cattle, goats and camel), meat (from cattle and camel), mutton, skin, wool (from small ruminants), hide (from cattle) and hair (from camel). Poultry produce egg and meat.

Livestock inputs to cropping activity in Ethiopia are traction, transport and manure. Traction is predominantly the principal role of livestock where approximately 5-6 million oxen are found. Equine are the main source of transport and limited traction power in the rural Ethiopia. Cattle also provide limited transport. Manure is obtained from cattle and to a limited extent from poultry. In the highly degraded central highlands of Ethiopia, animal manure is used as fuel rather than as fertilizer, because of severe fuel wood shortages. In the semi-humid highlands in the west and south west, however, manure is utilized as fertilizer.

Third function of livestock to the economy of the peasant farmers is the investment they provide. Depending on the production system, small ruminants, poultry and camels are source of cash to the household.

In all production systems in Ethiopia, cattle are the main livestock species kept; they provide inputs to crop production in the mixed farming system and milk for subsistence in the pastoral system. In the more arid pastoral environment, however, camel and goat are the main species that provide subsistence for the inhabitants. (Annex II)

Livestock by-products such as skins and hides are important sources of foreign exchange to the nation, second to coffee. They are also used as raw material by the domestic industries. Unfortunately, by-products of animal slaughter - blood and bone - are wasted instead of being used as animal feed or as fertilizers. (Annex III)

Other role of livestock in rural Ethiopia is the asset and security value they have. Livestock products such as milk and eggs provide regular income to the producer as opposed to cropping. Furthermore livestock can be readily sold when the family is in need of cash (Jahnke, 1982).

Furthermore, livestock have the social and cultural functions. Cattle have social value in most production systems in Ethiopia. They are important in determining the status a person has in the society and governs the relations between individuals.

1.3 Major problems and constraints

The principal problems and constraints livestock resources of Ethiopia faces are due to a number of complex and inter-related factors. Owing to the lack of hard data, it is difficult to rank the variables in the order of their importance.

The problems and constraints to livestock production can be classified into two broad major categories, namely, technical and non-technical. The former comprise: (1) animal diseases; (2) inadequate feed supply; (3) poor genetic constitution of indigenous stock; (4) low level of management; (5) lack of appropriate technology; and (6) poorly developed livestock marketing infrastructures.

Non-technical constraints to increased livestock production and productivity in Ethiopia are: (1) economic; (2) social; and (3) institutional.

These aspects will be briefly described below.

1.3.1 Technical Problems and Constraints

1.3.1.1 Livestock Diseases

Many diseases afflict livestock reared in different production systems in Ethiopia. Tsetse precludes the utilization of vast areas (about 120,000 km^2) of fertile valleys in the western and southwestern parts of the country for livestock and crop production. Moreover, an estimated 2.4 million cattle are at risk of trypanosomiasis, a deadly disease transmitted by the tsetse fly (FAO/World Bank, 1992).

Although, the occurrence of serious epidemics have been greatly reduced through vaccination campaigns, rinderpest and CBPP are still report from endemic foci. Sporadic diseases such as foot and mouth disease (FMD), African horse sickness (AHS), sheep pox and goat pox and Newcastle disease remain important endemic diseases in the country. Seasonal outbreaks of bacterial diseases like blackleg, anthrax and pasteurellosis occur throughout the country, but are rarely confirmed by laboratory diagnosis.

Parasitic helminths are rampant in all livestock species in highlands and cause direct and indirect losses which are estimated at Birr 70 million per annum (Mulugeta, *et al.*, 1989). Heavy tick infestations of livestock in the rangelands interfere with the animals' feed intake, cause skin damage and transmit deadly tick-borne diseases, more so in improved livestock production systems. In the highlands of central Ethiopia, tick-borne diseases transmitted by ticks are serious constraint livestock production using exotic species.

Prevalence of animal diseases zoonotic such as rabies, brucellosis and tuberculosis are a threat to human health.

Although not adequately quantified, production losses due to clinical and subclinical diseases are likely to be fairly high, because they cause reduction in draught output, milk yields, growth rates,

wool and hair growth and reproductive efficiency. In addition, disease reduce the quality and sales value of animal products. For example, live animal and animal by-products exports to lucrative international markets in the Middle East is curtailed by various diseases.

The national livestock population is under a constant threats of exotic livestock diseases which could have disastrous economic consequences if they get introduced.

1.3.1.2 Inadequate Feed

About 93% of feed for livestock is obtained from natural grazing and browse, the balance comes from hay, straw, some concentrates and green fodder (oats and vetch). The Ministry of State Farms, Coffee and Tea Development (MSFC&TD) runs 3 feed mills which produce 10,000 tones of poultry feed mostly for the State owned poultry farms.

Natural range and browse are characterised by high seasonal variations in quality and quantity of nutrients. Like all natural pastures in the tropics, in Ethiopia too, pastures grow rapidly during the rainy season and lignify and loose their main nutrients quite fast during the dry season. Livestock are mostly kept on communal pastures, steep slopes, barren and water-logged areas unsuitable for cultivation.

Communal pastures are neither protected nor developed by the community, and as result, experience accelerated degradation, because nutritious species get replaced with unpalatable species. The plants which grow in overgrazed and degraded areas have low nutrient, highly indigestible and depress the animal's appetite and feed intake, finally leading to low animal productivity.

For most livestock producers in Ethiopia, inability to feed animals adequately throughout the year is the most widespread technical constraint. In arid and semi-arid regions, the quantity of forages is often insufficient for the number of livestock carried. This problem

is further compounded by critical water shortage. While feed supplies are adequate in semi-humid regions, forage quality in terms of energy and protein content are low. In all production systems in Ethiopia, feed shortages and nutrient deficiencies are acute in dry season.

For improved livestock breed to fully exploit their genetic potential, it would be necessary to introduce better livestock feed and nutrition. The extent of development and use of improved pastures, silage, hay and concentrates is very limited and only restricted to commercial livestock production units. There is no tradition of conserving the excess quantities of forage available during the wet season as hay or as silage.

Crop residues and agro-industrial by-products which account for 7% of the animal feed. Farmers utilizes little amounts of crop residues as animal feed, because the bulk is wasted and some used for other purposes. Similarly, all agro-industrial by-products, including molasses, are wasted because they are not efficiently utilized.

It is estimated that 85% of the feed consumed by livestock is used for body maintenance and remainder for production, indicating the low efficiency of feed utilization.

The consequences of poor animal nutrition are poor production and reproductive performance and increased susceptibility to disease.

1.3.1.3 Poor Animal Genotypes

Poor genetic make-up of livestock breeds and types found in Ethiopia imposes limit on the productivity that can be achieved in high potential area. This means that by improving feeding, management and health care of local stock, a corresponding increase in output will not be obtained. Some genetic traits which may affect animal performance include: (i) poor feed conversion efficiency; (ii) salient heat that escapes detection and low artificial

insemination efficiency; (iii) poor mothering; (iv) milk let-down occurs after suckling by calf.

Low genetic quality of local animals lead to low production and reproduction outputs and low products' quality compared to exotic breeds. Although local animals are condemned for poor performance, they have some desirable traits such as tolerance to nutritional and climatic stresses and resistance to disease and challenge by ticks and biting flies.

Poor genetic constitution of local livestock species can only be improved thorough cross-breeding efforts to a certain level. But as the level of exotic blood gradually increases (beyond 60%), improved yields anticipated from cross-breeding exercise offset by the resulting increased susceptibility to nutritional deficiencies, management errors and various diseases and health problems.

1.3.1.4 Poor Management Practices

The majority of livestock in Ethiopia are reared under the traditional husbandry system. Often they are communally pastured in overgrazed meadows or water logged area or by the road side. In the highlands, they are herded by children who do not feel responsible of the animals daily feed requirements, health, etc. Management of natural pastures are not practised.

Animals are not closely observed that diseases escape notice until they have spread through a population. Sick animals are not reported to animal health personnel early enough. Newly introduced animals are immediately mixed with the herd/flock without isolation for close observation some days for any disease in incubation stage.

Livestock are rarely housed to get protection from inclement weather. Animals are not feed according to their physiological state or production levels. Mating is not synchronise so that parturition takes place at a time when ample forage is available for the dam to

properly feed the young one. In addition, breeding bulls are not carefully selected and mating occurs randomly on pastures. Farmers are interested in maximizing herd numbers for asset and social role rather than their economic role.

Failure of cross-breeding programmes attempted among peasant farmers could be partly attributed to the poor husbandry practices.

1.3.1.5 Weak Linkages between research and extension

Another major factor that limits increased livestock production is the scarcity of research activities which generate appropriate technologies that can be disseminated to the farming community for adoption. In addition, the linkages that exists between research and extension has been weak, such that the limited research results often do not reach the farmer to assist them to improve productivity.

1.3.2 Non-technical Problems and Constraints

Many factors which fall under this major categorized have influenced the performance of the livestock sector in Ethiopia the past decades. They comprise economic, social and institutional factors.

1.3.2.1 Economic Constraints

The scope livestock services in the country has expanded, while the role of the private sector diminished greatly in the last 2 decades. With decline in the economy of the nation, the government budget was inadequate to finance livestock services efficiently. Because of the low priority accorded to this sector, its recurrent expenditure grew 6% per annum, which was only one third of total agricultural expenditure. Moreover, over 80% of the recurrent budget was spent on staff salaries and wages. This forced the government to seek livestock services financing from credit and donations.

1.3.2.2 Poor Infrastructure

Some areas of the country are totally inaccessible, while others are only accessible in the dry season. Poor infrastructure hinders

livestock development by preventing efficient delivery of livestock services as desired. Poor infrastructure also prevents movement of livestock products, which are highly perishable, to market places and inputs necessary for livestock development from easily reaching the farming community. This results in an increased transport costs and losses of valuable animal products.

1.4 Sources of the problems and constraints and their impact on the national economy

Livestock industry in Ethiopia is traditional and largely under the peasant holdings. The main purpose of keeping these animals were discussed earlier. Unlike the commercial producer, peasant farmers aim at increased herd numbers than improve productivity per head.

The impact of various problems and constraints on the Ethiopian livestock industry have not been sufficiently studied, quantified and valued.

But it can be supposed that the low productivity of livestock in terms of growth rate, livestock outputs (milk meat, eggs, mutton, wool, etc.), traction power is due to the isolated or combined effects of the above mentioned problems and constraints.

Birth (1-1.5 kg for sheep, 23.5 kg for Boran calves) and weaning weight (170 kg at weaning) and daily weight gains (0.53-0.60 kg/day for Boran cattle until weaning) of some species indigenous breeds studied are very low.

Age at first breeding of local heifer on average is 4 year, while exotic heifer is mated at 18 month of age. Similarly, the lactation length and total yield are much lower than exotic breeds. For example an indigenous cow gives 250-300 litre of milk per lactation, while a cross breed under a similar management system produces 800-2000 litres. The liveweight gain of cattle is approximately 7 kg per year. While improved cattle attain 50-60 kg in the same period. (Annex IV)

Likewise indigenous hen lays not more than 70 smaller size eggs per annum compared to 300 medium to large eggs by exotic hen. The quality of meat and

milk on market are of a fairly low. The main source of meat supply for most butchers in urban centre is culled old draught oxen. This is also true to products derived from local sheep - mutton and skins.

Under the extensive traditional system, cattle produce 1.5 to 2 litres of milk a day over a lactation period of 150 to 180 days. In private small-scale dairies, the average daily milk production from improved cattle is 7 to 10 litres over a 270 to 300 lactation period. The per capita milk consumption has declined from 15 kg in 1970 to 13 kg in 1990 (Ethiopia: Livestock Sector Development Project - Phase I - Working Papers).

Meat for domestic requirements is a by-product of traditional cattle husbandry in both the highlands and lowlands. Carcass weight of cattle officially and unofficially slaughtered are 167 kg and 135 kg, respectively, and with a dress out percentage of 49. The total domestic consumption is about 5.5 kg per capita.

On average local poultry produces about 55-80 eggs weighing 45 g per chicken. A cock weighs about 1.5 kg while the chicken weighs approximately 1 kg.

External parasites and skin diseases (ticks, mange, ringworm, streptothricosis) and systemic diseases (lumpy skin diseases; sheep and goat pox) severely damage the skin and hide. In addition cultural practices such as indiscriminate branding and burning affects the quality and value of these byproducts both on local and export markets.

Livestock morbidity and mortality due disease and/or poor nutrition are high - 8.5% for adults cattle, 14.5% for sheep and 11.6% for goats. Loss due to mortality alone is estimated to exceed 700 birr million per year. Disease sharply reduces the productivity of livestock in all agro-ecological zones and production systems. Trypanosomiasis is arguably the single most important disease in the western and south western Ethiopia by hampering the use of fertile valleys for agricultural development. Although not quantified, production losses due to poor nutrition and clinical and subclinical diseases are likely to be fairly high, because they cause reduction in draught output, milk yields, growth rates, wool and hair growth and reproductive efficiency. They also curtail live animal and animal byproducts exports to lucrative international markets.

Due to poor management, livestock experience substantial weight loss during long distance trekking or trucking, without adequate feed and water provided during journey.

The overall annual mortality of adult stock due to diseases and animal health problems is over 8% cattle, 23% for goats and 30% for sheep.

Mismanagement of the rangelands and pasture area have lead to overstocking, overgrazing and subsequent natural grasslands and range deterioration, change in species composition and final decline in pasture and range productivity. This state of affairs may also lead to nutritional deficiencies, decline in livestock production and productivity, increase susceptibility to disease and mortality.

Low livestock prices serve as disincentive for farmers from selling surplus stock from the range in the lowlands and pastures in the highlands. Furthermore, movement of dairy products from surplus to deficit areas is constrained by poor road access, transport and storage facilities.

Inadequate nutrition contributes to low reproductive rate, low growth rate, low milk yield and high mortality rates.

In conclusion, problems and constraints to livestock development severely depress livestock production and productivity, reduce the revenue both the producers and the nation get from the sector, impede the development of the industry and greatly decreased the contributions of the sector to the national economy.

1.5 Efforts made to solve the problems

Efforts made over the years to alleviate the problems and constraints the livestock industry faced through foreign assistance and loans, and government annual budget support animal were to build infrastructure and facilities, and manpower development to promote livestock extension services in animal breeding, nutrition and health. The government has also been instrumental in the

development of manpower development in-country at the Junior Colleges and at the Alemaya Agricultural University.

The government efforts in solving problems and constraints faced by the livestock industry were mediated through the implementation of regular development programmes and specific projects in the livestock sector. Regular programmes were exclusively financed by recurrent budget from the central treasury, while project were funded either by credit from financial institutions or grant from donor governments or organizations.

Contributions of regular programmes to solving the above mentioned problems and constraints have been small compared to externally financed projects. The major livestock development projects so far implemented to address some the constraints and problems of the national livestock sector are many too. Therefore only the major one will be glossed over lightly.

1.5.1 Animal Disease Control

Tsetse and Trypanosomiasis Control Projects

With assistance from FAO and UNDP, Tsetse and Trypanosomiasis Control Project, the National Tsetse and Trypanosomiasis Investigation and Control Centre (NTTICC) was established at Beddele and carried out a pilot tsetse control trial which demonstration the adaptability and effectiveness of traps and target technologies for the control of tsetse fly from Chelo, Limu Shay and Beddele area in the Upper Didessa Valley of the Illubabor Zone where recent tsetse invasion had caused many cattle deaths. From 1986 until the external finance ceased in 1993, about 800 km^2 area of land had been successfully cleared of tsetse.

Under the Livestock Sector Project prepared by FAO Investment Centre for World Bank financing, a tsetse control project covering an area of 5,500 km^2 in the Upper Didessa and Wama Valleys, Illubabor Zone, was proposed. The project was supposed to have been appraised last year. It is not certain whether the Livestock Sector Project would get fund by the Bank as originally planned.

The Pan African Rinderpest Control

The Pan African Rinderpest Control (PARC) has been under implementation since 1988 with EC donation. PARC's objectives are to eradicate rinderpest from Ethiopia and to rehabilitate the veterinary field services through the provision of equipment, drugs and training. In addition, it also has the aim of promoting anti-desertification activities through support to forage development activities.

Through Joint Project 15 earlier effort was made to control rinderpest from the African continent. The project was implemented in Ethiopia from 1969 to 1974 over 5 years period. As a result epidemics of rinderpest in cattle was greatly reduced.

Tick Control Projects

Two Technical Cooperation Projects (Eth/75/021 and ETH/83/023) were implemented by the National Tick Project in western zone of Ethiopia, namely the Welega, Kafa and Illubabor zones with the financial assistance of FAO and the UNDP. The latter investigated tick distributions and populations dynamics in the above-mentioned zones with the aim of developing the necessary skills in national staff in all aspects of tick and tick-borne disease research. These projects were followed by a project (TCP/ETH/0053) financed by the UNDP and aimed at gaining knowledge on tick and tick-borne disease distribution in the improved dairy cattle in the highlands of the country and devising economical control measures.

1.5.2 Rangelands rehabilitation and development

The Third Livestock Development Project (TLDP)

The Third Livestock Development Project (TLDP) was the first large-scale pastoral development intervention in the rangelands of the northeast, east and southern Ethiopia with a loan from the World Bank. The project objective was to develop and rehabilitate in order to increase the

productivity of rangelands and livestock on a sustainable manner for the economic benefits of the pastoralists. The project run from 1967 to 1984.
The South Eastern Rangelands Development.

The South Eastern Rangelands Development Project (SERP) is an integrated pastoral development project aimed at improving livestock production and food security among the Somali in the south eastern lowlands, while ensuring the sustainability of the natural resource base. This project is funded by the African Development Bank and its 5 years life span extends from 1990 to 1996. The project components consist of Extension and Institutional Development; Land Use and Range Management; Animal Production and Health; Livestock Marketing; and Infrastructure Development.

1.5.3 Animal health and forage development

The Fourth Livestock Development Project

The Fourth Livestock Development Project (FLDP) was implemented from 1988 to 1994 with the objective introducing improved forage development techniques and strengthening the veterinary services in the control of livestock diseases. FLDP contributed significantly to competence building of many department in the Ministry of Agriculture. Through contracted farmers, it multiplied forage seeds in order to meet local demands for improved forage seeds. It tested various forage development techniques and introduced the suitable ones to farmers in many parts of the country. It FLDP was also instrumental in establishing a central disease investigation laboratory at Sebeta and strengthened the veterinary diagnostic laboratory in different parts of the country.

FLDP's conservation-based forage development strategies has been widely accepted and adapted in many regions of the country where mixed farming systems and critical animal feed shortage existed and improper cultural practices had caused severe soil erosion and decline in productivity.

1.5.4 Dairy rehabilitation and development

The Addis Ababa Dairy Development Project

This was the first livestock development project financed by the World Bank with the aim of promoting improved dairy production around Addis Ababa in the mid-1960s over 5 years period.

Dairy Rehabilitation and Development Project

Dairy Rehabilitation and Development Project (DRDP) started operation in 1988 until 1994 with loan from the African Development Bank. The project had the aims of promoting the development of improved dairy production by assisting peasant cooperatives, small-holders dairy farmers and the Dairy Development Enterprise (DDE). The project supplied 50% crossbred (Friesian x Boran) in-calf heifers, clinical intervention, forage development, credit scheme, etc to poor farmers in high potential regions of the country.

Selale Small Scale Dairy Development Project (SSPDDP)

DRDP was complemented by the Selale Small Scale Dairy Development Project (SSPDDP) which was implemented in the North Shewa with finance assistance from the Finish International Development Agency (FINIDA). The objectives of the pilot project were to distribute in-calf Friesian x Boran cross-bred to peasant farmers who were given extension supports in forage development, animal health, project monitoring and marketing. But the project terminated abruptly only after operating for a few years.

1.5.5 Integrated rural development with strong livestock component

Chillalo Agricultural Development Unit (CADU)

Chillalo Agricultural Development Unit (CADU) established in 1968 to carry out an integrated rural development in Chillao awraja in Arsi Zone. The livestock component of this project focused on the distribution of cross-bred in-calf heifers to small tenant farmers so as to improve milk production capacity of the region (Abay, *et al.*, 1989). The project was jointly financed by the Swedish and the Ethiopian governments. Latter CADU was expanded to cover the whole of the Arsi Zone and called the Arsi Agricultural Development Unit (ARDU).

Wollayita Agricultural Development Unit (WADU)

Wollayita Agricultural Development Unit (WADU) had a similar cattle breed improvement programme through the use of bull service station and AI in order to upgrade local stock. The present economic status of the two zones can be mostly attributed to diffusion of innovations and improved technologies by these projects.

Peasant Agricultural Development Projects

The Peasant Agricultural Development Project, although not strictly a livestock projects, PADEP II (being implemented in Sidamo and the North and South Omo Zones and financed by the ADB) and PADEP V (being carried out in the Shewa with the EC donations) both have animal health and livestock services and infrastructure development integrated with crop extension services. The livestock component of these projects have lesser importance compared to crop production component. The project was launched in 1990 and will continue until 1995.

Furthermore, in addition to efforts made to alleviate the problems and constraints the livestock industry faced through foreign assistance and loans, government annual budget support animal was used in institutional building, promoting livestock extension services in animal breeding, nutrition and health. The government has also been instrumental in the development of manpower development in-country at the Junior Colleges and at the Alemaya Agricultural University.

Cattle breeding centre were established in a number of regions with government budget. Similarly Artificial Insemination Centre which run AI services in any parts of the country was set-up through government efforts.

2. Current National and Regional Policies, Strategies and Actions Directed at Animal Husbandry

2.1 National and Regional Policies and Strategies

According to Proclamation No 7/1992 issued by the TGE, "A Proclamation to provide for the Establishment of National/Regional Self-Governments" Article 10 (15,j), empowers Regional self-governments to approve the social and economic development programme.

According to Proclamation 41/1993, the MoA must by itself directly undertake the formulation of policies and strategies relating to agriculture and the land use; and to the follow-up and supervision of the implementation of the same upon approval. Moreover, MoA is expected to advise, encourage, assist, provide technical support to relevant institutions (including Regional Agricultural Bureau).

On this basis MoA has prepared various livestock policy papers which had been submitted to the Office of the Prime Minister for ratification. These include Livestock Policy and Strategy, Veterinary Legislations, etc. The policy and strategy document is still under consideration by the Office of the Prime Minister.

As such there is at present no regional livestock development policy, strategy or development action plan issued by the regional self-governments.

2.2 National and regional strategies

The MoA is again preparing a strategy on ruminant livestock whose first draft has been released for comment. The paper encompasses the feeding, breeding, health, marketing, research strategies for the most important livestock (ruminant) species to the individual farmer as well as the nation.

Regions are also in the process of preparing agricultural development strategies tailored to their specific circumstances as one of its component, within the

framework of the TGE policy. This effort has in it a livestock development strategy as one component.

2.3 Animal husbandry development plan (long-term, medium, short-term)

There is no approved long, medium or short-term livestock development plan for of the MoA or the Regional self-governments.

3. Animal Husbandry Support Systems

3.1 Organizations relevant to the support system

The Ministry of Agriculture, Agricultural University and Colleges, International Organizations and Non-government organizations are directly and indirectly involved in livestock development in Ethiopia.

3.1.1 Delivery of Livestock Services

3.1.1.1 Ministry of Agriculture (MOA)

The MOA is the major provider of livestock services separately or in collaboration and coordination with the above-mentioned organisations. This Ministry rendered it livestock services nation-wide. Since the regionalization policy of the Transitional Government of Ethiopia, delivery of livestock services is the responsibility of Agricultural Development Office of the Region.

Over decades MOA has endeavoured to introduce to farmers improved livestock breeds and better ways of feeding and management them. It established infrastructures, and facilities for cross-breeding cattle, sheep, poultry and centres and institutes for operating artificial insemination services, vaccine production, diseases diagnoses, and for trained farmers' in improved livestock management.

MoA is the main organization responsible for the delivery of livestock disease diagnoses and control services. The projects MoA

has so far implemented have been covered under 1.4 above. MoA has also been promoting forage development, livestock products and by-products processing and marketing extension activities among smallholders. It also rendered AI services to improved dairy cattle farmers in major urban and peri-urban areas of the country.

3.1.1.2 NGOs

A number of non-government organizations (NGOs) have been carrying out livestock extension services to peasant farmers in areas where they have an integrated rural development programmes. To mention a few of the NGOs involved in livestock services delivery include FARM AFRICA, Society of International Missionaries (SIM), Food for the Hungry-Ethiopia (FH-E), Redd Barna, The Catholic Mission Church, AGRI-SERVICE Ethiopia, World Vision and ACTION AID. These NGOs have been carrying out forage development, delivery of animal health services, introduction of improved animal breeds and better management techniques to farmers in areas where they undertake an integrated rural development activities.

Some of these NGOs such as the SIM, FHE directly engage in the delivery of clinical animal health care to livestock in their areas of operations, while others give MoA with little support it needs with transport, operational funds, etc. to improve it services.

One of FARM AFRICA's programmes which has been going on since 1988 focuses on improvement of the Dairy Goat. Through this programme Farm Africa has imported Anglo-Nubian exotic buck from the UK for cross-breeding with indigenous goat at the Alemaya University of Agriculture and the Awassa College of Agriculture. Cross-bred bucks and does were latter distributed to poor women who are household head to improve their income and livelihood. SOS-Sahel (UK) operating in Bele, Kindo Koysha woreda in Welayita Zone, Redd Barna (Norwegian Save the Children) working among the peasant farmers in Bolosso Sori in

North Omo Zone were few of the NGOs who have worked with Farm Africa and MOA in implementing dairy goat development programme.

3.1.2 Livestock Development

The Ministry of State Farms, Coffee and Tea Development (MSFC&TD) manages dairy development programmes through the Dairy Development Enterprise (DDE). The latter is responsible for all state dairy development activities, including breeding its own improved dairy animals and AI services to its dairy farms. In suitable highland areas it operates dairy farms with the aim of supplying milk to the city residents.

MSEC&TD also operation livestock marketing enterprise which purchases cattle sheep and goats; cattle are finished in feedlots before they are exported.

MSFC&TD does not engage in the delivery of livestock extension services to the farmers. Under the new economic policy of the Transitional Government of Ethiopia, the future of these dairy farmers, cattle holding areas and finish feedlots to remain under the public sector is precarious.

3.2 Livestock Research and Extension

3.2.1 Livestock Research

Agricultural research centres which are run various institutions and organizations are found in different agro-ecological zones of the country. However, their distribution is uneven and their activities focus on few commodities. Livestock research requires longer period, compared to crops, to yield fruition making it relatively costly. Major institutions involved in livestock research are briefly discussed below.

Institute of Agricultural Research (IAR)

The Institute of Agricultural Research (IAR)has a number of research centre where it has been carrying out performance assessment of indigenous livestock breeds/type and conducting breed improvement trials through cross-breeding local animals with selected exotic genotypes.

IAR conducted studies on the genetic potentiality of the *Horo, Barcka, Boran* cattle for dairy traits and *Horo* sheep breeds for mutton. It also undertook adaptability and performance of these local cattle breeds and their crosses with different levels of exotic (Freisian, Jersey and Simmental).

Studies were also made to assess the reproductive, growth and fattening performance of Ethiopian sheep breeds such as the *Horo, Adal, Menz, Wolo and Arsi.*

In addition, the IAR has been actively involved in forage development and feeding trials.

Higher learning institution

Higher learning institutions such as the Alemaya Agricultural University and the Junior Colleges at Jimma, Ambo and Awassa undertake livestock research activities parallel with teaching. These activities are carried out by the livestock farms in the campuses of the institutions. Post-graduate students in Animal Sciences at Alemaya University conduct MSc research thesis as a partial requirements for their degree.

International Livestock Centre for Africa (ILCA)

International Livestock Centre for Africa (ILCA), which has been incorporated into the new International Livestock Research Institute (ILRI), has been actively engaged in research and trials on:

- agricultural systems in different agro-ecological zones;

- testing improved production practices at Debre Zeit;

- competence building by training experts in various disciplines related to livestock development;

- tsetse biology, behaviour, breed tolerance to varying degrees of tsetse challenge;

- trypanosomiasis prevalence; drug resistance, etc. on livestock in the Gibe and Tollay areas.

It also provides an excellent information services to those involves in livestock development, extension, research, teaching.

International Centre for Insect Physiology and Ecology (ICIPE)

International Centre for Insect Physiology and Ecology (ICIPE) signed an agreement with the Ministry of Agriculture and the Addis Ababa University to conduct collaborative research on the management of important plant and animal pest in Ethiopia, of which tsetse and trypanosomiasis and tick and tick-borne diseases research are of significance to livestock development in Southern Region. ICIPE has also sponsored short and long-term training in Kenya for staff and technicians employed on livestock pests.

3.2.2 Livestock Extension

Livestock extension services are rendered to farmers throughout the country the MoA, NGOs and to limited extent by higher learning institutes. An efficient delivery of livestock extension, like it is also true to crop husbandry, requires availability of appropriate technologies and innovations for dissemination to and adoption by the farmers. These are expected to be generated by organizations involved in research works. On the other, research organizations would require good feedback on farmers pressing problems and constraints to increased production under differing ecological conditions from organization delivering extension services. Good linkages between research and extension organizations are of paramount importance. Unfortunately this collaboration is weak such that research are

often weak such that the limited research information available at research organizations are not quick communicated to organizations involved in extension works for rapid dissemination to farmers.

Livestock extension works are few and lack the necessary extension packages and resources. Improved forage and livestock breeds (dairy, sheep, goats, poultry) and animal health services delivery are the main aspects of extension focus in livestock.

3.3 Credit and Livestock Development

Like in crop production livestock rearing requires working capital to purchase necessary inputs such as feed, animal health services, purchase replacement animals (in improved dairying, sheep, poultry production systems), for infrastructure development (animal shed, water source and watering facilities, etc. depending on the level of development), basic equipment for undertaking routine animal husbandry procedures, etc.

Given the low income of the farmers, they require capital sources which may local money lenders or banking institutions (Agricultural Development Bank, Commercial Bank of Ethiopia). Funding for the latter often are International Fund Agricultural Development (IFAD) through soft loan. AID Bank has been the organization entrusted with the responsibility for administering the funds.

Even if local money lenders are readily accessible and easy to obtain, interest rate are prohibitive. As credit source banks have fair interest rate but have precondition such as collateral security which the poor farmers cannot meet. Farmers' organizations which would provided security banks need to advance loan are poorly organized and financially and managerially weak to play this role, because most often they were heavily subsidized by the government.

Hard data may be lacking, but it can be supposed that private livestock farms (mainly dairy) have had better access to bank credit than farmers.

In general, credit support have been very weak, especially for the livestock development.

In recent years, having realized the problem, some NGOs with livestock development programmes have initiated credit scheme. But it is too early to reflect on how scheme has performed.

4. Fodder production in Ethiopia

4.1 Review of livestock (ruminant) feed supply

The supply of livestock feed comes mainly from grazing and browsing of an improved pasture, rangeland and fallow. Crop residues, and stubble feeding contribute substantially to the feeding of livestock in the highlands.

Grazing and browsing on permanent grazing lands, fallow lands, and stables past-crop harvest make up about 88.4 percent of the feed supply in the country (Annex 6). The total grazing and browsing area in the country has been estimated at about 63 million ha.

The 1989 FAO estimate indicate that the permanent pasture declined by 1.1 percent compared to the 1973 estimate.

In the cropping areas crop aftermath is estimated to contribute 3 per cent of the total feed supply (Annex 7).

Crop residue constitute around 11 percent of the total feed supply in the country (Annex 6) cereal straws of teff, barley and wheat are the major ingredients of the Ethiopian livestock diet in the high lands. Other feed sources constitute less than 1 percent of the total feed supply. Deliberate production of feed for ruminant livestock in Ethiopia is unusual.

Fodder/Forage development in Ethiopia began several years back by the Ministry of Agriculture (MOA). Species adaptation trials and demonstration sites were established. Oats, vetch and fodder beet seeds were distributed to ex-producer cooperatives' (PC) dairy farms. The farms were advised on fodder development and feeding management.

The Arsi Rural Development Unit (ARDU) tested a number of fodder species (oats, vetch and fodder beet) at sub-stations on a range of altitudes in both research and seed production. ARDU has had a significant impact on forage development in Arsi.

As a result of the ARDU extension program many milk producers make use of fodder crops substantially.

The use of introduced pasture and forage species has also been encouraged recently, particularly through the Fourth Livestock Development Project (FLDP).

Highlands

The primary source of forage is based on un improved and over-grazed communal grazing areas and fallow lands bordering the plots of arable lands. Crop residues such as stocker and stubble through significant in terms of calorie intake are of minor importance. With the exception of cereal straw forage conservation is not frequently practised and animals suffer from nutritional deficiency all-year round, the stress becoming severe in the latter past of the dry season.

Improvement of pasture lands has not been attempted and fodder crop production is insignificant though recent attempts to introduce pasture and forage species have been encouraging. Natural pasture lands are over-grazed, invasion by inferior species is a major problem. Over-stocking of grazing land and the resulting land degradation and soil erosion, as well as a progress decline in the fertility of the soil have become major livestock production conservation complex issue.

Fodder conservation to stabilize the seasonal feed fluctuations is not regularly practised.

The mere idea of fodder crops cultivation outside cash crop farming is new to most livestock owners.

Though few in number dairy herds under service cooperatives (SC) have better nutritional status. Mainly because some improved pasture and fodder crops were provided to the animals.

Lowlands

Both the nomadic and semi-nomadic herds of the range lands feed on various annual and perennial grasses and browse species. The condition of the rangelands vary from area to area. Except attempting to reserve grazing areas within the regions covered by the Third Livestock Development Project, no significant attempt has been made towards rangeland improvements.

Fodder conservation has not been practised. As a result, livestock suffer very severe nutritional stresses during the peak of the dry season and in drought condition invariably causing high mortalities.

In the rangelands the range of interventions to improve forage production are more limited when compared to the high land.

Current Situation

The implementation of the Fourth Livestock Development Project's which is being implemented in some 350 service cooperatives has shown promising results in forage development within and outside the project areas.

The strategies mapped out to this end have helped to improve the overall nutrition status of livestock primarily in terms of quality improvement.

4.2 Possible expansion of fodder production

4.2.1 Overall perception of fodder production

The general nutritional improvement of livestock envisages broadly the control of grazing pressure, improvement in total availability of feed stuffs and quality improvement of feed utilization. The experience of Fourth Livestock Development Project indicate the possibility of implementing different forage development strategy to improve the availability and quality of the total dry matter entail improvements through the use of fodder crops and fodder trees and forage inter-cropping cultures among other interventions. These activities can easily be adopted in the highland where mixed farming systems is practised.

In order to improve feed utilization apart from the control of diseases so that animals can take advantage of the nutritional improvement, fodder

production and conservation, feeding fresh forage using the cut-and-carry method would be expedient.

Highlands

Over-grazed grazing native pastures which have been rendered unproductive and un palatable due to encroachment from inferior species and a rampant land degradation have to be redressed.

The traditional livestock feeding of mainly deficient and unbalanced diets should e corrected and the total dry matter intake should be increased gradually.

The improvement and efficient utilization of cereal straws and residues by mixing them with legumes calls for the encouragement of legume production.

Due to these factors forage development in the highlands has been going on over a number of years. However, there has not been a major thrust until the implementation of the Fourth Livestock Development Project (FLDP).

The target development component of the FLDP envisages the improvement of livestock production by increasing the total feed supply through conservation based livestock/fodder production strategy.

During the previous regime an attempt were made to organize farmers to service cooperatives. There institutions were used as a focal point for the implementation of different fodder development activities. Accordingly, 350 service cooperatives were involved in the forage development scheme.

Increasing the quality and quantity of forages, assisting soil conservation, providing extra fuel woods and using manure as fertilizers were the major objectives of the forage development program.

Some of the strategies employed to achieve these objectives include:

(i) back yard forage production;

(ii) forage strip establishment; and

(iii) fodder production among others.

These strategies have been well accepted by the peasants because the technologies involved are simple and they hear low financial cost.

The strategies and individual activities of the forage development component are not meant to maximize fodder production which may be done at the latter stage of its development rather its desirable meant is that it is low cost forage development employing simple technologies acceptable to the peasants.

Some modification of the strategies in terms of strong of the forage development with dairy programs and forage supplemented small scale fattening operating have been attempted overall, the forward linkage of encouraging results of the forage development of the FLDP is worth thinking of in any major future fodder production thrust.

Lowlands

Strategies for improving forage production are more limited than the highland. Nevertheless, from useful interventions can be contemplated.

(i) the development of smaller reserves to be secured for use in periods of initial shortage of livestock feed; and

(ii) the increasing the number of permanent watering sides to previously inaccessible areas and water retention schemes to produce fodder crops are worth consideration.

Overall, the forage development thrust of the FLDP, the highlands and the limited interventions in the rangelands can be strengthened and expanded further.

5. List of donor assisted projects

The following the major livestock development projects which had been or are being implemented overs the past decades.

5.1 Components of an integrated rural development projects

Name of Project	Donor /period
Chilalo Agricultural Development Unit	SIDA,1968-73
Arsi Agricultural Development Unit (ARDU)	SIDA,1974-90
Wollayita Agricultural Development Unit	World Bank, 1968-76
Peasant Agricultural Development Projects (III& IV) (III& IV)	EEC, on-going

5.2 Animal health

The Pan African Rinderpest Control The JP15 for Eradication of Rinderpest	EEC , on-going
Tsetse and Trypanosomiasis Control Projects	FAO/UNDP,on-going
Tick Control Projects	FAO/UNDP,ongoing

5.3 Rangelands development

The Third Livestock Development Project (TLDP)	World Bank, 1985-89
The South Eastern Rangelands Development	ADF, ongoing

	The Fourth Livestock Development Project	World Bank, on-going
5.4	**Dairy development**	
	Dairy Rehabilitation and Development Project	ADF, on-going
	The Selale Small Scale Dairy Development Project	FINIDA, on-going

6. Possible cooperation by the government of Japan

6.1 Areas Japanese assistance could be provided for

Experiences have indicated that many projects that were supported by international donors to develop the sub-sector have not produced significant impact to affect the sector contribution to the national economy.

Any foreign aid should be targeted to solve bottle-neck problems the solution of which will have positive impact on the national economy. Therefore, based on their impact on the national economy, the following areas have been identified as potential recipients of Japanese assistance.

6.1.1 Institutional capacity building

Building up effective institutions is a long and arduous process in agriculture as elsewhere. Public organizations pertaining to livestock production need planning and bud getting capability, management and accounting systems, sufficiently funded above all the pay and incentive system must motivate staff and management to work efficiently. Large number of people have to be trained in technical and management skills.

Institution building also involves the establishment of organizational structures that have built-in capacity to review themselves.

A public body that is service-oriented and does not earn revenue, such as an extension service is vulnerable to a sustained under funding.

At the project level, the ultimate objective is to create or strengthen institutions that are able to implement new investments and of operating and maintaining existing ones. The emphasis in institutional building in this case should focus on planning, monitoring and evaluating the progress of the projects, and o research.

Deficiencies in institutional performance are a common source of problems during project implementation maximum effort has to be exerted in improving the institutional capacity of existing ones'

6.1.2 Fodder Production

The availability of feed is one of the major constraints to the development of the sector. The fourth livestock development forage development component have demonstrated that much can be done to improve the present feed situation at different agro-ecological zone with properly designed development project.

Although forage development in Ethiopia has moved a long way. Along this line, only a hand-full of projects partly designed to promote forage development have been designed and implemented. The results on the whole have been encouraging. Similar forage development efforts have to be initiated and expanded both in coverage and objective.

6.1.3 Training

It is generally, believed that development, of a country's human resource is essential to its prosperity and growth and the effective use of its physical Capital Education is investment in human capital. In the process of institutional capacity building large number of people have to be trained in various technical and management skills.

A shortage of human resources is a serious constraint in national agricultural research programs and extension services. It is important,

therefore, that any program to strengthen national research and development capacity give attention to staff training.

Dedicated trained staff in different livestock development disciplines are vital to improve the sub-sector output. The present trained staff number are not compatible with the resource base. The serious shortage of specialized staff in specific disciplines handicaps the sub-sector.

Intervention in the manpower development activity would contribute much to strengthen the livestock sub-sector contribution to the national economy.

6.1.4 Animal Health

As discussed in Section 2.4 above one of major constraints to the development of livestock industry in Ethiopia is the prevalence of animal diseases. The major one among this is tsetse-transmitted animal trypanosomiasis. In the souther western and western parts of Ethiopia, an estimated area of 120,000 km^2 is infested with tsetse fly. Here there is a high incidence of trypanosomiasis which precluded the vast fertile valleys from being put agricultural development. Moreover, tsetse is advancing into higher altitude areas above 1700 metres above sea level, severely affecting agricultural productivity of settled farmers in the area.

On the other hand, highlands of the country are severely degraded to a stage where they cannot support the high population found there. In order to ease pressure on the land, fertile valleys should be cleared from the tsetse fly to allow ox-based agricultural development of the area.

Effective, simple and easy-to-adapt technologies of controlling tsetse and hence trypanosomiasis have been tested and in western parts of the country found to be successful. With FAO and UNDP assistance reasonable level of competence in tsetse control has been attain over the last 9 years. About 800 km^2 area cleared of the fly should preserved and control should

expand into new areas to make more land available for agricultural development to support in improve food security of the people.

Japanese Government's assistance in tsetse control could be considered as an area of cooperation. Possible activities in which the Government of Japan could assist may include:

- Strengthening the NTTICC:
- the provision of inputs required for tsetse and trypanosomiasis control;
- manpower development through training;
- establishment of regional centres for tsetse and trypanosomiasis investigation in Bahir Dar and Awassa.

6.2 Special factors that could contribute significantly to the success of Japanese assistance

The change of previous policies in favour of economic liberalization directed towards market oriented economy is expected to require a substantial private investment both domestic and foreign in the livestock sub-sector.

The reform is at a cross-road at this particular state of evolution. In order to strengthen the positive development of the reform process it must be supported by foreign assistance. Any assistance donated at this crucial moment in the reform process is going to bear fruit and it will not be wasted.

The entrepreneurial enthusiasm that has unfolded as a result of the positive policy environment created will stay at its peak for a considerable period of time to come. This highly raised hope and motivation of people to test their talents and achieve some thing will surely create situations where by any assistance from Japan can be effectively and productively invested.

Japanese assistance can be effectively engaged in those areas of the sub-sector which chronically suffered from under funding. These areas (research, extension, health and disease, fodder production) have high economic and financial rate of return.

Conditions favourable for the success of proposed tsetse and trypanosomiasis control operation with Japanese assistance would include among others:

- existence of dedicate expertise and facilities for tsetse investigation and control at Beddele;

- presence of a project prepared by FAO Investment Centre with World Bank finance;

- reasonable knowledge of area for tsetse control operations;
- existence of a suitable topography of tsetse infested area (bounded by high altitude on three sides to permit erection of control barrier only on one side with minimum cost;
- existence of cost effective, environmentally safe technologies (traps/insecticide impregnated screens; and "pour-on" and "spot-on") for tsetse control/eradication;
- sustainability of the control/eradication project and its economic benefit of making livestock and agricultural production possible.

Under the Livestock Sector Project prepared by FAO Investment Centre for World Bank financing, a tsetse control project covering an area of 5,500 km^2 in the Upper Didessa and Wama Valleys, Illubabor Zone, was proposed. The project was supposed to have been appraised last year. It is not certain whether the Livestock Sector Project would get fund by the Bank as originally planned.

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III FORESTRY

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1. The Current Conditions of Forestry in Ethiopia

1.1 Forest Resources

Estimates of the forest resources of Ethiopia vary widely, partly due to differing definition of forest and partly to conceptual differences of the sources.

A number of sources indicate that 35% - 40% of Ethiopia's land area was once covered by broad leafed or coniferous forest on the basis of the potential climatic climax. If the savanna woodlands are included, 66% of the country is believed to have been covered with forest and wood lands. (see Annex 1) This is based on the work of F.v. Breitenbach (1961) later referred by FAO, (1981) Aklog (1990), NCS, IUCN (1990), EFAP (1994).

The National Report on Environment and Development prepared for the Rio de Janerio UNCED conference (1992), expressed doubts whether Ethiopia has ever had a closed forest cover within historical times as extensive as that described by FAO and others.

One fact all sources agree is that Ethiopia's forests and woodland resources have continued to decline. In the early 1950s forest were reduced to 16% of the total land area while by early 1980s forest area declined to 3.6% and by 1989 to 2.7%. (Source: IUCN 1990 National Conservation Strategy, Ethiopia).

According to EFAP Ethiopia' forest and woody vegetation is classified as follows:

Natural High Forest: defined as land covered by a closed stand of trees with more or less continuous canopy rising 7 to 30 meters, and a space ground cover of few grasses. The high forests are located mostly in Bale, Illubabour and Kefa. The government has classified 58 of the most important high forest areas totaling an estimated 2.8 million hectares as National Forest Priority Areas (NFPA) (see Annex 2)

Woodlands and Bushlands: woodlands can be defined as land covered by an open stand of trees taller than 5 meters and un to 20 meters in hight and a canopy cover of more than 20 percent. Bushelands are land covered by an open stand of trees and/or taller shrubs 2 to 5 meter tall and a canopy cover of more than 20 percent. Wood lands and bushlands are found in the Awash region, East and South Hararge, the rift valley, South Sidamo, Wellega, Gonder and the slopes of the eastern and central highlands.

Plantations: include industrial and peri urban plantations established and operated by government, as well as community woodlots and catchment protection plantations.

Farm Forestry: integrates tree growing within farming systems.

Table 1 : Estimates of the area, growth stock and incremental yields as per the above classification, 1992.

Forest/Resources	Area million ha.	Growth Stock m^3/yr	Annual Increment Yields	
			Per unit area m^3/ha/year	Total mill. m^3
Natural high forest	2.3	90-120	5-7	0.3
- slightly disturbed	0.7 1.6	30-100	3-4	6.4 4.0
- heavily disturbed	5.0	10-50	1.2	1.6
Woodland	20.0	5-30	0.2	2.1
Bushland	0.2	-	9.6-14.4[2]	
Plantations[1]	n.a	n.a	n.a	
Farm forestry				

Source : EFAP 1994

1. Includes industrial, peri-urban community woodlots and catchment protection plantation
2. Refers to coniferous and eucalyptus industrial plantation in HPP zone.

The extent of human-made forest in Ethiopia is as follows.

A. Per-urban fuelwood plantation	ha (1984-89)
Addis Abeba	12815
Nazareth	5181
Debre Berhan	3313
Desee	3059
Bahir Dar	465
Gonder	783
Addis-Bah	16708.3
Total	42124.6
B. Other Plantations	**ha (1989)**
Industrial timber	18706
Community woodlots	44534

1.2 The Role of Forestry in the Ethiopian Economy

Ethiopia has a land area of about 110 million hectares of which the highlands above 1500 meters constitute 45 percent of the total area. Eighty percent of the human and 75% the livestock population live in the high lands.

The deterioration of the national resources base and the environment of the country is vividly manifested by extensive soil degradation and erosion, deforestation, water resources degradation and with the overall effect of wide spread poverty and starvation.

Estimates show that between 150,000 to 200,000 hectares of lands are deforested and the highlands lose between 1.9 to 3.5 billion tons of soil as a result of erosion.

Within the framework of the above grim socio-economic and environmental setting, the contribution of forestry can only be minimal and unsustainable.

Even though there is no systematic survey on the contribution of forestry to the national economy, the EFAP reports shade some light on the issue. In the last decade forestry accounted for about 5.5 % of the agriculture sector and 2.5% of the total GDP. In 1991/92, forestry's contribution to GDP measured 406.2 million Birr at current factor cost. This figure includes gathering of fuelwood, production of timber, production of charcoal, production of natural gum, incense and medicinal herbs; operation of tree nurseries; and planting, replanting and conservation of forests by households, enterprises and state forest agencies. (See Annex 3 for forestry contribution to the GDP)

In 1985 forest imports accounted to 1% of total imports. Recently, except for some gum and incense products, forest exports are discontinued. (See Annex 4 total value of exports and imports)

In 1988/89 forestry employment accounted for 2.2% of the total work force while it contributed 2.8% to employment in the agricultural sector. The largest employment generator is fuelwood production, accounting for nearly half of the total forest employment followed by reforestation and afforestation activities contributing about a third of the total. (See Annex 5 forestry contribution to national agricultural employment).

The EFAP document further notes that if the depletion of forests is valued and taken into consideration in the national accounts, it results in a significant reduction in the contribution of forestry to national income. It further notes that land degradation which results in low agricultural production would reduce the GDP by 5% annually.

The annual industrial wood production, average for 1985-90, was 45,000m^3 sawn wood, 2800m^3 plywood, 3900m^3 fiber board, 5500m^3 particleboard and 10 tons paper. (EFAP, 1992 working paper No. 6).

The wood processing industry includes 39 sawmills, two plywood factories, one veneer slicing unit, one particleboard factory, one timber board factory, some

250 joinery and furniture units and one paper factory. The total number of employees in the above industries amount to 9583 with furniture and joinery accounting for 57% and sawmills for 25% the total number of employees.

Volume of wood products for four consecutive years is shown in the Table 2. There is a marked decline in production in 1992/93 when compared to the preceding two years.

Table 2: Wood Products

Wood Products	Unit	1989/9 0	1990/9 1	1991/9 2	1992/9 3
Industrial timber	M^3	62733	66150	65544	43405
Poles	No	15303	60819	82838	30014
Construction poles	M^3	52084	50012	36650	24739
Fuel wood	M^3	109301	127678	114788	70976
Charcoal	Qntl.	59082	107620	257130	30382

1.3 Major Problems and Constraints

The major problems and constrains facing the forestry sector can be divided into four major categories. These are; policy, institutional, technology and research, management.

1.3.1 Policy Related Problem

Land and tree tenure

In the last two decades government polices by enlarge had negative impacts on the development of forestry. They discouraged the private sector from participating in the forestry sector. Policies also discouraged the peasantry from forestry development due to the land and tree tenure policy of the then government which did not respect individual rights of land ownership. Land

reallocation by peasant associations which were done at random left the farmers with no guarantee of tenure.

Even though current government policies assure life long, inheritable and transferable land use rights, there is no regulatory or administrative framework that is required to implement such a policy objective.

The land use right policy has been included in the transitional government economic policy but has not been expressed in a legal document with full explanation of the concept, the legal and the operational aspects.

Land use plan

The lack of land use plan defining the allocation of land to different uses on the basis of land suitability, productivity and social and economic feasibility has resulted in delay of forestry projects implementation. Competing uses such as fuelwood plantations and farm or grazing land have frequently resulted in conflict among the peasantry and project implementors.

Pricing and marketing

Market for wood and wood products are heavily regulated. State enterprises enjoy sole purchasing and selling powers on the markets of wood products, which has led to lack of competition and inefficiency. Due to free open-access to forest and wood lands, market prices for fuelwood and charcoal do not reflect their full economic costs, resulting in waste and inefficiency in production and consumption.

State plantations also sell timber and poles at prices which are well below the full production costs thus resulting in weakening the enterprises and government to undertake afforestation and other related management activities.

1.3.2 Institutional Problems

Changes in organizational setups and personnel

The Ministry of Agriculture and Environment Protection and Development constituted two vice ministries of Agriculture and Natural Resources and Environment Protection. Recently the two ministries, the Ministry of Agriculture (MOA) and the Ministry of Natural Resources Development and Environment Protection (MONRDEP) were established.

The State Forest Conservation and Development Department (SFCDD) which is now within the MONRDEP has now again changed to Forest and Wildlife Conservation and Development Department (FWCDD). The above government organizations have also been transformed during the last regime. Frequent changes in organizational setups including high turn over of personnel in the forestry sector have contributed to inconsistency, frequent changes in plans and implementation and disruption of ongoing activities.

Disruption of demarcation and management plan preparation for National Forest Priority Areas, changes in fuelwood plantation plan implementations can be sited as practical examples of the problems mentioned above.

Legal status of forest areas

The legal status of forest areas including the 58 National Forest Priority Areas has not been established. The demarcation and mapping of forest areas have proceeded without simultaneous gazetting thus by the time they are gazetted the demarcation will have changed due to human interference.

Manpower

The SFCDD was organized into four divisions, employing some 5100 people of which 600 are diploma holders and the rest as support staff.

The Forest Demarcation, Inventory and Management Plan Development Division (FDIMPD) with a staff of about 30 including 8 professionals is constrained by staff shortage in conducting a rapid preparation of management plans.

Though the above Department and Division have been restructured they basically remain with the same staff and mandate. In the case of the Department it has now taken an additional responsibility regrading wild life. Trained manpower shortage is also noted in the forestry research sector.

Data Base and Information

The absence of basic forest resource information continues to be a fundamental constraint in the preparation of forest management plans.

1.3.3 Research and Technical Problems

The fragmentation of forest research institutions, the absence of a strong national coordination, the shortage of qualified professional research staff, shortage of funds and poor dissemination of research results are the major problems of the forestry research subsector. Technical problems include poor seed collection and handling practices, poor nursery practices and seedling handling during transport, inadequate soil cultivation, inadequate thinning, and inadequate use of fertilizers.

1.3.4 Management and Planning

Problems related to management and planning include:

- lack of institutional arrangement for state local community collaboration,
- low capacity of government organizations in carrying out management plans,
- inadequate information base for planning and management,
- inadequate extension capacity

1.4 Underlying Causes of the Problems

1.4.1 Policy Related Problems

Plantation and development of forests can only make a difference in the Ethiopian economy if the involvement of the private sector and the farming community is enhanced. This can only be achieved if the land and tree tenure policy is acceptable to the farmer and the private sector. Current government policy on land tenure is "lifelong, inheritable and transferable land use right".

This policy objective has to be supported by appropriate institutional set up including legislative mechanism. Farmers are currently gaining confidence and tree planting is on the increase. The private sector is also showing interest to invest in the forestry sector. One private company "Tree and Life Pvt. Ltd. Co." has already started development of forests in northern and central Shoa.

If this momentum is not lost and legal assurance is put in place regarding the above stated current government policy on land tenure, forestry development shall contribute significantly to the national economy.

1.4.2 Institutional Problems

Change of government usually results in change of government ministries structure and to an extent change of the civil service. This could affect temporarily the conduct of project implementation and follow up. Problems related to inadequate trained staff, absence of basic forest resource data are fundamental constraints.

These basic problems are common to research, and management capacity of the forestry sector. Technological problems also emanate from the shortage of trained manpower and inadequate information. Institutional problems impact directly on the performance of the forestry sector.

1.4.3 Price and Marketing

The deregulation of the market for wood and wood products and the restructuring of state enterprises are necessary steps to alleviate the root causes of inefficiency of state enterprises and waste in production and consumption of wood products.

Inefficiency of state enterprises has resulted in budget subsidy by government to these enterprises. It has also contributed to the decline in the development of the forestry sector. Market prices for timber, fuelwood and charcoal do not reflect their full economic costs. Current measures taken by the government in market deregulation and restructuring of state enterprises shall have a positive impact on the development of the forestry sector.

1.5 Efforts Made to Solve the Problems

1.5.1 Policy Related Problems

- The Transitional Government of Ethiopia has already clarified the land tenure issue. What remains is to put in place appropriate institutional set up to make the necessary follow up on the policy objective. Already the policy of 'lifelong inheritable and transferable land use right' is showing positive results in the participation of the private sector and farmers in forestry development.

- As has been mentioned earlier the land tenure policy has given farmers and private forest developers the necessary tenure security. This has opened a window of opertunity and shall certainly have a posetive impact on the development of forestry.

- On the other hand inadequate institutional set-up to implement and popularize the policy may result in retarding the momentum gained in forestry development by the farmers and the private sector.

- The deregulation of the market for wood and wood products, the restructuring of state enterprises have also been put into practice.

- Deregulation of the market for wood and wood products has resulted in price increase, but as far as fuel wood is concerned, which affects the majority of wood consumers, the price increase, if any, is not due to market deregulation. It is by enarge due to scarcity of wood and increase of distance to fuel wood areas.

- the major contribution of the market deregulation policy to forestry development is that it helps in reflecting the full economic costs of wood and wood products. This in turn assures that wood and wood products are used appropriatly and efficiently. It also opens up an opportunity for private investors to invest profitably in forest development.

1.5.2 Institutional Problems

Problems related to inadequate trained manpower, absence of basic data on forest resources shall take time to resolve. But steps in the right direction are being taken. The Alemaya University and Wondo Genet Forestry College shall go a long way to address the problem of trained manpower. One of the areas of intervention in the present study is directed to strengthening the data base on forestry and natural resources.

2. Policies and Strategies

2.1 National Policies and Strategies

The National Conservation Strategy (NCS) is the basic umbrella government policy and strategy document regarding the natural resources and environment protection.

The NCS, over the last four years of its preparation has been reviewed by experts, the donor community and government ministerial committees.

It's approval by the TGE's Council of Ministers is eminent in the near future. The basis for this chapter on policies and strategies concerning the forestry sector is therefore the NCS document volume II entitled "National Policy on Natural Resources and the Environment"

supplemented by the EFAP documents and the recent government proclamation on conservation, development and utilization of forests. Regarding forest, woodland and tree resource management, the national objective as stated by the NCS is: "to conserve forest ecosystems and genetic resources and to increase the production on a sustainable basis of forest resources including sawn timber fuelwood, poles, fodder and minor forest products as well as to increase soil fertility and decrease land degradation through the planning of appropriate trees thus improving agricultural production."

The guiding principles are:

- the complementary roles of communities, private entrepreneurs and the state should be recognized,

- the state should not undertake the execution of forestry projects and programmes when either communities or entrepreneurs can do so, but it should create an enabling environment for their participation,
- forestry development by individual farmers, communities and private entrepreneurs hould be encouraged through research and extension, the provision of infrastructure, ppropriate pricing policies and increased security of land and tree tenure,

- individuals, communities and the government should be actively involved in the planning and implementation of forestry programmes to ensure sustainability, to minimize cost, and to forestall conflict,

- forestry development strategies should integrate the development, management and conservation of forest resources with those of land and water resources, energy resources, ecosystems and genetic resources, as well as with crop and livestock production,

- afforestation of uncultivable areas should only be assisted with judiciously selected planting as the bulk of the local species will reestablish through natural processes provided that felling and grazing are controlled, and

- "sustainable forest management" is achieved when social acceptability and economic viability have been achieved and the volume of wood harvested in a given period is about equal to the net growth that the forest is capable of generating,

The Strategies regarding Forest Resource and Ecosystem Management are to:

- Increase the data on the types and extent of forests, woodlands and trees through comprehensive surveys and studies.

- Develop a partnerships between central/regional government and local governments whereby communities are included in benefit sharing including the provision of social and infrastructural developments, and obtaining forest products and other items for household consumption which in return will make them willing to protect the forest.

- Promote conservation of natural forests and expand the existing network of protected areas by concentrating efforts on establishing and implementing management plans for Forest Priority Areas; determining which are for habitat protection, for conservation and for production so that the existing network of protected areas is expanded, endemic and rare species, unique ecosystems and watersheds are adequately protected and wood production is carried out on a sustainable basis.

- Plant selected scattered exposure tolerant trees in uncultivable areas to afford shade to the trees that demand it, and plant scattered trees that give food and habitat to forest regeneration and, to make this possible, ensure that local species of trees for seed supply are available nearby: eg. in church groves or by specially planting trees.

- Pursue agricultural and other policies and programmes that will reduce pressure on fragile woodland resources and ecosystems.

- Promote changes in agricultural and natural resource management systems which will limit the need for free grazing of animals in protected forest areas.

The strategies regarding Tree and Forest Production are to:

- Develop agreed partnerships between local communities and the private entrepreneur or the state (whichever operates the plantation forest) whereby the community benefits financially and so affords protection to the forest.

- Ensure rapid build up of seeding supply by initially expanding production capacity at state run nurseries and increasingly promoting farmer/community or individual farmer operation.

- Established incentives that promote private sector development of industrial plantations and farmer and community investment in farm forestry, hill side protection forestry, woodlots and peri-urban fuelwood plantations.

- Reorganize and strengthen forestry research and extension to ensure effective integration of agro-forestry practices (at farm and community levels) with land management and farming systems, and to secure active involvement of local communities and farmers in land use planning.

- Reduce government's involvement in industrial and peri-urban plantations by gradually transferring management rights to private interests; restructure remaining state plantations to ensure commercial viability or privatize them.

- Make it mandatory that wood processing industries use only wood from plantations and not from natural forests unless deliberate exceptions are made by the Central Government based on a thorough impact assessment study and forest management plan that clearly shows the sustainability of the logging programme.

- Through tax or other incentives support wood using industries to establish their own forests or to develop firm contracts with wood producing plantations, and where such industries establish their own forests make the replanting after harvest a condition of any land lease.

The strategy regarding Technology Development and Dissemination is to:

- Improve the dissemination of research results through the extension services.

The strategies regarding Capacity Building and Institutional Development are to:

- Develop a revised school, institute and university curriculum in forestry management and conservation.

- Implement the revised curricula through technical assistance to schools, institutes and universities.

- Provide short term training courses for national, regional and wereda level staff in forestry and natural resource management.

- Strengthen forestry training institutions through the provision of teaching materials, equipment, training for trainers and/or translation of text books, etc.

2.2 Regional Policies and Strategies

The above broad policies and strategies are reflected in the Proclamation No. 94/1994 entitled, "Forestry Conservation, Development and Utilization Proclamation" (see Annex 6). The Proclamation has 18 articles, in which the preamble sets the basis for the proclamation and subsequent articles give definitions. Types of ownership, conservation and development of forests, utilization of forests miscellaneous provisions.

This proclamation has to be read along with previous proclamation such as the ones which delineates the powers and responsibilities of central and regional governments i.e proclamation No. 7/1992 and proclamation No. 33/1992.

Proclamation No. 2/1992, Article 10, sub article 6 states on special powers of national/regional transition self government as follows: "to administer, develop and protect the natural resources of the region in accordance with the relevant general policy and law of the Central Transitional Government."

Proclamation No. 33/1992 Article 5, sub article 4d states that forest royalty shall be joint revenue of the central government and regional government.

As such regional policies and strategies have not been formulated or at least have not been publisized. Currently the available sources are only the central government proclamations.

In a federal type of government the division or responsibilities and power between the central and regional government needs careful considerations. The above sited proclamations have by enlarge covered issues related to power and revenue sharing but details on revenue sharing have yet to come out. As current state of affairs indicate, regional governments have full powers in issues related to permits of forest exploration. Some areas of responsibilities are not very clear and may result in mismanagement of forest resources.

2.3 The Action Plan and Priority Areas

2.3.1 The National Action Plan

The NCS Sectoral Program IV, which is Forestry, Woodland and Tree Conservation, Production and Management, include the following components.

. Forest Resources and Ecosystem Conservation and Management
. Tree and Forestry Production
. Technology Development and dissemination
. Forest Industries
. Capacity Building and Institutional Strengthening

Forest Resource and Ecosystem Management
The Immediate Priorities are:

- To expand the current national forestry and natural resources data base study (Woody Biomass Study) to cover the whole country.

- To undertake a rapid nationwide survey and assessment of the biodiversity values (fauna and flora) of Ethiopia's forest and woodlands.

- To develop a process of, and methodologies in, participatory forest planning and management by establishing agreed partnerships between central and regional government, regional and local government and communities and local government so that communities can benefit financially from the preservation, conservation and sustainable and productive use of the forests within their areas and they, in turn, afford protection to the forests.

- To expand the current programme of demarcation of boundaries and formulation of management plans for forest priority areas within the framework of the participatory forest planning process, reflecting the biodiversity values previously identified.

The Medium Term Priorities are:

- To expand the existing formal protected area network (ie. national parks and wild life sanctuaries) to include natural forests and woodlands which are currently not represented.

- To ensure that local species of trees for seed supply for the natural regeneration of forests on uncultivable slopes are available nearby: eg. in church groves or by specially planting community groves.

- To develop appropriate livestock feed technologies in farming systems adjoining protected forest areas so as to limit the need for open grazing in these forests.

The long Term Priorities are:

To pursue agricultural and pastoral development policies and programmes that will reduce pressure on fragile woodland resources and ecosystems.

Tree and Forest Production

The Immediate Priorities are:

- To support rural families to plant their own trees for wood supply.

- To undertake national, regional and local level farm forestry planning studies to assess which areas and farming systems are likely to see an expansion in tree

planting, what are the particular elements for government support and what government intervention may be counter-productive.

- Deriving from the farm forestry studies, to facilitate a prioritized but rapid build up of seedling supply by initially expanding production capacity at state run nurseries but increasingly to promote farmer/community production of seedlings, and, in the medium term, to transfer state nurseries to community or individual farmer operation.

The Medium Term Priorities are:

- To establish a system of incentives, financial and tenurial, that promote private sector development of industrial plantations and farmer and community investment in farm forestry, hill side protection forestry, woodlot and peri-urban fuelwood plantations.

- To reorganize and strengthen forestry research and extension to ensure effective integration of agro-forestry practices (at farm and community levels) involvement of local communities and farmers in land use planning. (This has clear linkages with Sectoral Programmes 1 and 2).

- To reduce government's involvement in industrial and pri-urban plantations by gradually transferring management rights to private interests; to restructure remaining state plantations, if any, to ensure commercial viability.

- To promote the development of, and facilitate improvements to, apiculture through the provision of technical advice and technology demonstrations.

Forest Industries

The Immediate Priorities are:

- To make it mandatory that wood processingindustries use only wood form plantations and not from natural forests unless deliberate exceptions are made by the Central Government.

- To facilitate wood using industries to establish their own forests or have firm contracts with wood producing plantations, through tax or other incentives.

Technology Development and Dissemination
The Immediate Priorities are:

- To establish a Forestry Research Fund for contract research.

- To establish a Forest Research Coordination Committee which will develop a forestry research programme and determine priorities in terms of strategic, applied and adaptive research; and to give it the power to direct priorities in the use of the forestry research fund.

- To give priority to research on farm forestry as a part of farming systems research.

The Medium Term Priorities are;

- To establish and improved system of dissemination of agro-forestry research results to the extension service.

Capacity Building and Institutional Strengthening
The Immediate Priorities are:

- To establish a technical working group to undertake the development of a curriculum for education in forestry (Linkage to Cross-Sectoral Programme 11).

- To develop a revised school and higher education curriculum in forestry management and conservation.

The Medium Term Priorities are:

- To implement the recommendations of the Forestry Technical Working Group through long term technical assistance to schools and institutions of higher education.

2.3.2 The Ethiopian Forestry Action Program (EFAP)

The formulation of the EFAP begun in January 1990 and culminated with a donors conferences in May 1994. The final report is presented in three volumes which constitute The Executive Summary, The Challenge for Development and Issues and Actions.

The EFAP is a 20 year action program which comprises of four primary development programs and four supportive development programs, with a total estimated resource requirement of 1232.2 million US dollars of which US$ 506.6 million is for public and US $725.6 is for private investment.

Table 3: EFAP-Summary of Costs (US$ million)

	PUBLIC	PRIVATE	TOTAL
A. Primary Programs	350 7	725 6	1076 3
1 Tree and forest production program	199.4	595 6	795 0
2 Forest resource and ecosystems management program	121.7	-	121 7
3 Forest industries development program	16 1	130 0	146 1
4 Wood fuel energy development program	13.5	-	13 5
B. Supportive Programs	153 3	-	153.3
1 Technology development and dissemination program	21 2	-	21 2
2 Sectoral integration program	94.4	-	94.4
3 Planning, monitoring and evaluation program	7.3	-	7 3
4 Human resources development program	32 4	-	32 4
Total	506 6	725 6	1232 2

Source . EFAP, 1994

The following table summarizes the 46 projects under the eight programs.

Table 4: Summary of EFAP Projects

	Project Life (Years)	Costs US$ Million		
		First 2 years	Total Private	Total Public
PRIMARY DEVELOPMENT PROGRAMS				
A. Tree and Forest Production Program (TFPP)				
1 Rehabilitation of Industrial Plantations	2	1.1	-	4 1
2 Industrial Plantation Expansion (PD)	20	-	100	105
3 Feasibility Study for Industrial Plantations	0.5	0.3	-	0.3
N.Ethiopia(FS)	15 5	1 0	12 0	10 3
4 Peri-urban Fuelwood Development	17 0	1 2	6 0	1 2
5. Community Woodlot Management and Rehabilitation	20 0	5 6	475	56 7
6 Incentives for Production & Farm Forestry (PD)	1 5	0 8	-	0 8
7 Farm Forestry Planning Study (FS)	4 0	0 4	-	1 2
8. Seed Supply Development	-	5 6	-	13 8
9 Nursery Rehabilitation and Development (ID)	5 0	-	2 6	3 6
10 Agriculture Development (PD)	3.3	-	-	1 7
11. Bamboo and Reed Research and Development				
B. Forest Resource and Ecosystems Management Program				
	4 0	4 5	-	13 6
1. Development of a National Forestry and Natural	9 0	1.2	-	6 0
Resources Data Base (IS)	20 0	4 0	-	13 6
2 Forest Management Planning (IS)	1.0	1 0	-	1 0
3 Implementation of Forest Management Plans (PD)	6.0	-	-	6 3
4 Woodlands and Bushlands Survey (FS)	4 0	-	-	4 0
5 Woodlands Management (FS)				
6 Middle Awash Woodlands Conservation (PD)				
C. Forest Industries Development Program				
	0.9	0 5	-	0 5
1. Wood Processing Industry Rehabilitation Study (FS)	2 0	-	-	15 0
2 Rehabilitation of Wood Processing Enterprises (ID)	0 6	-	-	0 6
3 Wood Processing Industry Expansion Study (FS)	-	-	100	-
4 New Sawmills for Natural Forests and Plantations (ID)	-	-	10.0	-
5 New Veneer and Plywood Mill (ID)	-	-	20 0	-
6 New Medium Density Fibreboard Factory (ID)				
D. Woodfuel Energy Efficiency Dev. Program	5 0	3 6	-	
1 Promotion of Improved wood Stoves pilot (IS)				13 5

	Project Life (Years)	Costs US$ Million		
		First 2 years	Total Private	Total Public
SUPPORTIVE DEVELOPMENT PROGRAMS				
A. Technology Development and Dissemination Program(TDDP)				
1 National Forest and Plantation Research (IS)	5.0	1 2	-	6.3
2 Farm Forestry Research (IS)	3.0	1 9	-	3 8
3 Windbreak Research (IS)	5.0	0 4	-	0 8
4 Integration of Agricultural Extension(IS)	2 0	1 4	-	4 4
5 Re-orientation of the Extension Service (IS)	2 0	1 4	-	1.4
6 Establishment of a Land Husbandry Department Within MoA (IS)	5.0	3 1	-	4 5
B. Sectoral Integration Program (SIP)				
1 Local Level Land-Use Planning (IS)	5 0	1 0	2 1	10 7
2 Aerial Photography (IS)	10 0	10 0	-	50 0
3. Vetiver Hedge Soil Conservation (PD)	6 0	-	-	2.5
4 Feasibility Study for a Land Management Development Fund (FS)	0 5	0.2	-	0 2
5 Animal Nutrition Improvement (PD)	10.0	-	-	23 4
6 Ox Plow Development	7.0	0 6	-	7.6
C. Planning and Monitoring and Evaluation Program (PMEP)				
1. Strategic Land-Use Planning (IS)	4 0	1 8	-	4.2
2 Monitoring and Evaluation	3 5	1.3	-	2 7
D. Human Resources Development Program (HRDP)				
1 Curriculum Development for Education in Forestry and Natural Resources Management (IS)	1.0	0 6	-	0.6
2 Education and Training in Forestry and Natural Resource Management (IS)	10.0	4 2	-	21 8
3 Forest Industries Training(IS)	2 0	-	-	1 1
4 Environmental Education (IS)	5 0	2 6	-	6.3
5. Conservation Education (IS)	5 0	-	-	2.0
Total	-	65 1	725 6	506 0

3. Forestry Support System

The support system of the forestry sector discussed in this chapter include organizational set up, the research and extension system and financing.

3.1 Organizational Setup

National Level

The organizational set up of the forestry sector has changed a number of times over the last two decades. During the 70s a forestry and wildlife authority functioned for some years after which the forestry was taken up within the Ministry of Agriculture structure. In the 80s and beginning of the 90s the Ministry of Agriculture and Natural Resources Development was set up with two vice ministries, one for Agriculture the other for Natural Resources Development. In 1992 the State Forestry Conservation and

Development Department (SFCDD) was organized into four divisions covering licensing and utilization, forest management planning, fuelwood plantation expansion, and project coordination; two training centers, and a number of projects. It employed some 5100 people of which about 600 were diploma holders.

In 1993 the Ministry of Natural Resources Development and Environment Protection (MNRDEP) was established and with this change the SFCDD also changed to Forest and Wildlife Conservation and Development Department (FWDDD). (see Annex 7.1 organizational structure of MNRDEP)

Regional Level

Each region has a National Resources Development and Environment Protection Bureau with three departments under it. One of the departments is the Natural Resources Development and Conservation Department within which the Forestry Development teams is located. (see Annex 7.3 Organization of the Regional NRDEP Bureau). The district level bureau constitutes a Forestry Development Team and Soil and Water Conservation Team. (see Annex 7.4, 7.5 for Zonal and District Level NRDEP Bureau)

3.2 Research, Extension and Training

Research

Forestry research has not made a significant contribution to forestry development in Ethiopia. There are about 10 agencies with 80 centers excluding the NGOs, that are involved in forestry research. All of them are poorly staffed with inadequate financial resources and research facilities.

The major problems facing forestry research are lack of coordination among research organizations, absence of a clear research policy, nonavailability of qualified personnel, limited funding and poor dissemination of research results.

Extension

Forestry extension is a program or activity that assists local people to be willingly involved in forestry activities from which they will derive some recognizable benefit within a reasonable period of time.(EFAP, Vol. II, 1994)

Forestry extension lacks the voluntary and participatory aspects which are the main ingredients for success in extension services.

The community forestry program conducted by the Community Forestry and Soil Conservation Development Department (CFCDD) with the assistance of the World Food Program relied heavily on the physical outputs of the food for work program and less on convincing the farmers to perceive the importance of land degradation and deforestation as problems of agricultural production.

Fuel wood projects have also faced setbacks due to poor extension approaches. There are however some successful extension efforts in project specific cases conducted by NGOs and the Community Forestry Program. The major problems of forestry extension include poorly developed extension-research linkage, lack of funds and manpower, and practice of top-down approach.

Training

The Forestry Faculty at Alemaya University of Agriculture offers a four year BSc curse while the Wondo Genet College of Forestry offers a two year forestry diploma course. The Wondo Genet College has recently started MSc program in forestry. Major constraints related to training include utilization of existing training centers below capacity, non existent of a comprehensive forestry education policy and strategy, weak research and training linkage and budget limitations.

3.3 Financing

Forestry development is financed by government, multilateral and bilateral sources, NGOs and the private sector. As has been explained in chapter 4 of this report, out of the identified 107 forestry related projects the government has a budget share of 14%,

multilateral donors have a budget share of 58%, bilaterals a share of 12% and NGOs have a share of 16%.

4. Donor Assisted Projects

In 1989, Dr. Ermias Bekele prepared a detailed inventory of Forestry Projects in Ethiopia under a short term consultancy to the World Bank.

The inventory identified a total of 107 projects of which 3 were financed/implemented by the Government of Ethiopia, 20 by multilateral donors, and the remaining 70 by non governmental organization (NGOs). The duration of the projects varied from less than one year to as long as 10 years, with most averaging between 3 to 5 years and the budget likewise, ranged from a few hundred thousand to the millions of dollars.

The following table summarizes forestry investments by type of forestry activity (source: Dr. Ermias Bekele, 1989)

Table 5: Summary of Forestry Investment by Type of Activity

Activity	Budget US$	In Kind	% of budget
1.Conservation/protection	264,915,908	5331 mt grain 142 mt oil	44
2. Forest/Land use management planning	12,388,604	-	2
3. Forestry research	16,441,144	-	3
4. Fuelwood and construction material production	151,848,378		25
a. state run	138,275,127	9,907 mt grain 94 mt oil	18
b. community run	13,573,251		
5. Industrial wood production	110,194,299		8
6. Institutional building, training and/or extension	44,110,178		
Total	599,898,511	15238 mt grain 216 mt oil	100

The study further aggregates the forestry project by donor agencies. It states that the government has a budget share of 14%; multilateral donors have a share of 58%, bilaterals as share of 12% while NGOs have share of 16%.

In terms of geographical distribution of projects (number of projects) and budget share at a national level it is 11% and 23%; central 35% and 19%; eastern 13% and 8%; norther 7% and 2%; northeastern 1% and 13%; northwestern 11% and 20%; southern 7% and 2%; south eastern 5% and 2%; western 15% and 11%.
A list of donor assisted projects are presented below (Table 6) in three categories:

A. Multilateral Agencies Supported Projects
B. Bilaterally Supported Projects

C. Non Governmental Agencies Supported Projects

Table 6

A. MULTILATERAL AGENCIES SUPPORTED PROJECTS

ROJECT NO.	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
1	Addis Abeba Fuel Wood Plantation Project	1982-90	Addis Ababa	ADF WFP GOE	10.5 5 0 8 7 24 2
2	North Shewa rural Reclamation Development	1989-94	North Shewa	EEC GOE	24 5 4 6 29 1
3	Rehabilitation and Revival Program	1985-87	Tigray, Wolo, Shewa, Harar	EEC EEC	2 8 7.5 + gram,oil & trucks
4	Rehabilitation of Forest Grazing and Agriculture	1983-88	Tigray	EEC GOE	26 93 4 40 31 33
5	South Shewa Conservation Based Rural Development	1989-94	South Shewa	IFAD	1.97
6	Rehabilitation Program for Drought Affected Areas	1984-88	North Shewa	IFAD	33 7
7	IFAD Special Country Program	1988-93	Arsi/Bale,	UNDP	4 5
8	Assistance to the Soil and Water Conservation Phase III	1987-90	Harrar/Sidamo Shewa/Welo Gojam/Gonder Harar	GOE UNDP GOE	19 3 23 8 1.6 0 7 0 3 2 6
9	Assistance to Research for Afforestation and Conservation	1988-1991	National	UNDP SIDA GOE	2 6 0 3 2 9
10	Debre Berhan Fuel Wood Plantation	1984-91	Debre Berhan area	DANIDA GOE	5 1 0.4 5 5
11	Gonder Fuelwood Plantation	1987-93	Gonder area	DANIDA GOE	5 74 0 95 6 69
12	Nazareth Fuelwood Plantation	1983-91	Nazareth area	DANIDA GOE	3 19 0.50
13	Dessie Fuelwood Plantation	1984-92	Dessie area	FINNIDA DANIDA	2.47 6 16 27 2
14	Addis-Bah Fuelwood Plantation	1986-92	Addis Abeba Bahir Dar area	GOE WB	17 1 44 3 85 0
15	Bure Integrated Water Shade Management*	1989-95	Gojam	GOE	33 6 118 6
16	Charcoal Production Pilot Project	1988-91	Welega/Illubabor	WB GOE	6 79 3 86 10 65
17	Feed and Forage Project	1988-92	Highlands of Ethiopia	WB GOE	5.96 11.67 17.63

Table 6 contd.

PROJECT NO.	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
18	Upper Negesso River Catchment Integrated Agricultural Development*	7 Years	Welega	WB GOE	5.66 7.79 13.45
19	Woody Biomas Inventory and Strategic Planning	1988-92	National	WB GOE	5.02 2.66 7.68
20	Rehabilitation of Forest, Grazing Agricultural Lands Project ETH 2488 Phase II	1987-90	Gojam/Gonder Shewa/Welo	WFP GOE	76.1(in kind) 71.3 147.4

Table 6 conntd.

B. BILATERALLY SUPPORTED PROJECTS

PROJE	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
1	Rehabilitation of Forests Grazing and Agricultural Lands	1987-90	Gamu Gofa/Sidamo	AUSTRALIA GOE	9.77 (m kmd) 0 46 10.23
2	FRG/GTZ Forestry Project	1974-1988	National	FRG	9 88
3	Ethio-Italy Program for Rehabilitation and Development	1985-89	Harar/Welo	ITALY	0 53
4	Development of an Action Program of Agroforestry and Establishment of a Pilot Area for Trial and Demonstration of Community Forestry Practices	1987-88	Gojam,Harrar, Shoa	SIDA	0 17
5	Forest Inventory Project	1987-93	National	SIDA GOE	1 20 2 36 3 56
6	Manpower Development Project	1979-95	National	SIDA GOE	4 16 3 31 7 41
7	Support to the Borkena Catchment Project	1981-86	Welo	SIDA WFP	0 75 (m kmd)
8	Munessa-Shashemene Integrated Forestry Development and Utilization	1982-93	Shewa	SIDA	11 6
9	Support for Agricultural Development in Welo Region	1988-90	Wello	SIDA GOE	6 0 0 72 6 72
10	Tiro Boter Becho Pilot Project	1982-93	Kefa	SIDA GOE	1 40 8 03 9 49
11	Wood Utilization and Research Center	1987-93	Addis Ababa	SIDA GOE	0 34 0 88 1 22
12	Soil Conservation Research Project Phase III	1987-90	Sidamo/Welo Shewa/Gojam Illubabor	SWISS GOE	1 34 1 46 2 80

Table 6 contd.

C. NON-GOVERNMENTAL AGENCIES (NGOs) SUPPORTED PROJECTS

PROJE	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
1	Integrated Rural Development Program	1988-90	Gamu Gofa Bale	INADES EZE	0 069
2	Integrated Agricultural Development Project	1988-90	Shewa	BME	0 050
3	Debrelebanos and Gura Jarso Agricultural Rehabilitation	1988-90	Shewa	CPAR	0 030
4	Yaya Gulele Agricultural Rehabilitation Project	1988-90	Shewa	CPAR	0 029
5	Gursum Land Use Project	1989-91	Harerge	CARE	0 50
6	Food for Work Project	1987/88	Tigray/Harrar	CRS	0 34 + gram/oil 0 079 + grain/oil
7	Gonder Community Forestry and Soil Conservation Project	1987/88	Gonder Region	CRS	
8	Reforestation, Soil and Water Conservation Project	1988-90	Harrerge Region	CRS	0 39
9	Jarso Comprehensive Agriculture Development Project	1982-89	Welega	CONCERN	0 048
10	Kelto Comprehensive Agricultural Development Project	1987-89	Welega	CONCERN	0 048
11	Sike Integrated Development Project	1990-93	Shewa	CONCERN	0 096
12	Welayta Integrated Rural Development Project	1989-91	Sidamo	CONCERN	0 096
13	Adejebo Forestry Pilot Project	1988-90	Illubabor	EECMY LWF	0 013
14	Buno Bedele Relief and FIW Project	1986-88	Illubabor	EECMY	-
15	Chellia Rural Development Program	1987-89	Shoa	EECMY	0 24
16	Darimu Relief FFW Project	1988-89	Illubabor	EECMY	-

Table 6 contd.

PROJE	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
17	Degn Wereda Integrated Rural Development Project	1989-91	Shewa	EECMY	0 074
18	Gimira Bethel Presbytery Rural Development Program	1990-93	Kefa	EECMY	0 169
19	Ijaji Forestry Program	1986-89	Shewa	EECMY/ LWF	0 013
20	Kembata and Hadiya Rural Development Program	1986-91	Shewa	EECMY	0 164
21	Nunu Kumbe and Wame Hagello FFW Project	1986	Welega	EECMY	0 487 + grain
22	Surme Comprehensive Rural Development Project	1989-94	Kefa	EECMY	0 287
23	Tigray Community Development Program	1988-91	Tigray	EECMY	0 116 + grain
24	Washera Sub Catchment Community Development Program	1989-92	Welo	EECMY/ LWF	0 034
25	Afforestation Projects	1986-92	Arsi, Gojjam, Gonder, Harrarge, Shewa, Tigray,	EOC/ DICAD	0 808
26	Semi Nomadic Patoralist Rehabilitation and Development Project	1987-89	Welo Welo/Harrarge	ERCS	1.2
27	Upper Mille and Cheleka Catchment Disaster Prevention Program	1987-92	Welo	ERCS	7.73
28	Inemore Rehabilitation Project, Phase III	1989-91	Shewa	FCIM	0 167
29	Alaba Community Forestry and Conservation Project	1987-91	Shewa	FHI	0 87
30	Chebo/Gurage Relief and Rehabilitation Project	Aug.-Dec. 1986	Shewa	FHI FHI	6 0 2419 qt grain +12095 lt oil
31	Community Forestry Project	1988	Shewa	FHI	5540 qt gram +22160 lt oil
32	Tedelle Harole Afforestation and Erosion Control Project	1989-90	Shewa		

Table 6 contd.

PROJE	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
33	Wegeda and Sali Soil Conservation and Afforestation Project	1988-90	Gonder	FHI	1 92
34	FFW Rehabilitation Program	1986-89	Gonder	GAA	0 024
35	Kishe and Milha Sedecha Development Project	1986-89	Kefa	JRC	4400 mt gram, 200 mt oil 0 144
36	Mekdela Integrated Development Project	1986-89	Welo	JIVC	0 489
37	Damote Wyde Afforestation Project	-	Gojam	KHCDP	-
38	Dilla-Lugo Dama Forestry Project	1989-91	Sidamo	KHCDP	-
39	Omo Shelko Afforestation Project	1984-89 1988-92	Shewa	KHCDP/CIDA KHCDP	1500 mt grain 0 084
40	Salfo Gassero Forestry Project	1986-92	Shewa	SIM	144 mt gram 7500 it oil 0 480 FFW
41	Upper Bilate Reafforstation Project	1986-90	Shewa	LVIA	0.300
42	Integrated Rural Development Project	1985-92	Harrarge	IWF	0 010 + 100 mt grain
43	Hararge Soil and Water Conservation Project	1986-90	Welega	EECMY/LWF	0 010 + 100 mt grain
44	Joint Soil and Water Conservation Project	1985-92	Shewa	EECMY/LWF	2 55** + grain, oil
45	North Shoa Integrated Rural Development Project	1989-94	Shewa	MFM	13 29
46	Merhabete Integrated Conservation and Development Program	1986-95	Welo	MME	9 66**
47	Gerado Catchment Rehabilitation Project	1986-92	Bale	NCA	0 50
48	Delo Integrated Development Project	1987-92	Sidamo	NSTC	3 54
49	Bolosso Integrated Rural Development Project	1986-91	Bale	NSTC	0.507
50	Mensebo Rural Dev Project				

Table 6 contd.

PROJECT NO	PROJECT NAME	DURATION	LOCATION	DONOR	TOTAL COST MILLION US$
51	Wogeda Conservation and Rural Development Project	1987-91	Shewa	NSTC	1 461
52	Hararge Agricultural Project	1985-90	Hararge	OXFAM	0 386
53	Conservation Based Rural Development Project for Adamitulu Woreda	1986-90	Shewa	SELF HELP	1.271
54	Bobegya Reforestation Projects Kamba Agroforestry Project	1988-90	Shewa	SIM	0.015 + 450mt grain
	Warancha Afforestation Project				0 214
55	Sirinka/Hara and Lula-Masso Rehabilitation Project	1988-90	Gamu Gofa	SIM	-
56	Afforestation and Soil and Water Conservation Project	1985-	Sidamo	SPCM	0 247
57	Anger Gutin Settlement Afforstation and Rural Infrastructure Development Project*	1988-89	Welo	24-HOUR TV	3 62
58	Gilgel Gibe Catchment Integrated Agricultural Project*	(7 projects) 1986-95	Wolo/Shewa Sidamo/Gamu Gofa	WORLD VISION	23 77
59	South East Gonder Region Integrated Agricultural Development Project*	3 years	Wolega	-	59 85
60	Wama Valley Integrated Agricultural Development Project*	7 years	Kefa	-	61 59
61		8 years	Gonder	-	18 52
62		5 years	Wolega	-	

Source Inventory and Forestry Projects in Ethiopia, Dr Ermias Bekele 1989 Regrouped by consultant

Note * Project studies are complete but implementation not yet started
- Donor not yet identified
** Total project cost indicated. The Forestry budget component not indicated

5. Possible Cooperation by the Government of Japan

The framework for cooperation in the forestry development by the government of Japan is based on the following guiding principles.

- the areas of interventions shall be complementary to ongoing efforts,
- the inventions shall have positive impact in the development of the forestry sector,
- the areas of cooperation shall be within the framework of government policy, strategy and action plan.

The Ethiopian Forestry Action Program (EFAP), a 20 year action program for the forestry sector, is a government approved action program. The plan has been formulated in collaboration with the World Bank and the UNDP.

The selection of possible areas of cooperation by the government of Japan shall by enlarge be based on the Ethiopian Forestry Action Program. Please refer to chapter 2 of this report for an overview of the Ethiopian Forestry Action Program.

5.1 Priority Areas of Intervention

There are various options in both the primary and supportive development programs of EFAP for Japanese Government involvement. The following priority areas of interventions are recommended for Ethio-Japanese Cooperation in the forestry sector.

1. Capacity building at both national and regional level
2. Production development
3. Feasibility/planning study

Capacity Building and Institutional Strengthening

Capacity building interventions should give priority to the regions. The following programs are recommended among the EFAP projects.

a. Education and training in forestry and natural resources management,
b. Forest industries training
c. Development of a national forestry and natural resources data base
d. Forest management planning

e. Natural forest and plantation forestry research

Production Development

f. Implementation of a forest management plan

g. Rehabilitation of industrial plantation

Feasibility/Planing Study

h. Feasibility study for industrial plantation in North Ethiopia

i. Farm forestry planning study

j. Wood processing industry rehabilitation study

Note:

1. Ten areas of interventions are recommended with the aim of providing the donor country with different options to select from, commensurate with available resources and donor country policy.
2. Some of the intervention areas have distinct components in which case a part or parts of the intervention area can be taken up for implementation. The whole project may not be necessary to be supported by one donor agency.

5.2 Brief Description of Areas of Interventions

A. Education and Training in Forestry and Natural Resources Management

Project Components

- Development of reoriented new curriculum in forestry and natural resources management
- Support to local training institutions and vocational training
- Support for long and short term technical assistance
- Provision of equipment, teaching material, and vehicle, inservice training, practical training and study tours.

Project Duration : 10 years

Project Cost : US$ 21.8 million

B. Forest Industries Training

Project Components

- Provision of training to the staff of public and private forest industries
- Support for training, equipment and a forest industries training specialist

Project Duration : 2 years
Project Cost : US$ 1.1. million

C. Development of a National Forestry and Natural Resources Data Bank

Project Components

- Map Ethiopia's major vegetation types
- Establish a monitoring capability of changes in land use
- Identify land use options for the conservation and development of woody biomass resources (through expansion of the Woody Biomass inventory and Strategic Planning Project)

Project Duration : 3 years
Project Cost : US$ 13.6 million

D. Forest Management Planning

Project Components

- Forest management plans for the 58 NFPAs

Project Duration : 10 years
Project Cost : US$ 6.0 million

E. Natural Forest and Plantation Forestry Research

Project Components

- Improve the research capacity of the Forestry Research Center
- Develop the research capacity of FRC staff through a comprehensive training program
- Support for research equipment and transport
- Support a technical assistance team

Project Duration : 5 years
Project Cost : US$ 6.3 million

F. Implementation of a Forest Management Plan

Project Components

- Proper management and development of 800,000 ha. of production forests and conservation and protection of 1.2 million ha. of natural high forests
- Establishment of infrastructure works

Project Duration : 20 years
Project Cost : US$ 78.6 million

G. Rehabilitation of Industrial Plantations

Project Component

- Survey and prepare rehabilitation and management plan (phase 1)
- Rehabilitation of existing state plantations (phase 2)

Project Duration : 2 years (phase 1)
10 years (phase 2)
Project Cost : US$ 4.1 million

H. Feasibility Study for Rehabilitation of Industrial Plantation in North Ethiopia

Project Component

- Assess the availability of land for industrial plantation (for the development of a pulp and paper industry)
- Prepare preliminary implementation plan
- Provide support for a technical assistance team

Project Duration : 6 months
Project Cost : US$ 0.3 million

I. **Farm Forestry Planning Study**
Project Component

- Investigate traditional farm forestry practices
- Identify sources of farm forestry seed supply
- Evaluation workshop
- Technical assistance and equipment required in the study

Project Duration : 18 months
Project Cost : US$ 0.8 million

J. **Wood Processing Industry Rehabilitation Study**
Project Component

- Assess the viability of all primary processing units in the state sector and formulate viable rehabilitation proposal

Project Duration : 10 months
Project Cost : US$ 0.5 million

5.3 Special Factors That Could Contribute Significantly to the Success of Japanese assistance

Experience shows that successful donor assisted projects have common ingredients such as a well designed project, counterpart committement and effective monitoring and evaluation system.

The recommended projects for Japanese assistance are taken from the long term forestry Action Plan, which is one factor for the success of the projects are Government sanctioned projects.

Additional factors that contribute significantly to the success of Japanese assistance to the forestry sector include:

* a detailed design of the selected projects carriedout with the involvemment of counterpart staffs.

* capable and dedicated counterpart staff to make the necessary follow up on the project.
* The existence of policy framework, forestry proclamation longterm forestry action plan are conditions favourable for the sucess of the proposed projects.
* The decentralization of Government structure, availability of staff at field level, shall also contribute favourably to the success of the project implementation.

IV SUMMARY OF FINDINGS AND RECOMMENDATIONS

Summary of Findings and Recommendations

Summary of findings

1. General

As elaborated in the sub-sectoral survey, both sectors play a significant role in the economy. Tackling the problems, to the extent possible, and enhancing the development of the sub-sectors will no doubt raise the standard and quality of life of the population.

In both the agricultural sub-sectors, the human resource development and the capacity building of the relevant institutions contribute to sustained growth of the sectors.

Transparent regulatory instruments would stimulate the whole of the private sector in raising the production and productivity of the sub-sectors.

The forestry sub-sector detailed background study leading to the Ethiopian Forestry Action Plan (EFAP) is complete. The National conservation Strategy (NCS) which has served as a basis for developing the action plan is also complete. The sub-sector is therefore, in an advanced stage by way of policy and strategy development, plan of action and identification of prioritized investment programs for a period of ten years. What remains now is pulling human, material and financial resources to implement the programs.

The animal husbandry sub-sector on the other hand, does require basic data, including animal population census, for planning and programming purposes. The policy and strategy documents on the sub-sector either have not been completed, or if completed not been issued and availed to interested parties. Based on the strategy framework to be developed or issued, and prioritized investment programs for short, medium and long term have to be streamlined.

In both the agricultural sub-sectors, the constraints are identified by classifying them as technical and non-technical (administrative or otherwise). The solution for some of the constraints could be tackled within a shorter period if concerted efforts, both at national and community levels are synchronized. Prioritizing the investment programs on the basis of short, medium and long term is of importance. Some of the problems, specially the health related ones for animals require regional collaboration .

Even though a comparative impact analysis has not been done, the forestry sector has benefitted substantially from external assistance even under the then

prevailing policy environment. The donors could be involved in various stages starting with data base survey, planning, research and extensions, seedling production, assisting the private sector, the community and the state in production and marketing of forest products. Human resource development of the sub-sector is also of crucial importance if sustainability is to be maintained and if the dependency pressure could be tempered to the extent possible.

Both sectors will have significant impact on export earnings if intensive development programs are undertaken. At the moment the livestock bi-products such as hides and skins and meat products alone account as the secondhighest foreign exchange earners for the country. Improved quality and correspondingly increased quality of production of livestock will have spil-over effect over the industrial expansion. The demand for commercial level forest product is also quite high in neghbouring countries if intensive and aggressive development of the subsector are undertaken.

Overstocking of low quality breeds has invareable resulted in overgrazing, subsequently leading to grass and range land deteroriation.

As a matter of strategy, therefore, it has been stressed by experts to streamline activities and give more attention towards quality and less on quantitative head countbased on livestock number prestige .

2. Common to both sub-sectors

Institutional capacity Building:-

The institutional establishments that directly cater for the enhancement of both the sub-sectors require closer assessments. The strength and weakness including their area coverage should be closely scrutinized. In order to undertake this task, competent expertise in the area need to be deployed to do the need assessment. Incorporating in the study the prioritized programs of implementation with financial investment magnitude prioritized programs of implementation with shall assist both the government and donors to streamline their budgetary allocation. Unless a reliable ground work on capacity building is effected by way of supply of equipment, trained manpower and know-how, the sub-sectors will still remain susceptible to lack of sustainable development.

Research and extension services linkage:-

The government has issued policy directives on the need for linkage of research works and extension services. The institutional and infrastructural bondage should be rationalized and implemented for effective dissemination of the outcome of research works to beneficiary farmers through extension services.

3. Animal Husbandry

The need for detailed study, mapping out policy and strategy:-

The animal husbandry sub-sector, unlike the forestry, require detailed study with updated informational data base. The policy and strategy of the sub-sector should be issued and availed to all interested parties. Phased and prioritized plan of implementation should be developed.

Combating animal diseases:-

To the extent possible, tackling the animal diseases in the country shall remain of prime necessity. Some of the prevalent diseases are regional in character and hence requiring regional approach to the problem. There are vaccine producing laboratories for some of the diseases. By undertaking need assessment of the laboratories, trying to fill in the gap could be of great assistance.

Develop and expand animal feed production:-

To improve the quality of livestock breed, it would be necessary to introduce and sustainably develop livestock feed and nutrition. appropriate application of crop residues and agro-industrial bi-products as animal feed should be encouraged and popularized.

Improving the genetic make-up of local livestock:-

In view of low genetic quality of local livestock, cross breeding of these livestocks with high genetic breeds can raise productivity. This exercise should be substantiated by good livestock management, improved and balanced animal feed and regular disease control.

The role of the private investor in commercial livestock production and marketing:-

Outside of the peasant farmer and pastoralist there are very few specialized commercialized livestock breeders. Encouraging private investors to go into different sizes of modern ranch- type of investment for production and marketing will no doubt contribute to the sub-sectoral development.

Infrastructural Development:-

Much of the rural areas where livestocks are raised are inaccessible. In order to enhance the delivery of essential services, and to facilitate easy access to the markets, the feeder roads infrastructural developments are essential. Facilitation in the establishment of marketing terminals in appropriate locations would have significant impact for the local and foreign marketing activities. Advisory services to develop marketing strategy including regular dissemination of marketing information to beneficiary are crucial.

4. Forestry

Land and tree tenure system:-

Even though the TGE policies assure inheritable and transferable land use right, there is a crucial need for regulatory and administrative framework to implement the policies.

The need for land use plan and protected area network:-

It is very pertinent to delineate the allocation of land to various uses on the basis of established criteria. Unless this issue is tackled, however difficult it could be at times, the development of the sub-sector shall be jeopardized.

Legal instruments governing forestry:-

The legal framework governing the national parks and mapping of forest areas are very important tools for future development by all interested parties mainly private and state sectors and the community.

Strengthening the data base on forestry and natural resources, survey of bio-diversity of forest and woodland:-

For national planning, for active national and external participation and for any other purposes, establishing a reliable data bank on forestry, and survey and assessment of bio-diversity of the sub-sector are crucial.

3. Summary of recommendations of possible ares of Cooperation by Japanese Government

Areas of interventions in animal husbandry

Institutional capacity building

Public organizations pertaining to livestock production a larege number of people trained in technical and management skills.

A public body that is service-oriented and does not earn revenue, such as an extension service is vulnerable to a sustained under funding.

At the project level, the ultimate objective is to create or strengthen institutions that are able to implement new investments and of operating and maintaining existing ones. The emphasis in institutional building in this case should focus on planning, monitoring and evaluating the progress of the projects, and of research.

Fodder production

The availability of feed is one of the major constraints to the development of the sector.
Only a hand-full of projects partly designed to promote forage development have been designed and implemented. The results on the whole have been encouraging. Similar forage development efforts have to be initiated and expanded both in coverage and objective.

Training

Dedicated trained staff in different livestock development disciplines are vital to improve the sub-sector output. The present trained staff number are not compatible with the resource base. The serious shortage of specialized staff in specific disciplines handicaps the sub-sector.

Intervention in the manpower development activity would contribute much to strengthen the livestock sub-sector contribution to the national economy.

Animal Health

Tsetse-transmitted animal trypanosomiasis is the major animal disease that is also advancing into higher altitude areas above 1700 metres above sea level, severely affecting agricultural productivity of settled farmers.

Japanese Government's assistance in tsetse control may include:

- Strengthening the NTTICC:
- the provision of inputs required for tsetse and trypanosomiasis control;
- manpower development through training;
- establishment of regional centres for tsetse and trypanosomiasis investigation in Bahir Dar and Awassa.

Areas of Intervention in Forestry

Capacity Building and Institutional Strengthening

Capacity building interventions should give priority to the regions. The following programs are recommended among the EFAP projects.

- Education and training in forestry and natural resources management,
- Forest industries training
- Development of a national forestry and natural resources data base
- Forest management planning
- Natural forest and plantation forestry research

Production Development

- Implementation of a forest management plan
- Rehabilitation of industrial plantation

Feasibility/Planing Study

- Feasibility study for industrial plantation in North Ethiopia
- Farm forestry planning study
- Wood processing industry rehabilitation study

V. ANNEXES

ANNEX A

Terms of Reference

1. Background

The Japanese International Cooperation Agency (JICA) and the Corporation of Ethiopian Entrepreneurs (CEE) have entered into agreement to undertake Baseline study on Animal Husbandry and Forestry in Ethiopia. JICA has commissioned CEE to have the study prepared by appropriate consultants. Three consultants a coordinator consultant, a Forestry consultant and an Animal Husbandry consultant are engaged to undertake the study.

2. Arrangement

2.1 The Coordinator consultant shall be responsible for the supervision, compilation, integration, preparation and submission to CEE of the reports of the Animal Husbandry and Forestry consultants.

2.2 The Coordinator consultant shall ensure the draft and final reports are prepared in accordance with this terms of Reference .

2.3 The Animal Husbandry and Forestry consultants shall prepare in accordance with the respective terms reference below and submit the draft and final report to the Coordinator in due time.

3. Time Schedule and submission of Report

- The consultants shall submit their respective draft and final reports to the coordinating consultant in due time to be agreed between them and the coordinator.

- The coordinator shall submit to CEE the draft report on February 28; and six working days after the notification of CEE to proceed with the preparation of the final report incorporating comments if any, the final report.

- The draft and final reports shall be submitted to CEE in two copies each and on 3.5 inches diskettes in word perfect or Microsoft word file format.

4. Objectives of the study

4.1 To provide information and analyses on the status, relative significance within the overall economy, potentials and constraints of the forestry and animal husbandry sub-sector of the Ethiopia agriculture.

4.2 To provide general assessment of development activities taking place through domestic and external resources, the state of policy environment, the strategies adopted the relevant institutional and organizational structures in the sub-sectors.

4.3 To make recommendations and identify areas of potential cooperation for participation by the government of Japan in schemes that will address critical problems, obtain high impact, be sustainable and complimentary to existing government, external and community efforts.

5. Terms of reference of the Coordinator Consultant

i. The Coordinator shall:

prepare an introduction to the study and background section on the Ethiopian economy covering,

- overview of the economy
- the major national development policies
- the Government structure, and outline of the agricultural sector

ii. Summarize the major recommendations of the study.

iii. Integrate the animal husbandry and forestry documents in accordance with the table of contents of the study.

iv. Ensure conformity of the two documents with the terms of reference and respective table of contents.

v. Submit to CEE the draft study in accordance with the time table.

vi. Incorporate comments and views on the draft and submit the final study in accordance with the time table.

6. Terms of reference of the Animal husbandry consultant

The Animal Husbandry Consultant shall:

6.1 review and analyse the state of the livestock sector of the Ethiopian Economy, in particular shall:

- briefly discuss the livestock resource base,
- the role of livestok in the ethiopian economy.

6.2 Identify and evaluate the major problems and constraints facing animal husbandry focusing on:

- the major problems and constraints,

- the underlying causes of the problems and their impact on the national economy vis a vis the objectives of the study,
- the efforts made to solve the problems,

6.3 Analyse current national and regional policies, strategis and actions directed to the livestock sector, particularly :

- discuss past and current policies, proclamationss,
- discuss livestock action plans relevant to this study.

6.4 List donors assisted livestock projects.

6.5 Within the framework of the objectives of the study identify areas to which Japanese grant aid could be provided for:

- indicate areas of interventions in the livestock sector which are complimentary to on-going efforts, which shall have positive impact in the development of the sector,

- brief discription of the areas of intervention.

6.6 Identify special factors which will significantly contribute to the success of Japanese aid grant to the livestock sector.

7. Terms of reference of the Forestry consultant

The Forestry Consultant shall:

7.1 review and analyse the state of the forestery sector of the Ethiopian Economy, in particular shall:

- briefly discuss the forestry resource base,
- the role of forestry in the ethiopian economy.

7.2 Identify and evaluate the major problems and constraints facing forestry focusing on:

- the major problems and constraints,
- the underlying causes of the problems and their impact on the national economy vis a vis the objectives of the study,
- the efforts made to solve the problems,

7.3 Analyse current national and regional policies, strategis and actions directed to the forestry sector, particularly :

- discuss past and current policies, proclamationss,

- discuss part of the Ethiopian Forestry Action Plan relevant to this study.

7.4 List donors assisted forestery projects.

7.5 Within the framework of the objectives of the study identify areas to which Japanese assistance could be provided for:

- indicate areas of interventions in the forestry sector which are complimentary to on-going efforts, which shall have positive impact in the development of the sector,
- brief discription of the areas of intervention.

7.6 Identify special factors which will significantly contribute to the success of Japanese aid grant to the forestry sector.

8. Table of Content

Baseline study on Animal Husbandry and Forestry

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Forestry

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Animal Husbandry

ANNEXES ---- FORESTRY

Annex 1

The National Atlas of Ethiopia gives a condensed description of the main types of climatic climax vegetation[2] and existing vegetation from a cover map of the National Atlas and the IUCN phase I report the comparison of which reveals the extent of vegetation destruction in Ethiopia.
For ease of reference it is summarized in a tabulated form.

VEGETATION	ALTITUDE METER	MEAN ANNUAL RAINFALL MM	% OF TOTAL AREA	EXISTING LAND COVER %
1. Afro Alpine and sub- Afro Alpine Region	>4000 mm	800-1600mm	0 6	0.2
2 Coniferous Forest Region	1400-3100	500-1100	14 1	0.1*
3 Broad-leafed Forest Region	600-3400	>1300	20	2.3*
4 Woodland and Savanna Region	400-2000	250-1300	20.2	7.6*
5 Grasslands Region	250-2200	250-875	20.4	
6 The Steppe Region	200-1400	125-500	12 6	
7 The Semi Desert Region	600<	250<	6 3	
8 The Wet-lands			0.7	
9 Riverine Forests			0.5	
10 Holophytic Vegetation			4.7	

2

Climatic Climax Vegetation - is the vegetation that would develop in the absence of human influence and reflects the optimal vegetation of an area as determined by environmental conditions only.

Annex 2

National Forest Priority Areas (Ha)

Name of forest	Region	High Forests		Planta-tions	Other Land	Total Area
		Slightly disturb.	Heavily Disturb.			
1 Arba Gugu	Arsi		6,300	1,600	13,500	21,400
2 Chilalo Gallema	Arsi			1,400	20,600	22,000
3 Munessa-shashemane	Shewa	7,000	10,200	6,800	74,200	98,200
4 Alosha-Batu Dodola-Ababa	Bale		10,000	1,700	28,300	40,000
5. Logo	Bale	5,000	16,400	900	36,700	59,000
6 Goro Bele	Bale	9,800	50,000	200	40,000	100,000
7 Harena-Kokossa	Bale	20,000	70,000		92,000	182,000
8. Kubayo	Bale	5,000	17,900	300	55,200	78,400
9 Mena-Angetu	Bale	20,000	50,000	200	119,800	190,000
10 Bulki-Malakoza	Gamo Gofa			500	10,500	11,000
11 Gidola-Gamaba	Gamo Gofa	15,000	5,000		10,000	30,000
12 Gidole-Gamba	Gamo Gofa			1,200	14,800	16,000
13 Guangua-Kahtas	Gamo Gofa		32,000	2,800	21,700	56,500
14 Sele,a-Mariam	Gojam			2,000	8,000	10,000
15 Butugi-Melka-Jebdu	Harerge			3,800	41,400	45,200
16 Din Din-Arbag.	Harerge		3,300	5,900	57,600	66,800
17 Gara-Muleta	Harerge		2,600	2,000	2,400	7,000
18 Jalo-Mukatar-Metakesha-Add	Harerge		2,500	4,100	14,700	21,300
19 Jarso-Gursum	Harerge		1,500	4,500	46,300	52,300
20 Abobo-Gog	Illubab	150,000	45,000	100	22,900	218,000
21 Gebre Dima	Illubab	50,000	82,000		33,000	165,000
22 Godere	Illubab	40,000	100,000	500	19,500	160,000
23 Sele-Anderacha	Illubab	100,000	115,000	700	9,300	225,000
24. Sibo-Tale Kobo	Illubab	28,000	50,000	1,900	20,100	100,000
25. Sigmo Geba	Illubab	67,700	190,000	23,000	20,000	280,000
26. Yayu	Illubab	20,000	100,000	300	29,700	150,000
27 Yeko	Illubab	10,000	100,000	500	11,500	122,000
28 Wangus	Illubab	329,900			85,100	415000
29 Mesengo	Illubab	292,350		650	32,000	325,000
30 Abelti-Gibe	Keffa		4,700	1,300	4,000	10,000
31. Babya-Fola	Keffa		45,000	900	28,400	74300
32 Belete-Gera	Keffa	76,500	35,200	1,100	35,700	148,500
33 Bonga	Keffa	7,000	10,000	2,100	142,300	161,400
34 Gura Ferda	Keffa	80,000	35,100	800	224,100	140,000
35 Tiro Boter Becho	Keffa	16,000	23,300	2,300	44,200	85,800
36 Butagira	Shewa			1,600	13,400	15,000
37. Chilmo-Gaje	Shewa		2,000	800	23,200	26,000
38 Gedo	Shewa	2,000	3,000		5,000	10,000
39 Jibat-Mute-	Shewa		5,000		33,500	38,500
40 Menagesha-Suba	Shewa		3,600	1,300	4,900	9,800
41. Wof-Washa	Shewa		2,000	4,200	2,700	8,900
42. Yerer-Dire- Gebicha Zukuala	Shewa	300	3,800	1,700	3,800	9,600
43. Anferara-Wadera	Sidamo		13,000	3,700	89,900	106,600
44 Bore-Anferara	Sidamo		33,000	1,400	182,900	217,300

Name of forest	Region	High Forests		Planta-tions	Other Land	Total Area
		Slightly disturb	Heavily Disturb.			
45. Megada	Sidamo	5,000	10,000	1,300	4,500	20,800
46 Negele	Sidamo		12,000	300	16,300	17,800
47. Yavelo-Arero	Sidamo		8,000	150	41,750	49,900
48. Des-A	Tigraye				20,000	20,000
49 Chato-Sengi-Dangeb	Welega		5,000	60	39,800	44,860
50 Gegeda	Welega	20,000	20,000	1,000	96,400	137,400
51 Gidame	Welega		10,000		7,000	17,000
52 Jurgo-Wattu	Welega		15,000	200	4,700	19,900
53. Komto Waja Tesge	Welega		1,000	1,200	6,900	9,100
54. Konchi	Welega	10,000	5,000		8,000	13,000
55. Linche Dali Gewe	Wello		15,000		25,000	50,000
56. Denloro	Wello		2,300		3,000	5300
57. Gumburda Grakas	Wello		11,500	2,200	12,300	26,000
58 Yegof-Erike	Wello		2,800	8,400	6,800	18,000
Total		13,865,500	1,385,200	84,860	1,921,250	477,860

Forestry Statistics

Annex 3: Forestry's Contribution to GDP and the Agricultural Sector at Current Factor Cost (million Birr)

Year	GDP (million Bir)	Agricultural Sector (Million Birr)	Forestry (million Birr)	Share in GDP (%)	Share in Agriculture Sector (%)
1980/81	8,096.6	4,071.5	189.2	2.3	4.6
1981/82	8,296.6	4,061.8	200.4	2.4	4.9
1982/83	9,082.7	4,388.7	217.5	2.4	5.0
1983/84	8,943.5	4,070.2	224.3	2.5	5.5
1984/85	8,910.5	3,915.8	236.3	2.7	6.0
1985/86	9,816.7	4,370.4	238.1	2.4	5.4
1986/87	10,227.0	4,361.6	249.3	2.4	5.7
1987/88	10,571.8	4,307.6	264.1	2.5	6.1
1988/89	11,121.9	4,594.7	280.2	2.5	6.1
1989/90	11,219.7	4,699.6	298.7	2.7	6.4
1990/91	12,383.6	5,841.4	347.6	2.8	6.0
1991/92	12,420.4	6,229.0	406.2	3.3	6.5

Source Ministry of Planning and Economic Development

Annex 4: Total Value of Exports and Imports, and Export and Import of Forest Products (1970-1985)

Year	Total Imports (million Birr)	Total Exports	Imprt of Forest Products ('000 Birr)	Export of Forest Products
1974/75	613.1	478.3		26.6
1975/76	736.7	603.9	0.2	31.1
1976/77	810.9	722.0		
1977/78	1,080.8	640.9		
1978/79	1,174.6	873.9	48.8	1,148.8
1979/80	1,493.3	879.1	134.9	854.6
1980/81	1,526.6	805.1	13.9	0.1
1981/82	1,623.4	836.3	1,071.9	747.9
1982/83	1,813.3	833.0	218.9	
1983/84	1,951.1	863.6	1,319.7	
1984/85	2,046.4	699.2	2,464.9	

Source CSA, Ethiopia. Statistical Abstract, 1988

Annex 5: Forestry's Contribution to National and Agricultural Employment

Year	National (million)	Agriculture (million)	Forestry ('000)	% of National	% of Agriculture
1978/79	15.9	12.7	219.3	1.4	1.7
1979/80	15.4	12.3	240.8	1.6	2.0
1980/81	15.8	12.7	229.4	1.4	1.8
1981/82	16.3	13.0	281.0	1.7	2.2
1982/83	16.7	13.4	248.6	1.5	1.9
1983/84	20.2	16.2	238.8	1.2	1.5
1984/85	20.7	16.6	490.1	2.4	2.9
1985/86	21.3	17.1	405.1	1.9	2.4
1986/87	21.9	17.6	558.6	2.5	3.2
1987/88	22.0	17.6	498.0	2.3	2.8
1988/89	22.7	18.2	506.4	2.2	2.8

Source National Resources Conservation and Development Main Department, Annual Reports; CSA, Ethiopia Statistical Abstracts; Office of the Central Committee for Central Planning, Population and Development Bulletin Various years

Annex 6

PROCLAMATION NO.94/194 TO PROVIDE FOR THE CONSERVATION, DEVELOPMENT, AND UTILIZATION OF FORESTS, 28th MARCH 1994

WHAREAS the conservation, development and sustainable utilization of forests play a decisive role in combating the grave and alarming situation in soil erosion and in arresting the expansion of desertification and ecological imbalance;

WHEREAS extensive forest development and conservation undertaking significantly contribute to the enhancement of the economic development of the country and towards satisfying the needs of the society;

WHEREAS it is necessary to consolidate existing lows and provide for the inclusion therein provisions that further the better conservation, development and utilization of forest resources;

WHEREAS the sustainable utilization of the country's forest resources is possible through the participation of the people and benefit sharing by the concerned communities as well as by making forest policies and programs to be conducted in conformity with other economic sectors particularly agricultural development;

NOW THEREFORE, in accordance with Article 9(d) of the transitional period Charter, it is hereby proclaimed as follows;

PART ONE

GENERAL

1. Short Title

This proclamation may be cited as the "Forestry Conservation, Development and Utilization Protection No 94/1994".

2. Definitions

Unless the context otherwise requires, in the Proclamation:

1. "Ministry" means the Ministry or Minister of Natural Resources Development and Environmental Protection.

2. "Region" means a national regional self government established pursuant to proclamation to provide for the establishment of National/Regional self-Government Proclamation No.71/1992.

3. "Forest" means a community of plants either naturally grown or developed by planting and in any respects are trees and other plants having woody charter.

4. "Tree" means any woody plant regardless of its species, age or size including bamboo, reds and palms as well as other plants to be designed as "trees" by the Ministry.

5. "Forest land" means a land which is to be demarcated for the purpose of forest development and conservation in which naturally grown or planted trees and other woody plants are found including barren land found on steep slopes.

6. "State Forest" means a forest designated as State forest by a regulation to be issued by the Council of Ministers, upon the recommendation of the Ministry and that ate given special consideration so as to protect the genetic resources or conserved to keep the echo-system with a program that covers mote than one region.

7. "Regional Forest" means a forest designated a Regional Forest by the official Gazetta of the region which is not either a state or private forest and found within a specific region or developed by the said region.

8. "Protected Forest" means a forest or a forest land to be demarcated in order to make it free form human or animal interference for the purpose of protection of the environment and genetic resources.

9. "Private Forest" means a private forest developed by any person and includes a forest development by peasant association to by an association organized by private individuals.

10. "Forest Product" means any product which is obtained from a whole tree or part there of or any primary woody products processed manually or industrially.

11. "Person" means any natural or juridical person.

3. Types of Forest ownership

There shall be the following types of forest ownership:

1. State Forest
2. Regional Forest, and
3. Private Forest

PART TWO

CONSERVATION AND DEVELOPMENT OF FORESTS

4. Designation, Demarcation and Registration of Forests

1. The Ministry shall designate, demarcate and register state and protected forests

2. The Minister shall establish and administer a central forestry register.

3. Every region shall designate and demarcate its regional and protected forests.

4. Without prejudice to provisions indicated under special laws, each regional shall register private forests within its regional boundary.

5. If in pursuance of this Article and Article 7, the designation and demarcation of state forest, regional forest or protected forest is likely to result in eviction of the peasantry, this can be effected only after the consultation and consent of the peasantry and subject to the assurance of their benefits.

5. Conservation, Development and Management of State and Regional Forest

1. The ministry shall encourage and render the necessary technical assistance towards the conservation, development and sustainable utilization of state and regional forests.

2. Without prejudice to sub-article 1 of this Article, the Ministry of the Regional, as appropriate, shall as regards state or regional forest:

   a) Prepare forest development program and monitor its implementation;

   b) Take appropriate preventive measures to ensure that the forest its free form pests and forest disease;

   c) Facilitate the construction of access roads and other service facilities within the forest necessary for the development and conservation of the forest;

   d) Cause the forest is protected from fires and other disasters;

   e) In a manner that inhabitants within the forest don not obstruct or hinder forest development, facilitate conditions that ensure their well-being in such a way that he inhabitants would be beneficiaries form the development,

f) For a sustainable utilization of forest resources, and to administer the same in accordance with forest management procedures, hence provide appropriate technical and related assistance not only to provide sanctuary to wildlife and protect forest echo-systems form imbalance, but also ensure the conservation of bio-diversity.

g) Rehabilitate endangered indigenous species;

h) Collaborate with appropriate bodies towards the strengthening of conservation, development and management of forests.

6. Conservation and Development Private Forests

1. Without prejudice to the overall policy of central government, the Ministry of reach region shall facilitate donations and provide technical assistance towards the development of private forests.

2. Owners of private forests shall have the duty to;

a) develop forests in a sound manner and replace trees made use of, in different ways.

b) notify the Ministry of the appropriate regional body on forest pests and disease:

c) take the necessary measures to ensure that the forest is free form pests and disease:

d) ensure that the forest is protected form fire and other hazards; and

e) implement the overall directives issued by the Ministry on environmental protection and/or those pertaining to catchments, unique habitats as well as endangered tree species and forest communities within a region.

7. Protective forests

1. The Minister of the appropriate regional body, when deemed necessary, may designate any forest as " Protected forest" so that any tree species, bushes and other plants are developed and protected with the object to:-

a) Conserve the soil from desiccation, erosion and degradation as well as maintain and improve soil fertility;

b) protect and improve the status of water bodies, sources of rivers and catchments;

c) control floods;

d) protect rare or endangered endemic plant, animal and bird species, and genetic resources in general and

e) conserve unique and representative habitats or natural resources.

2. A forest land designated as "protected forest'" with little or no plant cover will be protected and conserved; and when necessary afforested in accordance with the programs to be issued by the Ministry or the Region.

8. Prevention of Forest Fire

1. Persons who inhabit and work in the forest have the responsibility to, prior to starting a fire, take all necessary precautions by removing all inflammable materials from their surroundings so as to prevent the spread of forest fire.

2. Any person who is aware of the occurrence of forest fire shall have the duty to immediately report the same t the appropriate regional body or the ministry.

3. In case of forest fires, the appropriate regional body has the duty to take the necessary measure by coordinating and mobilizing any government and private body as well as the community so as to extinguish such fires.

PART THREE

UTILIZATION OF FOREST

9. Utilization of State and Regional Forests

1. State and regional forests shall be utilized in accordance with the management plan approved by the Ministry or the appropriate regional body.

2. State and regional forests shall be utilized pursuant to sub-article 1 of this article by;

a) the central government or regional organizations; of

b) concessionaires.

3. Notwithstanding the provisions of sub-articles 1 and 2 of this Article, the inhabitants may in accordance with the management plant and directive to be issued by the Ministry or appropriate regional body utilize state or regional forest products in an amount necessary to satisfy their ordinary domestic needs by paying appropriate fees.

10. Utilization of Protected Forest

Notwithstanding Article 13/1/b of this proclamation, the appropriate body may allow forest products, grass and fruit to be harvested as well as beehives to be kept in protected forests.

PART FOUR

MISCELLANEOUS PROVISIONS

11. Research and Training

The Ministry shall;

1. Undertake or allow research to be undertaken for the conservation, development and utilization of forests as well as to promote the conservation of bio-diversity and genetic resources.

2. Ensure the training of senior and junior professional as well as technicians in adequate number for the development and management of state and regional forest and provide on the job training.

3. Cooperate on the training programs conducted by the regions; and

4. promote the heightened awareness in environmental protection and ensure its ultimate implementation.

12. Transporting and Storage of Forest Products

1. Except for those forest products specially indicated in the directive issued by the Ministry, no person shall transport or store forest products without holding a certificate of origin and destination issued by the Ministry or the appropriate regional body or without possession of a document testimony to his/her legal entitlement.