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**AGRICULTURAL DEVELOPMENT
AND FOOD SECURITY IN
SUB-SAHARAN AFRICA (SSA)**

Building a Case for more Public Support

The Case of Ethiopia

Prepared for the

**Policy Assistance Unit of the
FAO Subregional Office for
East and Southern Africa**

by

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ACRONYMS

ADDP	Ada District Development Project
ADLI	Agricultural Development-Led Industrialization
AMC	Agricultural Marketing Corporation
CADU	Chilalo Agricultural Development Unit
COMESA	Common Market for Eastern and Southern Africa
CSA	Central Statistical Authority
DSE	Dietary Supply Energy
DPPC	Disaster Prevention and Preparedness Commission
EEA	Ethiopian Economic Association
EEPRI	Ethiopian Economic Policy Research Institute
EFSR	Emergency Food Security Reserve
EGS	Employment Generation Schemes
EWS	Early Warning System
FAO	Food and Agriculture Organization of the United Nations
FSCO	Food Security Coordinator
FSSC	Federal Food Security Steering Committee
FEWS	Famine Early Warning System
GDP	Gross Domestic Product
HIV/AIDS	Human Immuno Virus/Acquired Immunity Deficiency Syndrome
IMF	International Monetary Fund
MEDAC	Ministry of Economic Development and Cooperation
MoFED	Ministry of Finance and Economic Development
MT	Metric Ton
MPP	Minimum Package Project
MASL	Meter Above Sea Level
NPDPM	National Policy on Disaster Prevention and Management
NDPPS	National Disaster Prevention and preparedness Strategy
NDPPF	National Disaster Prevention and Preparedness Fund
NOAA	National Oceanographic and Atmospheric Agency
PAs	Peasant Associations
PADEP	Peasant Agricultural Development Extension Program
RDPPC	Regional Disaster Prevention and Preparedness Commission
REFA	Revolutionary Ethiopia Farmers Association
REYA	Revolutionary Ethiopia Youth Association
REWA	Revolutionary Ethiopia Women's Association
RRB	Relief and Rehabilitation Bureau
RRC	Relief and Rehabilitation Commission
RTPs	Relief Transport Projects
SAP	Structural Adjustment Program
SDPRP	Sustainable Development and Poverty Reduction Strategy Program
SNNP	Southern Nations, Nationalities and Peoples

TGE	Transitional Government of Ethiopia
UNDP	United Nations Development Program
VAM	Vulnerability Analysis and Mapping
WADU	Wolamo Agricultural Development Unit
WDDPC	Woreda Disaster Prevention and Preparedness Commission
WFP	World Food Programme
WTO	World Trade Organization
ZDPPC	Zonal Disaster Prevention and Preparedness Commission

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FOREWORD

It has been the case that most African Governments have been taxing farmers and subsidizing urban consumers, while at the same time doing very little in terms of policy and investment to favour the rural sector. The ratio of investment to GDP in most Sub-Saharan Africa (SSA) has been well below the ratios attained in Latin America and Asia. Similarly, Africa's private sector investment in agriculture has been curtailed by a combination of financial capacity, and lack of security, financial services and regulatory framework.

However, Africa needs to investment more and encourage increased private sector investment - both domestic and external - to ensure agriculture based economic growth and sustain it. This notion seems to have been understood by African Governments when the Heads of State and Governments have, in approving the New Economic Partnership for Africa's Development (NEPAD) Comprehensive Africa Agriculture Development Programme (CAADP) at their Summit in Maputo in 2003, committed themselves to increase resource allocation to agriculture to 10 percent of the national budget by 2008. In this context, the Policy Assistance Unit (SAFP) of the FAO Subregional Office for East and Southern Africa, in collaboration with the Agriculture Policy Support Service (TCAS) of the FAO Policy Assistance Division (TCA) embarked in 2004 on a study to analyze the status of food security and agricultural development.

Implementing the Maputo commitment of budgetary increase is however likely to be difficult in view of resource constraints of counties against daunting challenges, especially in the public service sectors. One of the main objectives of the study was therefore to provide objective rationale why agriculture should be supported in the African context.

The study had four components: (a) preparation of 10 country studies representing Central, East, West and Southern Africa, (b) preparation of a background document that looks into the conceptual issues and development paradigms and the prioritization of agriculture, review of relevant lessons from developed and developing countries who have successfully eliminated food insecurity, (c) organization of high-level workshop to discuss the findings of the study and (d) preparation of a report based on the above as well as extensive desk based research by Senior FAO Officers. The paper represents one of 10 case studies.

EXECUTIVE SUMMARY

Ethiopia produces less food per person than three decades ago and remains one of the most malnourished and food deficit regions in the world. The Ethiopian economy is among the most vulnerable in sub-Saharan Africa. It is heavily dependent on the agricultural sector, which has suffered from recurrent droughts and extreme fluctuations of output. Agricultural production has been growing at a slower rate than the population growth rate, leading to a decline in per capita agricultural production. As a result, the number of food insecure households in Ethiopia has been increasing over time.

The main objectives of the study were twofold: to describe and analyse domestic food production and food security situation of the country; and to present both quantitatively and qualitatively the impact of food aid on long term food security and agricultural development efforts of the country. The study used various types of analysis including a descriptive and econometric analysis of both cross-section and time series data.

Description and Analysis of Food Security

The per capita food supply has not shown any substantial improvements over the last four decades. For instance, it declined from an average of 128.08 kilogram per head in 1961-1974 to 125.41 kilogram per head in 1992-2001. The figure for the period 1975-1991, a period characterized by poor management of the economy, internal conflict and drought, was only 119.99 kg. Per capita food availability improved in the 1990s but continued to fluctuate and remained well below the recommended rate.

Ethiopia received over one million metric ton of cereals in 1999 (1.03 million MT), 2000 (1.21 million MT) and 2002 (1.22 million MT). Cereal aid, which accounted for about 13% of the total cereal production in 1999, rose to about 19% in 2002. Food aid dropped to one of the lowest levels in 1996 and 2001. By contrast, the flow of food aid was consistently high (relative to total food supply) in the 1980s. The highest amount of food aid, accounting for some 27% of the total domestic food production, was received during the severe drought of 1984.

Domestic demand for cereals is projected to increase to 10.14, 11.59 and 13.13 million tons in 2005, 2010 and 2015, respectively, assuming the same rate of growth rate (2.5% per annum on the average) throughout. Domestic production, on the other hand, is projected to increase to 9.20 million metric tons in 2005, 10.26 million metric tons in 2010 and 11.43 million metric tons in 2015 (assuming a growth rate of 2.2%). The cereal gap is expected to increase from about 0.94 million metric tons in 2005 to 1.33 million metric tons in 2010 to 1.70million metric tons in 2015. However, the shortfall will be much greater if production is affected by major drought. The gap will also widen further if daily calorie intakes were to improve (above the minimum requirement levels).

There is little doubt that Ethiopia cannot expect such huge food gap to be met through foreign aid or commercial import. Not only is the future of food aid uncertain (partly due to WTO restrictions on subsidies in developed countries that is bound to reduce surplus and hence food

aid), but the cost of handling and receiving food aid is also very high. Solutions must be sought in accelerated growth of food production if the country is to survive the threat of recurrent famine.

Regression results of the determinants of rural food consumption indicate that there is strong relationship between demographic characteristics and the level of household food consumption. In other words, households with larger family size are more likely to suffer from consumption shortfalls or fall into poverty than those with smaller family size. The results of the study indicate that measures used to reduce dependency at household level will help increase food consumption. In addition, reducing fertility will have a beneficial impact on women's health, labor force participation and productivity. The results of the analysis also show that education is important in bringing about sustained growth and increase food consumption at household level. The impact of education in increasing food consumption and reducing food insecurity is significant in rural areas, i.e. households with higher levels of literacy are more likely to earn more income and enjoy increased food consumption than those households with lower levels of literacy. Households with multiple income sources are also better off in terms of food consumption and are less vulnerable to adverse economic and other shocks. Hence, investment in education and creation of alternative employment opportunities are among the key measures necessary to increase food consumption and reduce food insecurity. Although not captured by the regression model, HIV/AIDS has emerged as one of the major causes of vulnerability in both urban and rural areas.

Most of the food import is secured through aid (food aid) in Ethiopia. The country cannot afford to import the large quantity of food coming to the country every year. Hence, food aid has been increasing since the mid 1990s, although fluctuating from year to year. Ethiopia received over one million metric tons of cereals in 1999 (1.03 million MT), 2000 (1.21 million MT) and 2002 (1.22 million MT). Cereal aid, which accounted for about 13% of the total cereal production in 1999, rose to about 19% in 2002. Of the total food aid, more than 70% was in the form of emergency food aid until the 1990s. Project and programme food aid account for the remaining 30% of the total food aid.

Food insecurity in Ethiopia has several dimensions. Households living in drought prone areas are more vulnerable than those living in high potential areas. More generally, households who do not have land, oxen, and those headed by female households, elderly, and newly established settlers are food insecure for the most part. In the urban areas, unemployed people, single-family-headed households with dependents, elderly people living alone, and destitute and homeless people are food insecure.

The proportion of people affected by drought declined to less than 8% between 1994/95 and 1997/98 but rose to nearly 17% in 1999/00. The drought in 2002/03, believed to be one of the worst since 1984/85, affected over 14 million (22% of the total population). Food production was estimated to have declined by 20 percent and a total of 1.7 million tons of food aid was required to save lives. The US alone gave US\$ 500 million worth food aid in 2002/03.

The proportion of food-aid dependent population was highest in Tigray (on average 31% during the period 1994-2003) followed by Somali (8%), Afar (17%) and Benishangul-Gumuz-Gambella (16%). The percent of food insecure population increased significantly during poor agricultural years such as 2000 and 2003.

According to recent evidences, wasting (which is a short-run indicator of child malnutrition) has not shown any improvement: it has rather tended to increase, from 9.2% in 1995/96 to 9.6% in 1999/00. In rural areas, child wasting increased from 9.5% in 1995/96 to 9.9% in 1999/00. Child stunting (a long-run measure of child malnutrition) declined from 66.6% in 1995/96 to 56.8% in 1999/00. It decreased in both rural and urban areas but remained very high even by the standard of African countries.

On aggregate, poverty indices have tended to decline in 1999/2000 as compared to 1995/96. For instance, the head count poverty index declined from 45% in 1995/96 to 44.2% in 1999/00 at national level. The decline for rural areas was from 47.5 to 45.4% while for urban areas the index rather increased from 33.2 to 36.9% over the same period. However, there are no statistically significant changes in the head count indices of rural, urban as well as national poverty between the two periods. The poverty situation is very high, with no sign of significant improvement over the years.

Importance of Food and Agriculture in the Ethiopian Economy

Agriculture remains the main activity in the Ethiopian economy. It is the most important contributor to the country's GDP: it accounted for, on the average, 65.5%, 52.7% and 47.1% of the GDP during 1960-1973, 1974-1991 and 1992-2002, respectively. Agriculture accounts for about 90% of the total export earnings of the country. About two-third of the total foreign exchange earning is generated from coffee export. But the sector, which accounted for a lion's share of the national economy, made little contribution to the growth of the economy. Decomposing the growth of the economy into different sectors showed that agriculture contributed only 0.78% of the growth of the national economy while industry and services contributed 0.35% and 1.50%, respectively, during the period 1960-2002. The growth of the economy was largely attributed to the growth of the service sector. The growth in the service sector was in turn attributed to expansion in administration and defence expenditures.

Agricultural production is dominated by smallholder households which produce more than 90% of agricultural output and cultivate more than 90% of the total cropped land. Smallholders drive their income either in cash or through own-consumption from agricultural production. The agricultural sector consists of crop, livestock, fishery and forestry sub-sectors. Crop production is the dominant sub-sector, accounting for more than 60% of the agricultural GDP followed by livestock which contributes 30% of the agricultural GDP. The contributions of forestry, hunting and fishing do not exceed 10%. Between 1980 and 2001, crop yields have tended to stagnate, despite the government's effort to expand the use of fertilizer and increase the coverage of extension. Increase in production was achieved mainly through area expansion, required cultivation of hillsides with high slopes, reducing or eliminating fallow land, and converting pasture, woodland and forest areas into farmland, with obvious negative implications for

sustainable agriculture. Despite its potential, the livestock sub-sector has remained undeveloped because of rampant diseases and acute shortage of feed, among others.

Ethiopia has a large body of inland waters, comprising eight principal lakes, numerous rivers and reservoirs. These water bodies host a significant wealth of fish resources. The fish production potential of these water bodies is estimated at about 30,000 – 40,000 metric tons (MT) per year. Nonetheless, the share of fishing in agricultural GDP is insignificant. Current annual fish production in Ethiopia is estimated at about 4,400 MT, which accounts for less than 15 percent of the available water bodies fish potential. A large part of the country has no access to lakes or rivers with fishing potential. Fish harvesting and processing technologies adopted by fishermen are traditional, leading to low quality and quantity of fish catch.

At the turn of the last century, around the year 1900, the forest cover in Ethiopia was 40%, but recent estimates put it at only 3.6%. It is estimated that the current rates of depletion of forest cover is about 100,000 hectares per year. At this rate of depletion, it will only take 15 years from now to exhaust all the forest covers. The primary cause of deforestation is cutting trees in order to open up new farmland to feed the ever-growing population. Widespread use of wood as fuel has also contributed to the deforestation. Making and selling charcoal is a major non-farm employment along the main roads of the country.

There are a number of obvious problems, which have hindered the development of agriculture, including erratic weather conditions, environmental degradation, rapid population growth and declining farm size, technological gaps, inadequate markets, and infrastructural problems. But agriculture also faces many less obvious but critical problems. Limited role of civil societies in policy formulation and implementation is one such constraint. Lack of adequate mechanism to articulate the interest of peasants and ensure their active participation in planning and execution of development projects is one of the major reasons for lack of sustained development in Ethiopia. Independent farmers' unions, interest groups, union of waged workers and associations/network of craft workers have never been part of the rural life. In the absence of civic organizations to protect their interest, interactions with public officials have placed a large burden on poor people. They are unable to take advantage of new economic opportunities or engage in activities outside their immediate zone of security, i.e. subsistence farming.

Strategies and Support to Agriculture

The effort to develop the rural and agricultural sectors began in the 1960s with the launching of the comprehensive and minimum package agricultural projects in high potential areas using the free market policy framework. The Imperial regime introduced the first integrated rural development project, the Chilalo Agricultural Development Unit (CADU), in one of the high potential areas of the country, Arssi, in 1967. The project, CADU, aimed at a general socio-economic development including agronomic research, diffusion of research results, provision of modern farm inputs, marketing and credit facilities, promotion of cooperative societies, price stabilization, and training of local project employees. Based on the experience of CADU, a few other comprehensive package projects with similar objectives were initiated. The strategy lasted less than eight years as the Military government (which took power in 1974) declared the approach as elitist and capitalist-oriented and a new initiative was launched to transform the rural

areas along the socialist mode of production. The official policy in agriculture became expansion of state and collective farms and all rural lands became public property and private ownership of land was banned following the 1975 land reform. Land was distributed to tillers without compensation to former owners (landlords). The formation of Service and Producers' Cooperatives was highly encouraged. A villagization program, designed to bring distant households into small village clusters, was also initiated in the mid 1980s to expedite the process of collectivization. Both input and output markets were controlled through government parastatals that included imposing compulsory delivery quota of grain on farmers.

The communist experiment ended in 1991 with the introduction of a new development strategy called Agricultural Development Led Industrialization (ADLI) and the announcement of the market liberalization policy. ADLI emphasizes on the development of peasant agriculture and on making the agricultural sector the driving force of the national economy. At the heart of this strategy lies the attainment of food self-sufficiency and increase in the production of raw materials and thereby promote the linkage of the agricultural sector with the industrial sector. The main premises of the strategy are that agriculture acts as the springboard of the overall development process on account of its superior growth linkages; and it has also been widely recognized and accepted that Ethiopia cannot progress without strengthening of agricultural production and productivity. This strategy aims at improving the production and productivity of smallholder agriculture through generation, adoption and diffusion of new farm technologies in the form of improved inputs and farming methods.

Recognizing the complexity and intractable nature of poverty, the Government has prepared Sustainable Development and Poverty Reduction Strategy Program (SDPRP), which calls for empowering local community and demand-driven approach to technology generation and dissemination. The Government has also committed itself to the devolution of power to *woredas* (districts) and *kebeles* (villages) facilitating the direct participation of the people in growth and poverty reduction endeavours. Lack of independent grassroots organizations (e.g. association of producers (dairy, wheat, maize, etc.), farmers union, etc.) is perhaps the biggest challenge to the realization of the decentralization objective.

Despite the dominance and significance of agriculture in the overall economy, the level of government resources invested has been very much limited. Government expenditure in agriculture was, on average, 1.6% of GDP during the period spanning 1980-2001 and the trend increased only marginally from 1.3% in 1992 to 1.5% in 2001. The share of agricultural expenditure in the total government expenditure was also very low and depicted a fluctuating trend between 2% (the trough) 13% (the peak) for the period 1980/81-2001/02. The share of agriculture remained low but increased from an average share of 2.5% in 1980/81-1990/91 to 5.5% during post reform period (1991/92- 2000/01). The level of government expenditure in agriculture has not been commensurate with the sector's development requirements.

With the exception of the brief period between 1991/92 and 1996/97, defence absorbed that largest budget share. On average, 40% of the total recurrent expenditure (including grants) was spent on defence between 1980/81 and 1990/91 to fight rebel movements in different parts of the country. Because of the Ethio-Eritrea conflict, military expenditure accounted for about 37% of

the total recurrent expenditure during the period 1997/98 – 2000/01. Recurrent expenditure on education and training averaged 12.0% during the period 1980/81-1990/91, compared to 14.8% in the years 1991/92 to 2000/01. Expenditure on health accounted for 3.6% of the total recurrent expenditure in 1980/81–1990/91, compared to 5.0% during the period 1991/92-2000/01. The high cost of the civil war and the military conflict in Ethiopia has made it impossible to increase expenditure on pro-poor sectors such as agriculture, education and health.

The extent of farm production, productivity, level of farm income and investment in modern inputs are determined by the pattern of relative price of agricultural products. The role of price is particularly significant in an economy where attempts are made to move away from subsistence production. Available evidence indicates that the terms of trade between agriculture proxied by food prices and non-agricultural sectors represented by prices of DAP fertilizer, clothing and footwear and household equipments have been biased towards the non-agricultural sector (i.e. against agriculture). For instance, price index of food items has increased by about 12% during the period 1995-2000 while prices of DAP fertilizer and transport and communication increased by 76.6% and 65.2%, respectively.

Grain prices have rather declined in rural areas in recent years. Grain prices in surplus producing areas declined sharply, particularly in 2000/01 major season. For instance, the ratio of DAP to teff price increased from 0.55 in 1992 to 1.94 in 2001. In other words, only 0.55 quintal of teff (mixed) was required to buy 1 quintal of DAP in 1992, compared to 1.94 quintal in 2001. The change represents a 253% increase in the amount of teff required to buy a quintal of DAP in 2001 (as compared to 1992). Maize producers suffered the most as a result of the unfavourable price changes in recent years. In 1992, the cost of one quintal of DAP was only 1.23 quintals of maize. In 2001, farmers were forced to sell 8.2 quintals of maize to buy a quintal of DAP, representing a 670 percent increase over 1992. Producers were clearly faced with rising fertilizer prices on the one hand and declining output prices on the other hand.

It is believed that private investment has a vital role in the development of agriculture. The provision of inputs and credit services to farmers very much depends on strength of private dealers, transporters and financial institutions. Farmers equally need efficient and competitive markets and processing facilities to be adequately rewarded for their produce. But private investment is constrained by several factors in Ethiopia. Some of the major constraints include limited access to land for investment purpose, lack of finance, weak physical infrastructure, policy uncertainties (because of limited participation of the private sector in policy formulation and implementation, lack of networking and joint action within the business community, limited access to external finance, and uneven playing field due to party-affiliated companies.

Assessing the Impact of Food Import/ Aid Dependence

The model fitted to determine the effects of food aid on the economy indicates that a sustained 10% increase in food aid would entail a decline in producers' price for food grains by about 0.21% and 2.04% in the short-run and long-run, respectively. A continuous increase in food aid has a disincentive effect on domestic agricultural production, through depressing producers' prices, although the magnitude is not substantial. It also creates pressure on the demand for

foreign exchange earnings (for food import) which otherwise will be used for importing other goods.

With regard to the microeconomic effects of food aid, the results have shown that the effect of food aid on farm production is negative. Since most food aid in the country is delivered via food-for-work programs such as Employment Generation Scheme (EGS), diversion of labor from farm production to such activities seems to have resulted in loss of farm output, i.e. EGS competes with farm labor. The reason for the negative impact may also be associated with lack of motivation to undertake a proper management of the farm since lack of asset is the major criterion for receiving food aid.

The domestic cost of food aid appears to be substantial in terms of administration and transport costs as these costs are covered by the Ethiopian government. Government expenditure of food aid (in the form of operation cost and support) averaged US\$ 312.5 million per year and this represents 5.1% of GDP and 17.4% of total government expenditure during the period 1994-2002. This indicates that food aid has not only impacted negatively on the agricultural sector in terms of depressing local prices but it has also drained limited budgetary resources of the country. Food aid has also been costly to donors. Many donor agencies do not like to see an increasing amount of food aid being shipped to the same country on a continuous basis.

The process by which areas and households are selected to receive emergency food aid has been blamed for the limited impact of food distribution programs on nutrition. Targeting the real poor has not been easy as different districts apply different criteria in distributing relief: some give it to all households for the sake of social cohesion and generalized need, hence no one actually receiving sufficient quantities to have the intended effect, while others attempt to target the poorest of the poor using asset ownership as the major criterion. The amount of food aid received by most families (on a per capita basis) falls short of the minimum requirement or the international standards due to supply shortages in inappropriate targeting. General rations are also reduced at household level since families are often obliged to share with relatives and neighbors or sell part of the ration to protect productive assets (e.g. oxen) or to purchase other key goods and services (e.g. health care). It has reported that there were large errors of inclusion and exclusion in the selection of districts as well as households. The primary beneficiaries were found to be the relatively well-off and the poorest, with the middle two groups were excluded. The former group appears to be using its status and resources to influence food aid distribution. It has also been observed that livestock holdings are considered as the only criterion in many areas and a significant number of households sell livestock to qualify for relief distribution.

Pathways towards sustainable Agricultural Development and Food Security

There are many untapped potentials and options to bring about sustainable development in the country. The country is endowed with rich natural resources and large labour force. The land and climatic resources are suitable to grow a wide range of agricultural commodities. The agricultural sector spans diverse agro-ecological zones with corresponding diversity in crop production. Ethiopia has a substantial amount of water resources, though its distribution and

occurrences through time and space is erratic. The surface water potential amounts to over 110 billion cubic meters per annum.

Ethiopia has an important place in its richness and diversity of the flora and fauna and endemic plants. The number of Ethiopia's flora is estimated at over 6,000 species. The unique landscape and climate regimes have made the country a veritable island in the eastern Sahel. The country has also one of the largest livestock populations in Africa. Animals are primarily part of the mixed subsistence farming system, providing inputs (draught, transport and manure) to the cropping system and generate consumables and saleable products (meat, milk, manure, eggs, hides and skins).

The country needs to design and implement programs aimed at tapping its potential, transforming agriculture, breaking the cycle of famine and poverty and thereby eliminating dependence on food aid. The task of reversing the fortunes of the country calls for comprehensive and integrated measures. To begin with, the institutional environment must be changed to firmly establish fundamental political, social and legal rules that create the basis for efficient production, exchange and distribution. The institutions of the country must be able to protect productive resources and allow full participation of the public. Government commitment is needed to develop and facilitate the formation of institutions to ensure respect for the rule of law and efficient judiciary in rural areas. Strengthening protective and inclusive institutions is vital for asset creation and protection. This will also induce million of farmers to innovate and take the initiative to invest in sustainable production. The land policy should be revisited to remove insecurity and enhance transfer transactions so as to encourage consolidation (arresting fragmentation) and out-migration from densely populated areas. There is a consensus that tenure insecurity is a major factor behind the massive land degradation and desertification.

A significant rise in agricultural labor productivity and poverty alleviation would only come about as a result of widespread adoption of scientific agricultural techniques including improved seeds and chemical fertilizers using irrigation. The need for reducing the dependence on rainfall and mitigating volatility in crop production cannot be overemphasized in Ethiopia. It is important to increase yield and stabilize agricultural production via investment in irrigation. Effort should be made to contain costs and reduce environmental hazards of irrigation through improved designs and effective management, close attention to water conservation, soil conservation, soil conditioning and soil productivity, and careful selection of crops to be grown in order to maximize return. Agricultural research is needed to generate new technologies, introduce new crops and develop productive agronomic practices under irrigation. It should be stressed that Ethiopia has a comparative advantage (weather and proximity to major markets such as Europe and Middle East) in a number of high value horticultural crops.

But supply-side interventions would not help farmers if there no adequate markets and demand for their produce. Non-agricultural employment opportunities should be developed in order to ease population pressure in food insecure areas. No effort was made in the past to avert the build up of population beyond the carrying capacity of the land. Diversification of the economy away from uncertain agriculture towards more certain and productive non-agricultural sectors would not only make the economy less vulnerable but also remove the demand constraint for agricultural development. Cities are powerhouses for processing farm products and supplying

inputs to rural areas. Larger and expanding urban centers create better opportunities for agriculture and small enterprises to grow, innovate and expand. Measures are also required to take advantage of the regional market (e.g. COMESA), the Middle East, the EU, the Asian and the American markets.

A significant number of households have lost their valuable assets as a result of recurrent drought, severe land degradation, HIV/AIDS, etc. and are pursuing unsustainable livelihoods. In the absence of a national safety net program, food aid could be the only supplementary source of income for survival. However, the approach to food aid assistance must change to avoid dependency. In this regard, the twin track approach of FAO could be very useful: the approach combines (i) resource mobilization for agricultural and rural development to create opportunities for the poor and hungry to improve their livelihoods, with (ii) measures to meet the immediate food and nutrition needs of the seriously malnourished so that they can take advantage of such opportunities. For instance, food assistance could thus be combined with financial support and credit with the goal of establishing a sustainable livestock farm (e.g. small ruminants) in the case of poor female- and child-headed households as well as other poor households with labour shortages. Similarly, free or subsidized inputs could be provided for a specified period to time with the aim of increasing production and eventually enabling the family farm pay for itself.

Structural adjustment was introduced to stabilize the economy, but cuts in human capital development, agricultural research and extension, infrastructure and irrigation have detrimental long-term impacts on agricultural production and productivity growth. The future development of the country will critically depend on a flexible, educated and healthy workforce. Demographic transition to reduce population growth will also require education, especially for women. Existing public expenditure patterns should also be closely reviewed to channel resources to agriculture where the payoff in terms of poverty alleviation and sustainable development is very high. In this regard, the huge expenditure on administering, transporting and distributing imported relief food needs to be shifted to investment activities. A substantial amount of budgetary resources could also be secured (for rural and agricultural development) by concluding a lasting peace agreement with neighboring countries, hence reducing defense budget.

As one of the poorest countries in the world Ethiopia cannot be expected to exit from the poverty trap it finds itself in on its own solo effort. National saving rates are too low to mobilize sufficient resources for investment in capital formation. Annual food shipment and various grants have not made an impact on the country's chronic and complex problems. The donor community must show more commitment and support investment aimed at addressing the root causes of the problem, rather than the symptoms. Donors should rather step up their development assistance to complement public and private investment in agriculture. A Big Push through well-targeted infusion of foreign assistance can end the poverty trap. The aim should not be 'for endless flows of increased aid, and not for aid as simple charity, but rather for increased aid as an exit strategy from the poverty trap.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 The problem

Africa faces the world's gravest hunger problems, and these problems are getting worse. According to the Food and Agriculture Organization (FAO) estimates, 186 million Africans are going hungry today. Even more disturbing, Africa is the only continent where hunger is projected to worsen over the next two decades. Currently, sub-Saharan Africa produces less food per person than three decades ago and remains one of the most malnourished regions in the world (Mulugeta and Etalem, 2003; Degefa, 2002).

The Ethiopian economy is among the most vulnerable in sub-Saharan Africa. It is heavily dependent on the agricultural sector, which has suffered from recurrent droughts and extreme fluctuations of output. Agricultural production, for instance, has been growing by about 1.4% during 1960-2000 while population was growing by about 2.7% per year, leading to a sharp decline in per capita agricultural production. According to the UNDP, the proportion of people who are absolutely poor was 44% in the year 2001 and levels of poverty showed significant variation between rural and urban areas and across regional states. Income distribution also seems to be more uneven in both rural and urban areas than other Sub-Sahara African countries: the overall consumption Gini coefficient was 0.572 in 2000, signaling a polarization of the society. Income inequality appears to be higher in urban areas than in rural areas. Poverty situation of the country has shown no sign of improvement over time.

The number of food insecure households has been increasing since the 1960s. The annual food deficit increased from about 0.75 million ton in 1979/80 to 1.4 million tons in 2000 (Mulat 1999; Mulugeta and Etalem, 2003). The country has been receiving on average 700 thousand tons of food aid per annum in the last fifteen years. Increasing reliance on food aid underscores failure of the country to initiate a sustainable path of development.

The available evidence suggests that the support provided to the agricultural sector has been less than satisfactory (Mulat 1999; Taye 1992). Government expenditure in agriculture and natural resources (in relation to total expenditure) has been declining throughout the 1990s. The agriculture sector, despite its dominance in the economy, has been receiving little support and budgetary injections in the last four decades. Limited support to agriculture has severely constrained agricultural development. The problem is further compounded by land degradation and climatic shocks. These and other factors are responsible for the country's faltering struggle to grow even at a rate of the population growth.

Despite the complex problems, Ethiopia has a great potential for increasing agricultural production and productivity and thereby ensuring food security. The country is well endowed with potentially cultivable land resources, has an immense untapped irrigation and hydroelectric potential, has diverse climatic features to grow a large variety of crops and sustain pastoral activities, and has the largest livestock population in Africa. The question then is why the country cannot tap its potential, instead of relying on food aid? Why is the agriculture, despite its lion's share in the economy, attracting less support from government and other development partners?

What are the impacts of food aid dependence on Ethiopian agriculture sector? And what needs to be done to ensure food security and foster sustainable agricultural development in the country?

1.2 Objectives of the Study

The central objective of this study is to explore how Ethiopia could disentangle itself from food aid dependency and attain a sustainable food security, agricultural development and economic growth. The specific objectives of the study are to:

- Describe and analyse domestic food production, flow of food aid/imports and food security situation of the country.
- Analyse the evolution and trends of support provided to the development of the agricultural sector.
- Assess (quantitatively and qualitatively) the impact of food aid on long term food security and agricultural development of the country
- Recommend concrete policy and support options.

1.3 Methodology of the Study and Data Sources

In order to address the stated objectives, both descriptive and econometric techniques are employed. In doing so, trend analysis of time series data both at national and regional levels have been employed to assess the pattern of selected variables. In addition, econometric modelling has also been used both at national as well as household level with the objective of examining the impact of food aid on the agricultural sector. These methods are used to analyse the link between food aid on the one hand and food security, agricultural production and productivity on the other hand.

The data for have come from various sources including National Income Account Statistics, rural and urban household surveys conducted by the Department of Economics of Addis Ababa University, report on Household Income, Consumption, and Expenditure surveys (1995/96 and 1999/2000), National Labour Force Survey (1999), Agricultural Census and Sample Surveys, Population and Housing Censuses, Welfare Monitoring Surveys, and Population Censuses etc. of the Central Statistical Office and various publications the Disaster Prevention and Preparedness Commission (DPPC) and the Ministry of Finance and Economic Development (MOFED).

1.4 Organization of the Study

The study is organized in six Chapters. Chapter 2 provides description and analysis food security situation. Chapter 3 discusses the importance of food and agriculture sector and public support. Chapters 4 and 5 deal, respectively, with the impact of food aid/ import dependence and pathways towards sustainable agricultural development and food security. Finally, summary and conclusions of the study are given section 6.

CHAPTER 2: DESCRIPTION AND ANALYSIS OF FOOD SECURITY SITUATION

2.1 Description and Analysis of Food Supply and Demand

Emerging evidence indicates that per capita food supply has declined since the 1960s: from an average of 128.08 kilogram per capita in 1961-1974 to 125.41 kilogram per capita in 1992-2001. The figure was 119.99 for the period 1975-1991; a period characterized by lower per capita food supply due to poor management of the economy, internal conflict and drought. The per capita food supply has not shown any substantial improvements over the last four decades.

Despite substantial ups and downs, particularly in the 1990s, per capita food availability has increased from 113.26 kg in 1992 to 149.33 kg in 2001, representing an average growth rate of 3 percent per year during this period. In the 1990s, the lowest per capita food supply was recorded during the drought year of 1993, amounting to 110.13 kg (Table 2). It should be noted that the minimum weighted average food requirement per head, per day for the country is about 2 100 calories, i.e. 225 kg of grain per head, per year (MEDaC, 1999). As indicated in Figure 2, domestic food production has never met the minimum food requirement, set at 2 100 calories per capita (Figure 2.1).

In terms of calorie per capita, the daily calorie per capita supply of cereals increased from 1056.20 per day in 1992 to 1409.9 in 2001. The daily calorie per capita supply of vegetables, however, declined from 6.4 in 1992 to 5.2 in 2001. Similarly, the daily calorie per capita of animal products has shown a downward trend in the 1990s: it declined from 102 in 1992 to 96.5 in 2001 (Figure 2.2).

Table 2.1: Trends in food availability

Description	1961-1974	1975-1991	1992-2001	1961-2001
Food supply/head/year	128.11	119.99	125.41	124.08
Daily calorie per capita (cereals)	1160.64	1106.80	1177.10	1142.33
Daily calorie per capita (vegetables)	128.11	119.99	125.41	124.08
Daily calorie per capita (animal products)	153.69	120.92	87.62	123.99

Source: Own computation from FAOSTAT

Figure 2.1: Trends in per capita food availability and requirement (kg/head/year)

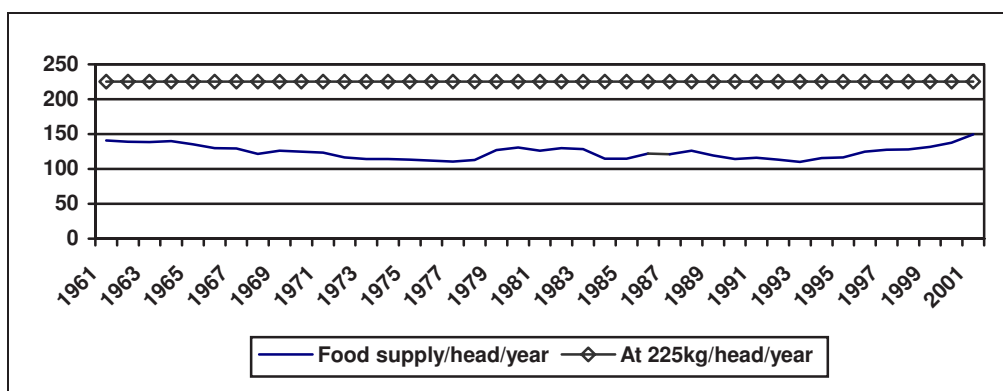
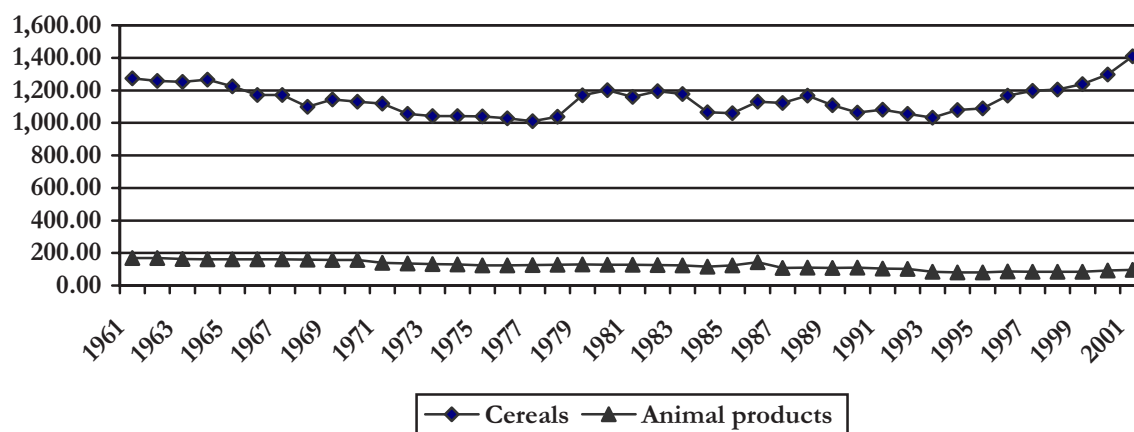
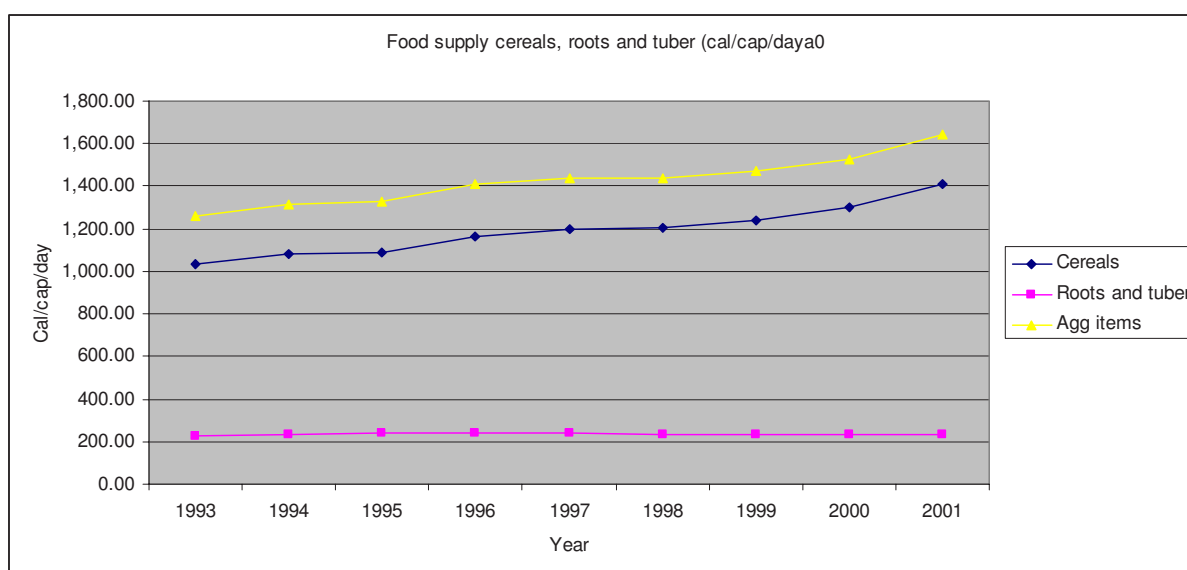


Figure 2.2: Daily per capita calorie supply of cereals and animal products



A significant proportion (62%) of the total calorie intake in Ethiopia comes from cereals, followed by roots and tuber (22.1%), pulses (11.5%) and animal products (4.6%) (Figure 2.3 for cereal and roots and tubers). The importance of cereals has also increased in recent years with stagnation in the production of roots and tubers and decline in consumption of animal products (Figure 2.2 above). Increasing dependence on cereals could reflect more vulnerability (since cereals are more prone to weather fluctuations than roots and tubers) and less balanced diet.

Figure 2.3: Food supply by source (cereals, roots and tuber) (cal/cap/day)



Source: FAOSTAT

It should be noted that most of the increase in per capita daily calories in the 1990s is attributable to an increase in availability of cereal products via domestic production and import (which includes food aid). Although fluctuating, the amount of food import has been increasing over time both in volume and value terms. It increased from 119.6 million US\$ in 1993 to 237.78 million US\$ in 2001 and 175.2 million US\$ in 2002. Overall, the value of food imports (excluding fish) increased at an average annual growth rate of 1.7%.

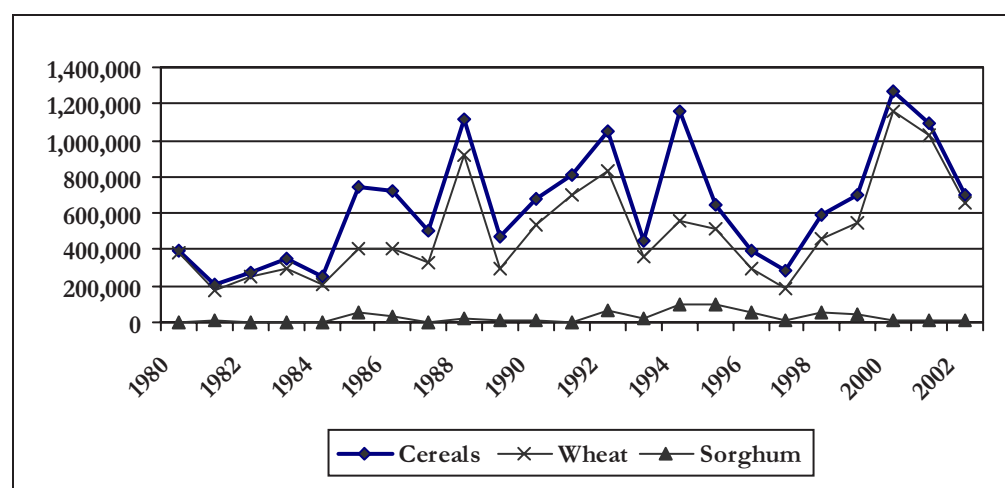
Cereal import accounted for the largest share of the food imports during the period under consideration: it increased from 75.9 million US\$ (~449,330 metric tons) in 1993 to 108.3 million US\$ (~697,017 metric tons) in 2002. Specifically, wheat import has been the most important cereal, followed by sorghum and fruits and vegetables. Wheat imports increased from 56.8 million US\$ (~358,100 metric tons) in 1993 to 98.5 million US\$ (~657,000 metric tons) in 2002 (Table 2.2). Food imports tend to decline during good harvest years and rise during bad years or seasons (Figure 2.4).

Table 2.2: Food imports (in metric tons)

Item	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Cereals	1 047 405	449 330	1 158 372	640 240	394 280	283 727	586 455	703 676	1 265 320	1 092 451	697 017
Maize	166	21 000	36 300	24 500	20 500	26 800	30 000	35 000	12 011	6 361	3 189
Rice	13 371	13 170	10 264	1 333	2 100	3 600	5 491	9 095	2 695	4 713	10 777
Wheat	830 000	358 100	553 583	509 500	295 000	187 200	463 000	550 000	1 164 000	1 031 000	657 000
Pulses	31 200	16 900	15 315	4 696	4 696	4 696	4 696	6 531	25 190	17 300	2 190
Sorghum	63 200	19 900	102 875	100 354	50 000	10 000	50 000	49 000	7 400	8 500	10 000

Source: FAOSTAT

Figure 2.4: Patterns of food imports



2.2 Projection of Food Supply and Demand

It has been indicated that the daily calorie supply of food, measured in terms of dietary supply energy (DSE) improved during the period 1992 to 2001. For instance, it increased from 1 402.4 calories in 1992 to 2 081.4 calories in 2001, with the average being about 1 911.54 calories, which is lower than the minimum daily requirement, by about 9 percent. A significant proportion (62 percent) of the total DSE is contributed by cereals, followed by roots and tubers (22.1 percent), pulses (11.5 percent) and animal products (4.6 percent), as shown in Figure 5.

However, the improvements in domestic production during the 1990s have not been sufficient to ensure food security, either at household or national level, and the gap has to be filled by food aid. Thus, as long as the need generated by the size of the population is

greater than domestic food production, food insecurity and of the necessity for food aid will continue.

Based on the trends of DSE and current population size (about 71.1 million in 2004), it is possible to predict the total food requirements from the main crops for the 2005 and 2015 periods. The requirements have been calculated on the basis of projected growth from the present population size (Table 4). The major challenge for the country is to meet the food requirements of a population, growing at a rate of 2.9 percent per year and projected to increase to 94.5 million by 2015. The future trend of food supply and demand can be estimated based on the historical data, i.e. the future projection of food supply in terms of dietary supply per capita is based on the assumption that cereal production will remain stable during the period considered.

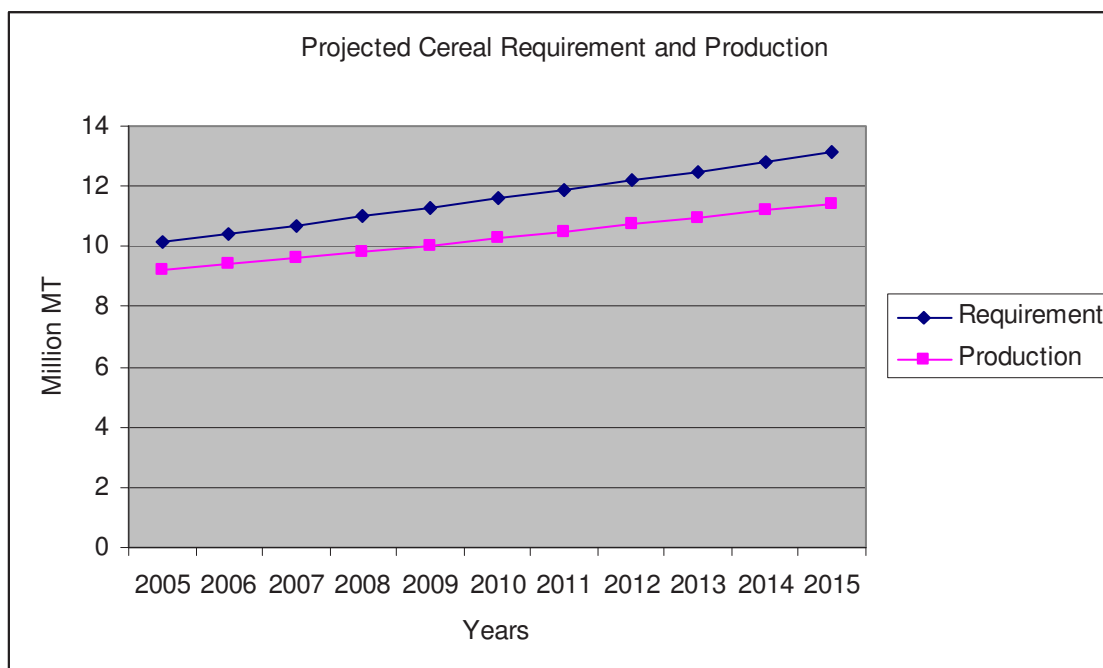
The results recorded in Table 4 show that, if the minimum food per capita is to be achieved (i.e. 2 100 calories, equivalent to 225.5 kg per capita, per year) the total domestic food requirement will increase from 16.47 million tonnes in 2005 to 21.32 million tonnes in 2015, at a rate of 2.58 percent per year. To meet this huge food requirement in the years to come, domestic cereal production should be increased to 10.14, 11.59 and 13.13 million tonnes in 2005, 2010 and 2015, respectively. This clearly reveals that, even under the assumption of stable cereal production (which is unlikely, because of frequent drought), there still remains unsatisfied food demand, suggesting the need for food aid to bridge the gap.

Table 2.3: Projected food supply and requirements (tonnes)

Food items	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cereals	10.14	10.42	10.71	11.00	11.29	11.59	11.89	12.20	12.50	12.81	13.13
Vegetables	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06
Roots and tubers	3.63	3.73	3.84	3.94	4.05	4.15	4.26	4.37	4.48	4.59	4.70
Pulses	1.89	1.94	2.00	2.05	2.11	2.16	2.22	2.28	2.33	2.39	2.45
Animal products	0.75	0.78	0.80	0.82	0.84	0.86	0.89	0.91	0.93	0.95	0.98
Total requirement	16.47	16.93	17.39	17.86	18.34	18.82	19.31	19.81	20.31	20.81	21.32

Source: Own computation

Figure 2.5: Trends in projected cereal production and requirements



2.3 Determinants of Food Consumption in Rural Ethiopia

A regression model has been built for the estimation of the determinants of per capita food consumption in Ethiopia, based on data compiled from the Fifth Round Ethiopian Rural Households Survey for the year 1999/2000. It should be noted that the dependent variable of the model is the natural logarithm of real food consumption per capita, and hence the estimated regression coefficients measure the percentage change in real food consumption per capita for a unit change in the dependent variable. A summary of the results of the model run is presented in Table 2.5. Details of the key determinants of per capita food consumption are summarised as follows:

- Demographic variables** From the estimated regression model, it can be seen that there is a strong negative relationship between real consumption per capita and household size, i.e. larger households have lower per capita food consumption and they are likely to suffer from food shortfall. Hence they are particularly vulnerable to shocks. This is true for the five variables measuring the number of persons in the household, disaggregated by age and sex. It should be noted that the estimated coefficient of the square of household size is statistically significant, suggesting a U-shaped relationship between consumption per capita and household size. However, the effect of age and sex of head of household on the per capita consumption is insignificant, even at the 20 percent level.
- Education** The results of the regression model show that the number of literate adult males in the household tends to have a significant positive influence on per capita food consumption. However, the number of literate adult females and

number of adult males and females who completed primary education have no significant effects.

- Employment and income sources Per capita food consumption is found to be influenced only to an insignificant degree by the sector (agricultural, industrial, or service) in which members of the household are employed. Nevertheless, per capita food consumption is relatively higher in households with more persons employed in the service sector and lower for those with more members employed by the agricultural sector. Households with multiple income sources are better off in terms of food consumption and are less susceptible to shocks. It has been argued that one of the persistent and chronic food insecurity problems in the country is lack of off-farm employment opportunities.¹ Even if such employment opportunities exist, they are directly or indirectly influenced by rainfall and other factors, such as land tenure and border conflicts.²
- Size of landholding and number of farm animals While landholding size has a significant positive effects on per capita food consumption, the number of farm animals tends to have insignificant effects, at least at 5 percent.
- Access to infrastructure As anticipated, participation in the new extension programme has a positive effect on food consumption per capita. The programme involves diffusion of modern inputs such as fertilizer, improved seeds, herbicides etc. with close monitoring of farmers, intended to increase productivity and hence crop income.

¹ According to the available evidence, a quarter of households in Amhara region had one or more members migrate to nearby rural areas during the dry season in search of work. One in three migrants had difficulty securing employment, while half returned without food or income for their families (FSCO, 1999 cited in Devereux, 2000).

² Before the war with Eritrea, many Tigrayans used to travel to Eritrea to work but this opportunity was lost following closure of the border (Devereux, 2000).

Table 2.4: Determinants of food consumption per capita in rural Ethiopia

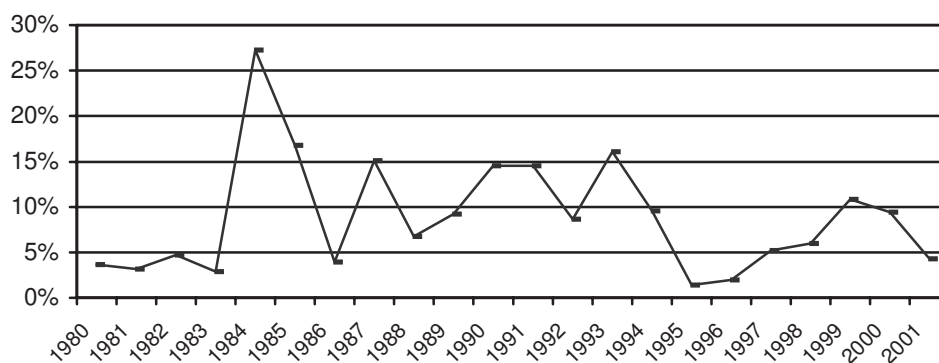
Logarithm of real food consumption per capita (Dep. Variable)	Coef.	Robust Std. Err	t	P> t
	Age of head of household	0.002	0.002	1.110
Sex of household head	-0.002	0.044	-0.060	0.955
Persons 0-6 years old	-0.099	0.020	-4.980	0.000
Persons 7-17 years old	-0.177	0.015	-11.530	0.000
Males 18-64 years old	-0.232	0.026	-8.960	0.000
Females 18-64 years old	-0.155	0.028	-5.560	0.000
Persons aged 65 or older	-0.201	0.037	-5.410	0.000
Number of persons employed in agricultural sector	-0.007	0.022	-0.320	0.745
Number of persons employed in industrial sector	0.047	0.075	0.630	0.531
Number of persons employed in service sector	0.029	0.017	1.680	0.094
Number of literate adult males	0.146	0.041	3.520	0.000
Number of literate adult Females	-0.030	0.040	-0.730	0.463
Number of adult males who completed primary education	-0.102	0.059	-1.720	0.085
Number of adult females who completed primary education	0.014	0.049	0.280	0.778
Highest level of education of any adult in the household	0.001	0.003	0.160	0.870
Number of income sources	0.077	0.018	4.210	0.000
Dummy for use of any modern agricultural inputs	0.009	0.046	0.200	0.845
Dummy for security of land tenure	0.030	0.096	0.310	0.753
Dummy for food crops	-0.016	0.116	-0.140	0.890
Dummy for horticultural crops	0.255	0.051	4.980	0.000
Dummy for cash crops	-0.062	0.059	-1.040	0.298
Dummy for presence of markets	-0.150	0.039	-3.840	0.000
Dummy for participate in the new extension programme	0.135	0.052	2.600	0.009
Logarithm of landholding size	0.107	0.022	4.930	0.000
Ownership of livestock	0.022	0.036	0.630	0.530
Square of adult equivalent household size	0.006	0.001	8.610	0.000
Dummy variable for Amhara region	0.320	0.080	3.990	0.000
Dummy variable for Oromiya region	-0.272	0.074	-3.670	0.000
Dummy variable for Debreziet district	0.970	0.097	9.950	0.000
Dummy variable for Adel Tike district	0.627	0.088	7.150	0.000
Dummy variable for Sodere district	0.520	0.099	5.260	0.000
Dummy variable for Shashemene district	0.453	0.103	4.390	0.000
Dummy variable for Bako district	0.011	0.102	0.110	0.914
Dummy variable for Endibr district	-0.403	0.099	-4.080	0.000
Dummy variable for Durame district	-0.241	0.102	-2.360	0.018
Constant term	6.864	0.142	48.270	0.000
Regression with robust standard errors	Number of obs = 1339 F (37, 1301) = 20.29 Prob > F = 0.000 R-squared = 0.348 Root MSE = 0.576			

Although not captured by the model above, HIV and AIDS are now major causes of vulnerability in both urban and rural areas. A severe HIV and AIDS crisis is currently killing the prime labour force of the country, with 10.6 percent of the adult population reported to be already infected. AIDS is the leading cause of death among those aged 15 to 49, and the number of AIDS orphans is growing by the day (as reflected by the rising number of street children in major urban centres). With the world's third largest population of AIDS patients, the impact of the disease is likely to be more catastrophic than even the worst drought years. High levels of poverty, widespread hopelessness among the youth (caused by lack of employment) and demobilisation of soldiers (which took place twice between 1991 and 2001) have all undermined efforts to control the spread of the disease.

2.4 Food Gap and Food Aid

The imbalance between domestic food production and food demand shows the amount of food shortfall at national level, which has shown an increasing trend in recent years. It has been documented that this gap has largely been met through external food aid. The volume of food aid has increased, with significant fluctuations, from 239 thousand tonnes in 1980 to 409 thousand tonnes in 2001, representing an average growth rate of about 2.5 percent per year. The flow of food aid increased substantially in the 1980s. The highest volume of food aid, accounting for some 27 percent of the total domestic food production, was received during the severe drought of 1984. The average food aid delivered was about 620 700 tonnes during the 1980s, while the figure for the 1990s was 583 000 tonnes, indicating a slight reduction in food aid dependency. Although the absolute volume of food aid has declined in recent years, compared to the early 1980s, food aid continues to be an important component in bridging the food gap (Figure 2.6).

Figure 2.6: The share of food aid in domestic food consumption



Ethiopia was food self-sufficient and used to export food crops until the late 1950s. However, this trend changed and the country received food aid for the first time in 1959, when drought and crop infestation affected the harvest in some parts of the country (Alemayehu, 1988 cited in Getinet, 1995). Since then, the country has remained one of the world's major recipients of food aid. Food aid delivery to Ethiopia has taken the forms of emergency, project and programme food aid, as elaborated below:

- Emergency food aid is urgent food aid, delivered in response to natural calamities (floods) and human-induced problems (such as war), which are prevalent in the country. Of the total food aid, more than 70 percent was in the form of emergency

food aid until the 1990s. Components of this category include tinned, compressed and other storable foodstuffs, clothing, provision of fresh water, and treatment of survivors and injured persons.

- Project food aid is mainly used in development-related activities (soil and water conservation, forest planting, and other public works) in the form of food-for-work, in which food aid is substituted for a wage and complementary feeding projects are aimed at groups with an inadequate level of nutrition. Such public works under food-for-work programmes, generate both employment and a form of income.
- Programme food aid refers to food supplied for bulk sale or distribution as part of budgetary or balance-of-payments (BoP) support, price stabilisation, or for reserve purposes. In terms of volume, this type of food aid is the least used in Ethiopia.

2.5 Food aid administration, logistics and distribution

The entire food assistance or aid in the country is managed and administered by the Disaster Prevention and Preparedness Commission (DPPC), formerly known as the Relief and Rehabilitation Commission (RRC), which was established in 1974/75 following the outbreak of famine in the two northern provinces of Ethiopia, namely, Wollo and Tigray. Since then, it has undergone several transformations, the latest of which is its re-establishment in August 1995 as the DPPC under Proclamation No-10/1995. The major objectives of DPPC include prevent disasters by way of removing the basic causes thereof (i.e. Prevention), build, in advance, the capacity necessary to alleviate the extent of damages that could be caused by disasters (i.e. Preparedness), and ensure the timely arrival of necessary assistance to victims of disasters (i.e. Response).

To address these objectives, the Federal Government has adopted a National Policy on Disaster Prevention and Management (NPDPM) since 1993 which aims at tackling disasters and ensuring that famine situations are addressed in ways that reduce people's vulnerability to disasters. The National Disaster Prevention and preparedness Strategy (NDPPS) provides the institutional framework for drought-induced mitigation and prevention and setting the broad outlines of a move from relief to development that puts Employment Generation Schemes (EGS) at the center of its implementation modalities targeted at food insecure and able bodied.³ Within this policy framework and strategy, the major activities of the DPPC include the following (DPPC, 2001):

2.5.1 Prevention

The first important function of the DPPC is to tackle the root causes of vulnerability to disasters and to promote food security, i.e. prevention. EGSs are promoted as the main mechanisms through which relief is provided to able-bodied disaster victims in exchange for work. These schemes help build assets and reduce the risk of vulnerability of affected populations. Many development works have been undertaken in different regions using

³ The major strengths and weakness of the current food security strategy can be found in Senait Seyoum (2001).

relief food through EGSs. The development efforts currently being undertaken towards overcoming famine conditions and attaining food self-sufficiency have already demonstrated positive effects. The government has, furthermore, formulated a food security programme, for which EGSs are one of the major instruments contributing to the efforts to attain food security at the household level.

2.5.2 Preparedness

Preparedness, which is another function of the Commission, refers to the building up of capacities to mitigate the negative effects of disasters. The major preparedness modalities are an Early Warning System (EWS), Emergency Food Security Reserve (EFSR), National Disaster Prevention and Preparedness Fund (NDPPF) and logistics. Some of the key preparedness components are already in place. At present, maximum efforts are being exerted to further strengthen these. Highlights of the major preparedness modalities are given below.

- Early Warning System (EWS) The Ethiopian EWS, which was established in 1976, is an information management system that uses data from, and provides information to, a large number of government and non-governmental organizations (NGOs). It is an interagency system which involves different relevant government institutions. The system has been decentralized, according to the regionalization policy and bottom-up planning approach, since 1993. It is now operational at federal, regional, zonal and *woreda* (district) levels.

The main objective of the EWS is “to provide timely and accurate early warning information on impending and actual emergencies, so that swift, appropriate and effective measures can be taken to avoid suffering.” The focus of the System is on identification of areas and population groups needing relief assistance. As part of the regular activity of the programme, all relevant indicators of food security are monitored, often on a monthly basis, culminating in annual nationwide crop assessments. Pastoral area assessments are also carried out in the livestock-dependent regions, while disaster assessments are conducted as and when emergency situations arise. Early warning reports are issued regularly and distributed to the Government, donors and the international community (ibid, 2001).

- Emergency Food Security Reserve (EFSR): The Reserve was first established in 1982 as a project within the then RRC. With a view to revitalizing the operation and functioning of the EFSR as one of the major preparedness modalities in disaster management, it was reconstituted in 1992 as an autonomous entity, in which donors are represented in the decision-making body on the management and utilization of commodities in the reserve. The objective of the EFSR is to provide adequate capacity to prevent disasters through provision of loans of food and non-food emergency items to agencies that are engaged in relief activities. At present, there are five Food Reserve locations – Nazareth, Kombolcha, Shashemene, Dire Dawa and Mekelle. The present physical capacity of the warehouses for the Food Reserve stands at 224 000 tonnes and additional warehouses with a capacity of 91 500 tonnes are under construction.

- The National Disaster Prevention and Preparedness Fund: An NDPPF with the objective of maintaining a readily available cash reserve for a quick response to emergency situations has been established. The Fund also aims to cover funding shortfalls for development programmes. It provides drawing rights to regions and implementing NGOs to support relief programmes based on prioritized needs, in the event that resources required for such programmes cannot be secured in time. The Fund is to operate mainly as a revolving fund granting loans.
- Logistics It is clear that timely response to disaster depends critically on the effectiveness of logistical infrastructure. The Commission used to transport relief cargo to different distribution sites through its own Relief Transport Projects (RTPs), while NGOs and UN transport fleets also played a significant role. However, in line with the free-market economic policy of the Government, the RTPs, NGOs and UN trucks have been privatized. Since then, the DPPC and its partners have been able to dispatch relief food and other emergency items to disaster-prone areas using private sector trucks. Given the poor infrastructure in the country, however, full reliance on the private sector for the transport of emergency relief items, particularly to remote areas, is not possible. The Government has recently established Emergency Relief Transport Enterprises in order to avoid the risk of delays and subsequent consequences in relief delivery.
- Emergency responses During emergencies, timely relief interventions such as provision of food, potable water, shelter and medical services to disaster victims, are undertaken with the aim of saving lives. After emergency situations, recovery and rehabilitation measures through provision of draught oxen, seeds and hand tools in cropping areas, and to some extent, replacement of depleted livestock resources in the pastoral areas, also need to be undertaken in order to sustain the livelihoods of victims.

As indicated earlier, demand for food aid is estimated at *woreda* level. When a disaster is about to occur in a certain *woreda*, the Woreda DDPC (WDDPC) assesses and reviews the degree, as well as the coverage, of the event and then submits details to the Zonal DPPC. The ZDPPC, after reviewing and appraising *woreda* reports and identifying the affected population, submits a summarized report to the regional DPPC. The RDPPC, through its Relief and Rehabilitation Bureau (RRB), compiles zonal reports and works out regional logistics, including transportation of relief commodities, and submits these to the national DPPC. Finally, the NDPPC will appraise, prioritize and approve regional reports and channel resources to regions accordingly. The contribution of NGOs involved in relief activities is determined by the national DPPC. Regional DPPCs receive food aid, from the centre, which has come from different donors. Then each region allocates relief commodities to affected *woredas*.

It should be noted that, although the need for food aid is inevitable, given low domestic food production, the cost of food aid is substantial in terms of administration and transport costs borne by the Ethiopian government. It has been documented that Government spent (in the form of operation cost and support) on average US\$ 312.5 million per year on food aid, representing 5.1 percent of gross domestic product (GDP) and 17.4 percent of total government expenditure during the period 1994 to 2002 (Table 6). This indicates that, not

only does food aid have an impact upon the agriculture sector in terms of depressing local prices, but it also has huge budgetary implications because it drains limited government resources.

Table 2.5: Cost of food aid (US\$ million)

Year	Total expenditure on food aid ('000' US\$)	Expenditure on food aid as % of GDP	Expenditure on food aid as % of total government expenditure
1994	369.00	6.81	27.54
1995	281.70	4.69	19.47
1996	137.80	2.16	8.94
1997	176.60	2.70	10.82
1998	253.70	3.93	12.58
1999	369.00	5.79	17.49
2000	656.20	10.52	34.45
2001	303.80	5.05	14.63
2002	264.90	4.00	10.99

Source: Tassew, 2004

2.6 Food Security in Ethiopia

The definition of 'food security' has undergone significant transformations since it was developed in the 1970s. The initial concern was with global, regional and national food supply or stocks and food security was conceived as the adequacy of these stocks. Such conceptualization of food security focuses on aggregate supply of food but overlooks micro-level food access. But, food security at a global or national level does not guarantee and ensure food security at a household or community level. This can only be guaranteed by the inclusion of households at the centre of the food security concept.

Food security is attained when all people at all times have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life, without undue risk of losing such access.⁴ According to this definition, people can have access to food via production, purchase, exchange or gifts. It has been argued that households may fail to command access to sufficient food because of inadequate landholding, off-farm employment opportunities, access to credit or other inputs, and that people who face any of these inadequacies constitute the vulnerable groups in the society. 'Sufficiency' refers to the calories necessary for an active and healthy life, while 'availability', which is the supply-side indicator of food security, refers to sufficient supplies of food of appropriate quality being continuously available (stability indicator of food security) to individuals. With average adult equivalent per capita daily caloric consumption estimated by FAO to be approximately 1 810 kcal – i.e. among the lowest in the world,⁵ – a large number of Ethiopians are clearly not consuming sufficient

⁴ World Food Summit Plan of Action, Rome 1996; available at <http://www.fao.org/docrep/003/w3613e00.htm#PoA>

⁵ Compared to Chad – 2 140; North Korea – 2 080; India – 2 430. 1997-99 data from FAO, 2001 as quoted in Barry Riley, et al. 2002.

food to be able to lead productive, healthy lives. The estimates range between a third and half of the total population in this category.

Depending on the time dimension, food insecurity, a situation in which individuals do not have the physical nor economic access to the nourishment they need, can be either ‘chronic’ or ‘transitory’. The former occurs when there is a constant failure of food acquisition, while the latter refers to a temporary failure of acquisition caused by drought, war, or short-term variability in food prices, production, and incomes. The consequences of household food insecurity are as many as its causes and each requires a different response. Poor households are the least food secure and they are highly prone to shocks. In rural areas, households that do not have land or oxen, those headed by a female or elderly person, and those newly established by settlers are food insecure households. Unemployed people, single parent households with dependents, elderly people living alone, and destitute and homeless people are food insecure in urban Ethiopia (Table 2.6).

Table 2.6: Classification of food insecure households in Ethiopia

	Rural households	Urban households	Others
Chronic	<ul style="list-style-type: none"> • Landless or land-scarce • Without oxen • Poor pastoralists • Female-headed households • Elderly • Poor non-agricultural households • Newly established settlers 	<ul style="list-style-type: none"> • Low-income urban households outside the labour market • Elderly • Displaced • Households headed by female • HIV and AIDS-affected families 	<ul style="list-style-type: none"> • Refugees • Ex-soldiers
Transitory	<ul style="list-style-type: none"> • Farmers and others in drought-prone areas • Pastoralists • Less resource-poor households vulnerable to shocks (not drought) • Others vulnerable to economic shocks in low-potential areas 	<ul style="list-style-type: none"> • Urban poor vulnerable to shocks 	<ul style="list-style-type: none"> • Groups affected temporarily • Civil unrest

Source: Food Security Strategy, 1996

In any one year, more than five million people are enlisted for a daily relief food per annum over the last decade. A combination of factors has resulted in serious and growing problem of food insecurity. According to the government report (MOFED, 2002), ‘adverse climatic changes (droughts) combined with high population pressure, environmental degradation, technological and institutional factors have led to a decline in the size of per capita land holding. This was exacerbated by policy induced stagnation of agriculture and internal conflict and instability in the past resulting into the widening of the food gap for more than two decades, which had to be bridged by food aid.’

The Government has adopted a three-pronged strategy of increasing the availability of food through domestic production, ensuring access to food for food deficit households, and strengthening emergency response capabilities. In what follows, an attempt will be made to examine the food security situation of the country by analyzing domestic food production, consumption and food gap.

2.7 Trends in the number of food-assisted people

The frequency of drought has increased in recent years, leading to a substantial increase in the number of people requiring relief food assistance. For instance, the number increased from 2.8 million in 1980/81 to 7.9 million in 1991/92 and to 10.6 million in 1999/2000 (Table 8). In particular, marginal and drier areas gained very little from the new extension approach and increasingly became dependent on food aid and day-to-day survival activities. The drought in 2002/03, believed to be one of the worst since 1984/85, affected over 14 million (22 percent of the total population). Food production is estimated to have declined by 20 percent and a total of 1.7 million tonnes of food aid was required to save lives. The US alone gave US\$ 500 million worth of food aid.

Table 2.7: Drought/disaster affected population

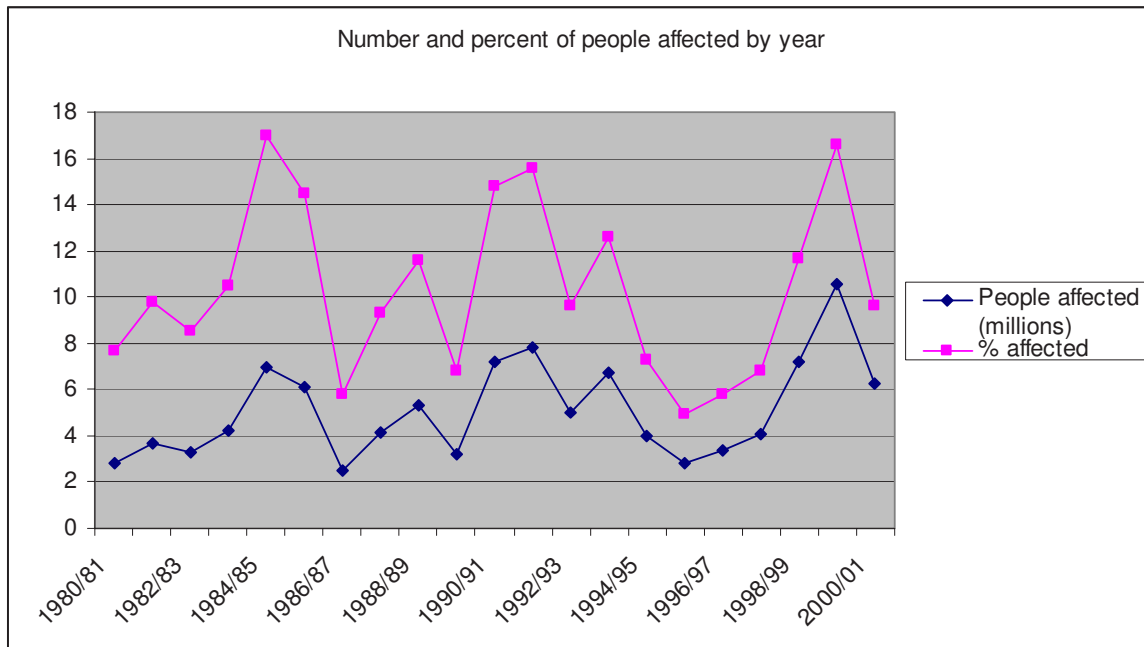
Year	Disaster/drought affected population (million)	Proportion affected (%)
1980/81	2.82	7.7
1981/82	3.70	9.8
1982/83	3.30	8.5
1983/84	4.21	10.5
1984/85	6.99	17.0
1985/86	6.14	14.5
1986/87	2.53	5.8
1987/88	4.16	9.3
1988/89	5.35	11.6
1989/90	3.21	6.8
1990/91	7.22	14.8
1991/92	7.85	15.6
1992/93	4.97	9.6
1993/94	6.70	12.6
1994/95	3.99	7.3
1995/96	2.78	4.9
1996/97	3.36	5.8
1997/98	4.10	6.8
1998/99	7.19	11.7
1999/00	10.56	16.6
2000/01	6.24	9.6
Average	5.37	10.3
2002/03	14.3	22.0

Food availability in Ethiopia has been below requirements for the last two decades or so, with per capita food grains availability around 135kg per year, and daily kilocalorie consumption at around 1750, representing only three-fourth of the total nutritional requirement. In particular, people living in the drought prone areas of Eastern and Central Zone of Tigray (Tigray region), Wello, North Gondar and North Shoa (Amhara region), and Borena, and Haraghe (Oromiya region) are severely affected by lack of food.

The number of people requiring food assistance is largest in Amhara, Oromiya and Tigray regions, accounting for about 71% of the total food aid recipients during the period 1994–2003. On average, about 1.6 million people required food assistance in the Amhara region over the period from 1994 to 2003. The corresponding figures for Oromiya and Tigray regions were 1.4 and 1.1 million, respectively. Even during good agricultural years such as 1995, 1996, 1998 and 2002, the number of people requiring food assistance in the three

regions was more than 2 million, implying that there are structural problems such as limited access to technology and markets as well as minimal employment opportunities, besides recurrent drought.

Figure 2.7: Drought/disaster affected population



The proportion of food-aid dependent population was highest in Tigray (on average 31% during the period 1994-2003) followed by Somali (8%), Afar (17%) and Benishangul-Gumuz-Gambella (16%) (Table 2.8). The percent of food insecure population increased significantly during poor agricultural years such as 2000 and 2003. Farm households most affected in each region are asset-poor with limited access to arable land, low productivity and insufficient purchasing power to secure their food requirements from the market.

Table 2.8: Regional distribution of relief food assisted population (in '000')

Region	Year										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
Tigray	1 085.00 (34.87)	764.40 (23.87)	751.20 (22.80)	675.00 (19.92)	1 201.00 (34.46)	998.40 (27.86)	1 717.80 (46.60)	938.50 (24.75)	917.20 (23.52)	2 011.40 (50.15)	1 105.99 (30.88)
Amahara	2 096.80 (15.28)	1 201.60 (8.51)	868.00 (5.97)	822.10 (5.50)	2 022.20 (13.15)	278.70 (1.76)	3 569.80 (21.94)	2 130.00 (12.73)	172.50 (1.00)	3 123.00 (17.64)	1 628.47 (10.35)
Oromiya	1 995.00 (10.75)	902.00 (4.71)	395.40 (2.00)	547.80 (2.69)	709.60 (3.38)	1 562.50 (7.22)	1 902.80 (8.53)	1 129.00 (4.91)	1 051.40 (4.44)	3 733.70 (15.28)	1 392.92 (6.39)
SNNPR	840.00 (8.17)	822.00 (7.74)	361.40 (3.29)	331.70 (2.93)	0.00 (0.00)	718.50 (5.95)	1 410.00 (11.30)	869.80 (6.75)	303.30 (2.28)	1 439.30 (10.48)	709.60 (5.89)
Afar	215.00 (20.41)	100.00 (9.27)	50.00 (4.53)	264.20 (23.36)	0.00 (0.00)	160.60 (13.54)	306.60 (25.25)	127.70 (10.27)	22.50 (1.77)	786.20 (60.32)	203.28 (16.87)
Somali	250.00 (7.90)	100.00 (3.08)	210.00 (6.30)	600.00 (17.55)	50.00 (1.43)	864.80 (24.04)	1 489.70 (40.37)	981.00 (25.91)	894.80 (23.04)	1 063.50 (26.70)	650.38 (17.63)
Beni-shangul-Gumuz	83.00 (18.13)	20.00 (4.26)	35.00 (7.26)	13.10 (2.65)	0.00 (0.00)	0.00 (0.00)	4.20 (0.79)	0.00 (0.00)	9.00 (1.60)	0.00 (0.00)	16.43 (3.47)
Gambella	27.00 (14..99)	10.00 (5.41)	25.00 (13.17)	41.50 (21.30)	72.30 (36.15)	17.00 (8.28)	46.60 (22.12)	0.00 (0.00)	32.80 (14.78)	58.40 (25.65)	33.06 (16.32)

Source: FDRE, 2003, The New Coalition for Food Security in Ethiopia, vol. I.

Note: Figures in parentheses refer to the share of food-assisted population from the respective total regional population.

2.8 Malnutrition and under-nutrition

Emerging evidence indicates that about 30 million Ethiopians live in absolute poverty, consuming below the recommended daily nutritional requirement and unable to satisfy basic non-food requirements (Berhanu, 2003). It has also been documented that domestic food production falls short of domestic food demand, leading to an increased food gap and low level of nutritional intake. The level of malnutrition is high, particularly in rural Ethiopia, owing to food shortages. Children are particularly affected by periods of food deficit and many have died during droughts and famines. The effects of food shortage on children are manifested in the form of wasting and stunting, which are indicators of child malnutrition. According to recent evidence, 'wasting, which is a short-term indicator of child malnutrition, increased from 9.2 percent in 1995/96 to 9.6 percent in 1999/2000. The situation is worse in rural areas, where child wasting increased from 9.5 percent in 1995/96 to 9.9 percent in 1999/2000. On the other hand, child 'stunting', a long-term measure of child malnutrition, declined from 66.6 percent in 1995/96 to 56.8 percent in 1999/2000. It decreased in both rural and urban areas (Table 10) but remained very high even by the standards of African countries.⁶

⁶ For instance, child stunting in Ethiopia was reported as the worst (51 percent), along with war-torn Angola, among African countries in 1999/2000 by the 2004 African Development Indicators of the World Bank.

Table 2.9: Child wasting and stunting in Ethiopia (children aged between 6-59 months)

Location	Short-term child malnutrition		Long-term child malnutrition	
	1995/96	1999/00	1995/96	1999/00
Rural	9.5	9.9	68.4	57.9
Urban	6.8	6.1	55.9	44.5
National	9.2	9.6	66.6	56.8

Source: MOFED, 2002

2.9 Trends in poverty levels

Poverty still poses a major challenge in developing countries, particularly in Sub-Saharan Africa where there is no sign of improvement in major socio-economic indicators. Thus, poverty reduction has received increased attention by bilateral and multilateral development agencies in the late 1990s. Even though it has been a major social and economic concern of developing countries, poverty continues to be a major impediment to human development and economic progress of these countries. An increasing number of people in these countries face unemployment, famine, illiteracy, inadequate shelter, illness and other forms of deprivation, which are the various dimensions of poverty. The central strategy choice is between poverty reduction via faster economic growth and reduction through redistribution, though the two may be complementary.

The household income, consumption and expenditure surveys provide useful information on income, consumption and poverty levels in Ethiopia. According to recent evidences, agricultural enterprise is the main source of income for the rural population while wages, salaries, bonuses, overtime and allowances are sources of income for urban households in 1999/2000 (MOFED, 2002). Table 2.10 compares the structure of national, rural and urban household income and food consumption in 1995/96 and 1999/2000. Consistent with international statistics (e.g. World Bank), per capita income in Ethiopia is characterized by stagnation or even decline. Rural per capita income decreased slightly from Birr 1035.33 in 1995/96 to Birr 994.71 in 1999/2000, while per capita income increased marginally from Birr 1411.32 in 1995/96 to Birr 1452.54 in 1999/2000. Overall, per capita income at national level was Birr 1087.83 and Birr 1056.71 in 1995/96 and 1999/00, respectively. Real per capita consumption expenditure in 1999/00 was equivalent to US\$139, 131 and 191 at national, rural and urban levels, respectively. It can also be observed from the Table 2.10 that food accounted for a significant proportion of households' total expenditure in both rural and urban areas. It accounted for, on average, 60% in 1995/96 and 65% in 1999/2000 (MEDaC, 1999; MOFED, 2002).

Table 2.10: Structure of household income and food consumption (percent)

Year Type	1995/96		1999/2000	
	Income per capita (Birr)	Food Consumption (%)	Income per capita (Birr)	Food Consumption (%)
Rural households	1035.33	60	994.73	67
Urban households	1411.32	56	1452.54	56
National	1087.83	60	1056.71	65

Source: MEDaC, 1999 and MOFED, 2002

** At constant 1995/96 prices

Table 2.11 shows that the national per capita consumption expenditures in real terms were Birr 1088 and Birr1057, respectively, during 1995/96 and 1999/2000, indicating that real per capita consumption expenditure has decreased marginally in 1999/2000. The rural per capita food consumption has increased while it has slightly decreased in urban areas in 1999/2000. However, the difference in both rural and urban areas is not statistically significant.

Table 2.11: Real annual consumption expenditure (in Birr)

Description	1995/96			1999/2000		
	Rural	Urban	National	Rural	Urban	National
Real food expenditure per capita	577	790	607	609	631	612
Real total expenditure per capita	1035	1411	1088	995	1453	1057
Real food expenditure per adult	697	947	732	774	767	773
Real non-food expenditure per adult	561	750	588	495	993	562
Real total expenditure per adult	1250	1693	1312	1261	1751	1327
Kilocalorie consumed per day per adult ⁷	1938	2050	1954	2723	1861	2606
Share of food in total expenditure (I %)	60	56	60	67	53	65
Gini coefficient (consumption)	0.27	0.34	0.29	0.26	0.38	0.28

Source: MOFED, 2002

Poverty indices have been estimated in terms of the minimum calorie for subsistence, i.e., 2200 kcal and accordingly, Birr 1075 is taken as the absolute poverty index of the country. The results show that, on aggregate, all indicators of poverty indices have decreased in 1999/2000 as compared to 1995/96 (see Table 2.12). However, there are no statistically significant changes in the head count indices of rural, urban as well as national poverty between the two periods.

Table 2.12: Trends in poverty

Description	1995/96			1999/2000		
	Rural	Urban	National	Rural	Urban	National
Head count index (P_0)	0.475	0.332	0.455	0.454	0.369	0.442
Poverty gap index (P_1)	0.134	0.099	0.129	0.122	0.101	0.119
Squared poverty gap (P_2)	0.053	0.041	0.051	0.046	0.039	0.045

Source: MOFED, 2002

2.10 National food security strategy

In Ethiopia, attempts are made to ensure that all citizens have a right to aid in times of crisis. A key focus of the Disaster Prevention and Preparedness Commission (DPPC) is to prevent a repeat of occurrence of the types of famines that struck Ethiopia in the 1970s and 1980s in which thousands of people died.

Since information is critical for providing assistance, a number of institutions are engaged in disaster early warning, baseline information and food security surveillance activities. In addition to DPPC, government agencies engaged in such activities include the Central Statistical Agency, the Welfare Monitoring Unit of the Ministry of Finance and Economic

⁷ It should be noted that calorie intake in rural areas has increased from 1 938 in 1995/96 to 2 723 in 1999/2000 at a rate of 41 percent within just five years. Both rural and the national calorie intake figures are above the recommended level of 2 200 by 1999/2000. This is difficult to justify other than as inaccuracy of the data.

Development, and various line ministries. Famine Early Warning System (FEWS) of the USAID produces a monthly food security report using secondary data generated through the Early Warning Working Group consisting of DPPC, Save the Children – UK, World Food Programme (WFP), CARE and other government and non-governmental organizations. FEWS also makes use of satellite imagery for spatial analysis, which it receives directly from NASA and NOAA (National Oceanographic and Atmospheric Agency) every ten days. WFP's Vulnerability Analysis and Mapping (VAM) department uses state of the art mapping technologies to identify areas where people are most vulnerable to hunger and to estimate their needs. The annual FAO/WFP Crop and Food Supply Assessment mission (October/November) estimates national cereal and pulse production, import requirements and needs for emergency food aid (Lautze, et al, 2003).

Despite the numerous early warning and surveillance systems and the long history of the early warning system of DPPC, there is no working capacity for meta-analysis of the different data and no single organization utilizes the full range of information generated. The objective is to identify only numbers needing various levels of emergency food aid without indicating the nature and causes of vulnerability among diverse livelihood. This has become a regular task of DPPC and emergency food aid appeals have been made in years of bumper harvest and deficit alike in almost ritualistic fashion.

Distribution of food assistance has received as much attention as early warning and surveillance system since the 1983/84 famine. The process by which areas and households are selected to receive emergency food aid has been blamed for the limited impact of food distribution programs on nutrition. Targeting the real poor has not been easy as different districts apply different criteria in distributing relief, leading to a situation where the most need ones end up getting very small quantities of rations (see also section 4 for the impact of food aid).

In 2003/04, budget requested for food security increased significantly, accounting for 57% of the total allocated for food security, agriculture and natural resources. The budget for food security is intended to finance the operation of the Disaster Prevention and Preparedness Commission (DPPC) for the purpose of administration, general services, early warning department, and management of information services. Resettlement activities are also expected to constitute a major component of the food security programs. The government is hoping that a significant proportion of the capital budget allocated for food security will be financed through donations (54%) and loan funds (13%).⁸ Past experience, however, shows that aid and loans do not come on time and actual expenditure is bound to be much lower (Tassew, 2004). It requires a massive investment and a firm commitment from the government, donors and the beneficiaries themselves to end the cycle of famine and chronic poverty in Ethiopia.

⁸ About 91% of the total budget (1.8 billion birr) is planned for capital budget.

CHAPTER 3: IMPORTANCE OF FOOD AND AGRICULTURE SECTOR AND PUBLIC SUPPORT

This section focuses on the performance of the economy in general and that of the agriculture sector in particular, in terms of both aggregate and sectoral growth rates. The situation of food security in the country will be assessed by looking at its food supply and demand needs. The pattern of food aid and the procedure in bridging the gap between food supply and demand will be examined. The premise of this section is that the growth of domestic food production is important to ensuring food security in a sustainable manner in a landlocked country such as Ethiopia. Without adequate domestic food production, it is difficult to sustain improvements in human welfare.

3.1 Overview of the Economy

The available evidence indicates that the tempo of economic growth over the last three decades was unsatisfactory. Regardless of the policy regimes, real total GDP grew at rate of 2.6 percent from 1960 to 2002. The population grew, on average, by 2.71 percent during the same period, implying a 0.11 percent decline in the growth rate of per capita income per annum. In terms of sectoral growth rates, agricultural GDP, industrial GDP, and service GDP grew, on average, by 1.35 percent, 3.35 percent, and 4.70 percent per annum, respectively, during the period 1960 to 2002.

Classifying economic performance by regime reveals important information about the pattern of growth, (Table 14). The period 1960 to 1973, representing the Imperial era, witnessed a liberal type of economic policy, while the period 1973 to 1991 was marked by a planned economic system. The third regime, 1992 to 2002, is a period of more a liberal economic system, similar to the first regime. The performance of the economy was the worst during the second regime, when real GDP registered an average growth rate of 1.84 percent per annum. All sectors, especially agriculture, performed very badly during this period. The performance of the economy has shown improvement in the 1990s, with real GDP growing, on average, by about 4.18 percent. However, the performance of agriculture was very poor under this regime as well. It recorded an average growth rate of 1.53 percent. Indeed, the performance of agriculture in the first regime was better than in the latter two regimes.

Table 3.1: Growth Episodes, 1960 – 2002 (in percent)

Sector/Year	Regime I	Regime II	Regime III	Average
	1960-1973	1974-1991	1992-2002	1960-2002
Real GDP at constant factor cost	3.71	1.84	4.18	2.60
Agriculture	2.10	0.70	1.53**	1.35
Industry	7.04	2.81	7.74	3.35
Services	7.33	3.44	6.97	4.70

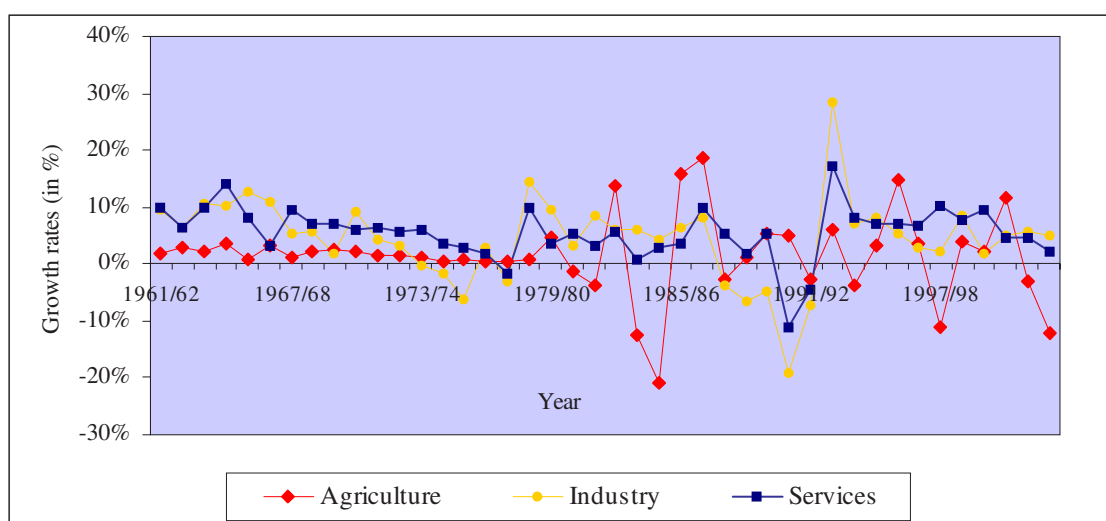
Source: Own computation from EEA/EEPRI database

** These figures are low because of the sectors poor performance in 2001 and 2002. The growth rate of agriculture for the period improves to 2.3% if the two years were excluded.

The sector that accounted for the lion's share of the national economy made little contribution to its growth. A breakdown of the growth of the economy into different sectors shows that agriculture contributed only 0.98 percent of the growth of the national economy, while industry and services contributed 0.47 percent and 1.75 percent, respectively, during the period 1960 to 2002.⁹ The growth of the economy was largely attributable to the growth of the service sector. Growth in the service sector was, in turn, attributed to expansion in administration and defence expenditures. It had little to do with expansion in health services (believed to improve stock of human capital) or improvement in trade, transport and communications services (believed to widen markets) (Zerihun, 2003).

Although the economy has shown better performance in the 1990s, the improvements failed to be sustained as the economy continued to suffer as a result of fluctuations in weather conditions. Figure 7 shows the pattern of GDP annual growth rates of the agricultural, industrial and service subsectors. The pattern shows that agricultural GDP has been highly unstable, probably due to war, drought, and policy failures. It also portrays the variability in the growth rates of industrial and service GDP, although the extent of fluctuations is lower than agriculture.

Figure 3.1: Pattern of GDP growth rate of agricultural, industrial and service sectors (at constant prices) over the period 1962-2002



Source: Own calculation from EEA/EEPRI database

⁹ The contribution of each sector to the national economy can be determined using the simple total factor productivity accounting technique. Let Y denote real GDP; Y_A , Y_I and Y_S refer, respectively, to agricultural GDP, industrial GDP and service GDP. From the national income accounts,

$$Y = Y_A + Y_I + Y_S$$

Taking the total derivate of Y and dividing both sides of the equation by Y and rearranging yields,

$$\frac{dY}{Y} = \left[\frac{dY_A}{Y_A} \right] * \left[\frac{Y_A}{Y} \right] + \left[\frac{dY_I}{Y_I} \right] * \left[\frac{Y_I}{Y} \right] + \left[\frac{dY_S}{Y_S} \right] * \left[\frac{Y_S}{Y} \right]$$

The above specification can be reduced to,

$g = r_A S_A + r_I S_I + r_S S_S$ where g is the growth rate of real GDP; r_A , r_I and r_S refer to the growth rates of agriculture, industry and services, respectively, and S_A , S_I and S_S are the shares of agriculture, industry and services, respectively.

A look at the pattern of growth rates by regime reveals that the growth rate of agriculture was relatively stable during the imperial era (1961-1973) while other sectors were highly subject to substantial fluctuations. On the other hand, the degree of volatility was high during the period covering 1973-1991 and 1992-2002 when the growth rates of all sectors were invariably unstable. The latter two regimes (1974-1991 and 1992-2002) can be characterized as periods of significant ups and downs in the levels of economic activities.

The pattern of aggregate consumption expenditure, investment and domestic savings over the last four decades has been closely related to the poor performance of the economy as shown in Table 3.2. Aggregate domestic consumption expenditure as a proportion of GDP was on average 91.5% during the period between 1960 and 2002. The figure has increased from about 86% in 1960-1973 to 96% in 1992-2002 representing very low rates of savings. If population growth is taken into consideration, then per capita private expenditure has been progressively declining during the indicated period, implying stagnation of the economy. Private consumption accounts for a significant proportion of the total domestic expenditure and it does not show variability from one regime to other (i.e. the average private consumption expenditure as a percentage of GDP remained about 78%).

Table 3.2: Trends in other macroeconomic indicators (in percent)

Demand and savings	1960-1973	1974-1991	1992-2002	1960-2002
Aggregate domestic consumption	85.85	93.14	95.83	91.46
Government consumption	8.40	15.13	16.11	13.19
Private consumption	77.46	78.01	79.72	78.27
Gross capital formation	15.94	13.03	17.28	15.07
Gross domestic saving	14.15	6.86	4.17	8.54

The trends of gross domestic savings (GDS) and gross investment (GDI) reveal important information: Gross capital information as a percentage of GDP declined from about 15.9% in 1960-1973 to 13.0% in 1974-1991 and then increased to 17.3% in 1992-2002 (Table 2.3). Gross domestic saving show a similar trend, i.e. it decreased from 14.2% in 1960-1973 to 6.9% in 1974-1991 and 4.2% in 1992-2002. The gap between investment and domestic saving has widened over time. For instance, domestic saving used to finance more than 85% of the investment during the period 1960-1973: the gap which was less than 2% of GDP during the period 1960-1973 increased to more than 12% of GDP in 1992-2002. The economy is becoming more dependent on external sources for financing investment projects.

The available evidence suggests that inflation has never been out of control in Ethiopia (See Table 3.3). It has been checked within single digits, usually below 5% except in 1994/95 (MOFED, 2002). However, price movements in the country are highly correlated with agricultural production (especially food production). For instance, inflation rate was 0.9% in 1995/96 while it was 4.2% in 1999/2000). A favourable weather condition and bumper harvest in 1995/96 led to low food prices. The year 1999/2000, on the other hand, was marked by drought with low agricultural production and relatively higher food prices. The national inflation rate was below zero (-7.2%) in 2000/2001 due to good weather condition and improved performance of the food sub-sector.

Table 3.3: Trends in inflation (%)

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
National	3.9	4.8	6.2	-5.2	-7.2	15.1
Urban	4.3	4.8	5.7	-3.5	-	-
Rural	3.8	3.7	3.8	-8.1	-	-

Source: NBE, 2003/04

3.2 Importance and Performance of the Food and Agriculture Sector

Agriculture remains the main activity in the Ethiopian economy. It is the most important contributor to the country's GDP: accounted for, on the average, 65.5%, 52.7% and 47.1% of the GDP during 1960-1973, 1974-1991 and 1992-2002, respectively. Agriculture accounts for about 90% of the total export earnings of the country. About two-third of the total foreign exchange earning is generated from coffee export. Exports from the livestock products that include mainly hides and skins, live animals and leather products are other main source of foreign exchange.

Although the employment share of agriculture has declined over time (from 89% in 1984 to 80% in 1999.¹⁰¹¹), it is still the main source of livelihood for a sizable majority of the proportion of the population: over 80% of the population earns their living from the sector. The employment share of agriculture has tended to decline, although slightly. There seems to be some shift to other sectors of the economy, particularly to the wholesale, retail trade and catering services (from ~4% in 1984 to ~10% in 1999). Undoubtedly, given its importance in the overall economy as a generator of income and employment, agriculture is potentially a vital sector in the country to achieve self-sufficiency in food production, reduce rural poverty and trigger a sustainable economic development.

Agricultural production is dominated by smallholder households, which produce more than 90 percent of agricultural output and cultivate more than 90 percent of the total cropped land. Smallholders derive their income either in cash or through own-consumption from agricultural production. According to the national accounts, the agriculture sector consists of crop, livestock, fishery and forestry subsectors. Crop production is the dominant subsector, accounting for more than 60 percent of the agricultural GDP, followed by livestock which contributes more than 20 percent. The contributions of forestry, hunting and fishing do not exceed 10 percent.

3.2.1 Crop sub-sector

Crop production is mainly exercised in the highland areas where the climate is suitable for sedentary agriculture. The sub-sector is dominated by small-scale farmers who cultivate less than one hectare of land under rain-fed farming system (see Chapter 4).

Because of the diverse agro-ecological zones, topography and natural vegetations, Ethiopian small farmers have developed complex farming methods and cropping patterns.

¹¹ It should be noted that the 1984 employment share is based on the Population and Housing Census while the 1999 share is based on the National Labour Survey (CSA, 1984, 1999).

Accordingly, seven different cereal crops, six pulse crops, seven oilseed crops, and a number of different other and tree crops are grown. Diversification has allowed farmers to cope with the drought or erratic rains but identifying the right technological package for the various ecologies and crops has been of considerable challenge to researchers and extension systems.

Details on total crop production, area harvested and yield are given in Table 3.4. Cereal production grew by a mere 2.4% per annum (using long linear growth rate) between 1980 and 2002. The growth rate of pulse production was very low, 0.84% per annum, while oilseeds expanded by 2.63%. More importantly, extensification (area expansion) rather than intensification (yield increase) has been the major contributing factor for the increase in production. Over the period 1980-2001, yield of cereals showed almost no change, increasing by a mere 0.04% per annum, while that of pulses and oilseeds declined by 0.91% and 1.50% per annum. The cultivated area for cereals, pulses and oilseeds increased annually by 2.56, 1.76, and 4.13%, respectively, over the same period. Hence, all the growth in field crops production for the period 1980-2001 was achieved by extensification.¹²

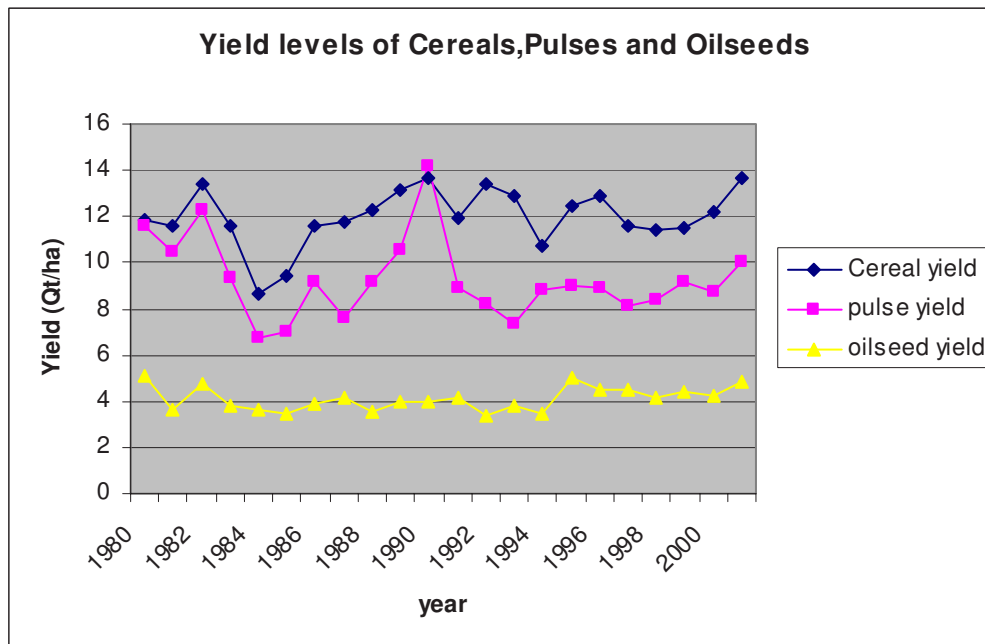
¹² The growth rate (in log linear) of production is the sum of the growth rates of area under cultivation and yield per hectare.

Table 3.4: Nation wide total area harvested, production and yield of Cereals, Pulses and Oil seeds

YEAR	CEREALS			PULSES			OIL SEEDS		
	Total Production	Total Area Harvested	Cereal yield	Total Production	Total Area Harvested	Pulses yield	Total Production	Total Area Harvested	Oilseed yield
	In (' 000 tons)	In (' 000 hectares)	tons/ha	in (' 000 tons)	in (' 000 hectares)	tons/ha	in (' 000 tons)	in (' 000 hectares)	tons/ha
1980	5321.49	4501.24	1.18	868.26	749.20	1.16	97.11	190.08	0.51
1981	5083.35	4384.17	1.16	841.22	801.95	1.05	81.64	223.55	0.37
1982	6405.81	4777.45	1.34	991.87	808.12	1.23	124.64	260.89	0.48
1983	5501.93	4735.65	1.16	734.25	784.94	0.94	100.08	260.38	0.38
1984	3937.21	4535.62	0.87	512.53	756.60	0.68	102.42	279.58	0.37
1985	4419.25	4688.21	0.94	482.91	692.43	0.70	99.29	289.30	0.34
1986	5236.38	4519.56	1.16	543.15	593.85	0.92	82.29	211.89	0.39
1987	5110.52	4340.57	1.18	533.85	699.86	0.76	77.36	188.13	0.41
1988	5075.45	4133.63	1.23	557.46	610.27	0.91	71.99	203.33	0.35
1989	5443.87	4141.13	1.32	631.94	598.88	1.06	89.72	224.19	0.40
1990	5426.57	3976.60	1.37	977.80	687.58	1.42	99.59	248.00	0.40
1991	4658.48	3911.86	1.19	636.67	714.62	0.89	88.74	212.31	0.42
1992	5318.68	3961.72	1.34	595.61	723.73	0.82	71.91	215.02	0.33
1993	5273.73	4084.59	1.29	535.29	725.17	0.74	78.81	207.32	0.38
1994	6418.83	5993.09	1.07	805.56	916.26	0.88	120.21	350.13	0.34
1995	8269.71	6652.56	1.24	814.14	904.39	0.90	195.26	391.58	0.50
1996	8629.33	6688.56	1.29	802.63	905.35	0.89	213.28	478.45	0.45
1997	6498.78	5601.88	1.16	680.19	837.61	0.81	183.70	410.01	0.45
1998	7682.99	6744.71	1.14	731.98	875.38	0.84	156.74	374.78	0.42
1999	7741.26	6747.46	1.15	959.45	1044.98	0.92	190.28	424.26	0.45
2000	8810.82	7855.73	1.12	1006.79	1164.39	0.87	256.61	581.00	0.44
2001	8303.17	6717.96	1.24	713.52	923.11	0.77	33.73	505.31	0.07
2002	6349.73	6323.82	1.00	823.17	1061.42	0.78		474.26	0.41
Growth rate	2.42%	2.36%	0.06%	0.84%	1.76%	0.91%	2.63%	4.13%	-1.50%

Source: From 1980-1998, FAO paper on page 25 and from 1999-2002, NBE

As shown in Figure 3.2, yields have tended to stagnate over the years, despite the government's effort to expand the use of fertilizer and increase the coverage of extension. It should be mentioned that the area expansion was achieved through cultivation of hillsides with high slopes, reducing or eliminating fallow land, and converting pasture, woodland and forest areas into farmland, with obvious negative implications for sustainable agriculture (Mulat, 1999)

Figure 3.2: Trends in yield per hectare for cereals, pulses and oilseeds

3.2.2 Livestock sub-sector

Ethiopia is said to possess the largest livestock population in Africa. Livestock is considered a form of security in the event of crop failure, as well as a form of investment and additional income for farmers. According to the available documentation, there are about 33 million cattle, 30 million sheep, 21 million goats, 1 million camels, 7 million equine, 52 million poultry and 10 million bee colonies (MEDaC, 1999). About 80 percent of the cattle, 75 percent of sheep, and 27 percent of goats are found in the highlands, while the rest (20 percent of cattle, 25 percent of sheep, 73 percent of the goats and all camels) are located in the lowlands.

Livestock serves as a source of traction for crop production, raw material input for industry (e.g. hides and skins, wool, etc.) and manure for fertilization. Equine animals are the major means of transport in rural areas. The role of livestock as a source of food is critical for both highland and lowland inhabitants. The main food contributions of livestock include meat and meat products, milk and milk products, eggs and honey. In the mixed farming systems of the highlands, 26 percent of the livestock output is used as food, while in the pastoral areas, where livestock forms the main source of livelihood, this proportion increases to 61 percent.

Despite its potential, the livestock sub-sector has remained undeveloped in Ethiopia. On average, it contributes up to 30 percent of agricultural GDP. The main constraints include the following:

- Diseases: Diseases have been identified as one of the main factors in low productivity of the livestock subsector. About 30 to 50 percent of the total value of livestock products is lost every year through diseases, such as rinderpest, trypanosomiasis, foot-and-mouth disease, and liver fluke (FAO, 1993).
- Feed shortage Undernutrition and malnutrition are among the major constraints to livestock production in Ethiopia. Nutritional stress has caused low growth rates, poor fertility and high mortality. High population growth and increasing density have led to expansion of the cultivated area, at the cost of grazing land on which smallholder livestock production depends. Permanent pastureland is believed to have declined by close to 60 percent over the past three decades. It should be noted that, in areas where there is intensive cultivation, crop residues have become the main source of animal feed. In the lowlands, shortage of feed and water in drought years has resulted in loss of a large number of the animal population (Befekadu and Berhanu, 2000).
- Demand constraint Underdevelopment of roads and other infrastructure has hindered livestock offtake. It has been indicated that, as income declines for a variety of reasons, livestock products are the first to be removed from the menu by the majority of consumers. Also, during the fasting seasons (which are many) of Christians, livestock products are not part of the daily menu, i.e. they are not entirely consumed which influences the demand for products negatively.
- Institutional and policy constraints There are also institutional and policy related problems, such as lack of stability of the institutions that could promote the subsector, and lack of appropriate policies to promote and increase production and productivity of the subsector. Inadequate capital and recurrent budget allocations to the livestock subsector have also contributed to its low productivity.

3.2.3 Fishery sub-sector

Ethiopia has a large body of inland waters, comprising eight principal lakes, and numerous rivers and reservoirs. These water bodies host an enormous wealth of fish resources. Although there is a large part of the country with no access to lakes or rivers, the fish production potential in the remainder is estimated at about 30,000 to 40,000 tonnes per year. Despite its high potential, the share of fishing in agricultural GDP is insignificant. Current annual fish production in Ethiopia is estimated at about 4 400 tonnes (Mulat *et al*, 2003), which accounts for less than 15 percent of the potential of available water bodies. More than half of the fish catch comes from three lakes (Abaya, Chamo and Ziway) that comprise only 20 percent of the total inland water bodies. The fish harvesting and processing technologies adopted by fishermen are traditional, leading to low quality and quantity of fish catch. Poor transport facilities have restricted the scope of marketing to nearby local outlets where fish can be sold fresh immediately it is caught. The fact that fish is not a part of the diet of most Ethiopians has also constrained the development of the fish subsector.

3.2.4 Forestry subsector

Forest resources are very important for economic development and for the maintenance of ecological balance. Forests are also good for the control of runoff (erosion), replenishment of ground waters, and the maintenance of hydrological cycles that produce rainfall. The Ethiopian forests are being depleted at an alarming rate. Around the year 1900, the forest cover in Ethiopia was 40 percent but recent estimates put it at only 3.6 percent. It is estimated that the current rate of depletion of forest cover is about 100 000 hectares per year. At this rate, it will take only another 15 years to exhaust all the forest cover. The primary cause of deforestation is cutting of trees in order to open up new farmland to feed the ever-growing population. Widespread use of wood as fuel has also contributed and making and selling charcoal is a major non-farm employment along the country's main roads. Due to the lack of an adequate plan to conserve and sustainably utilize forest resources, the contribution of this subsector to the national economy is minimal, standing at less than 6 percent of the agricultural GDP and only 3 percent of the entire GDP of the country.

3.3 Major constraints to food security and agricultural development

Increasing agricultural productivity and expanding the sector's productive capacity is the prerequisite for sustained economic growth in Ethiopia. It is impossible to stabilize the macroeconomy without stabilizing the food economy. Unfortunately, the agricultural development efforts of the last three decades have failed to address the problem of food security. A review of key constraints to food security and agricultural development is essential to chart out an effective development path.

3.3.1 Erratic weather conditions

Much of Ethiopia is subject to a high degree of interseasonal and intraseasonal climatic variability. Rains in Ethiopia are highly erratic and uneven. Often it is not changes in rainfall totals (i.e., those associated with climatological drought), but changes in the patterns of rainfall vis-à-vis the moisture needs of key crops and animals that is key to productivity. The variation coefficient in monthly, seasonal, and annual rainfall is particularly high in the semi-arid and arid districts where most of Ethiopia's food insecure people are found.

Since rainfed agriculture dominates the national economy, the performance of the sector is closely associated with levels of rainfall. Annual agricultural growth rates fluctuated and show negative signs in the eight-year period 1981 to 2001 (Table 18). These fluctuations are generally attributed to changes in rainfall and weather conditions. For instance, agricultural output declined by 21 percent during the major drought year of 1984. Rainfall was only 90 percent of the 1980 to 2001 period average during 1984.

Table 3.5: Rainfall variability and trends of the agricultural growth rate

Year	Rainfall variability (Rft/mean*100)	Agricultural output at CFC	
		Million Birr	Growth rate
1980	93.22	5384.8	
1981	98.86	5189.7	-3.62
1982	98.65	5895.2	13.59
1983	99.7	5155.8	-12.54
1984	90.16	4078.9	-20.89
1985	94.66	4732.45	16.02
1986	105.63	5620.22	18.76
1987	106.46	5464.74	-2.77
1988	116.25	5521.05	1.03
1989	110.79	5814.24	5.31
1990	106.68	6114.88	5.17
1991	96.81	5947.56	-2.74
1992	103.7	6308.27	6.06
1993	109.15	6077.99	-3.65
1994	107.95	6284.01	3.39
1995	101.44	7206.2	14.68
1996	113.29	7453.9	3.44
1997	109.72	6620.6	-11.18
1998	112.66	6873.5	3.82
1999	110.16	7024.7	2.2
2000	105.23	7831.1	11.48
2001	89.51	7586	-3.13

3.3.2 Environmental degradation

It has been documented that the wealth of the country depends on its ability to conserve and manage its land resources. Because of the aridity of a considerable area of Ethiopia, seasonally heavy rainfalls and flooding in the highlands, and loss of vegetation cover as a result of poor soil husbandry, much of the country has for decades been subject to erosion, land degradation, enormous soil loss, and reduced moisture availability. Some of the adverse consequences of land degradation include declining food production, drought, ecological imbalance, and deterioration in the living standard of the population. In the absence of an adequate in yield to secure livelihoods, farmers reduce fallow periods and expand into new areas, many of which are environmentally fragile and easily degraded (Getahun, 2003). It is argued that land degradation is partly due to the subsistence farmers' unsustainable resource use practices, including clearing of the vegetative cover from steep lands in quest of fuel wood and cropland.

Significant land degradation has been observed in the highlands over 1 500 metres above sea level and with long history of settlement. It has also been documented that the highlands of Ethiopia are among the most severely degraded lands in Africa (El-Swaify and Hurni, 1996 cited in Bewket and Sterk, 2002). Soil erosion by rain is the biggest problem in this regard and average soil removal is about two billion tonnes per year. If this

trend continues, the per capita income of the highlands will be reduced by about 30 percent by the year 2010. However, soil degradation is not limited to highland areas. Pastoralists and agropastoralists of lowland areas are also being affected by declining soil fertility, erosion and desertification.

3.3.3 Rapid population growth and declining farm size

Very high population growth rate is another typical feature of rural Ethiopia. The total population more than doubled during the past three decades, from 29.1 million in 1972, to a projected 67.2 million in 2002 (NOP, 2000). The sharp increase in the annual population growth rate, from 0.2 percent at the beginning of the twentieth century to 3 percent in the 1980s, was mainly due to an increase in fertility rate and a decline in mortality. The high fertility rate of rural people (6.99 live births per woman in rural areas, compared to 3.3 in urban areas) is the main reason for the rapidly increasing population. The main reasons for such a high fertility rate in rural areas include early marriage, lack of access to family planning and the economic value attached to children.

A rapidly growing population, along with limited possibilities to expand the area under rainfed agriculture and lack of employment opportunities outside agriculture, has led to a sharp decline in farm sizes. About 39 percent of the farming households in the country cultivate less than 0.5 hectares and about 89 percent cultivate less than 2 hectares. Only 0.75 percent of the farmers own more than 5 hectares of land (Table 19). Small farm sizes under rainfed conditions have reinforced subsistence production, in which activities are guided by home consumption requirements. Small-scale farmers produce about 94 percent of food crops and 98 percent of coffee. State and private commercial farms account for the rest of production.

Table 3.6: Number of Households by size of holding (1997/98)

Items	< .10	.10-.50	.51-1.0	1.01-2.0	2.01-5.0	5.01-10.0	>10.01	Total
No. of household (000)	583.50	3 020.63	2 500.09	2 137.40	982.89	64.06	4.36	9 292.90
% of households	6.28	38.78	65.69	88.7	99.26	99.95	100	100
No. of holders (000)	584.40	3 086.50	2 537.30	2 188.30	1 035.20	75.96	6.24	9 513.90
% of holders	6.14	38.58	65.25	92.2	99.71	99.98	100	100
Total land use (000 ha)	31.39	896.57	1 842.40	3 015.10	2 777.80	407.9	89.53	9 060.60
% of total land use	0.35	10.24	30.60	63.9	94.51	99.01	100	100
Average land holding/ household (ha)	0.05	0.3	0.74	1.41	2.83	6.37	20.53	0.98
Average land holding/ holder (ha)	0.05	0.29	0.73	1.38	2.68	5.37	14.35	0.95

Source: CSA, Land Utilization, Private peasant holdings, 1997/98 Addis Ababa, December 1998

3.3.4 Technological gaps

Utilization of modern inputs such as improved seeds, chemical fertilizers, pesticides or irrigation is very low as shown in Table 3.7. Only 5.4% of the cereal area, for instance, was covered with improved seeds and the corresponding proportion was 0.1% for pulses and 0% for oilseeds in 2000/01. Only about 8% of the coffee area was planted with improved seedlings over the same period. In spite of the recurrent drought, only 0.8% of

the total cultivated area by the peasant sector was irrigated in 2000/01. The use of organic and chemical fertilizer is limited to about 38% of the total area.

Table 3.7: Modern inputs in the peasant sector (2000/01)

	Total crop		Improved seed		Irrigated		Pesticide		Fertilizer*	
	Area (000ha)	%	Area	%	Area	%	Area	%	Area	%
Temporary										
Cereals	7636.62	73.18	415.27	5.438	45.77	0.599	986.27	12.92	3339.73	43.73
Teff	2182.53	20.91	14.52	0.665	5.65	0.259	443.65	20.33	1146.46	52.53
Barley	874	8.38	0.9	0.103	3.68	0.421	83.52	9.556	315.39	36.09
Wheat	1139.72	10.92	53.95	4.734	1.33	0.117	395.97	34.74	746.76	65.52
Maize	1719.73	16.48	344.57	20.04	18.96	1.102	25.3	1.471	843.64	49.06
Sorghum	1332.86	12.77	1.33	0.1	15.91	1.194	25.17	1.888	131.94	9.899
Millet	346.78	3.32		0		0	9.5	2.739	143.04	41.25
Oats	40.98	0.39		0		0	3.17	7.735	12.51	30.53
Pulses	1233.93	11.82	1.71	0.139	3.88	0.314	7.56	0.613	172.58	13.99
Oilseeds	561.41	5.38		0	0.29	0.052	4.12	0.734	37.42	6.665
Others	306.22	2.93	1.51	0.493	9.24	3.017	5.9	1.927	129.61	42.33
Subtotal	9738.17	93.32	418.76	4.3	59.19	0.608	1003.85	10.31	3679.35	37.78
Permanent										
Chat	99.02	0.95		0	6.98	7.049	2.67	2.696	35.3	35.65
Coffee	274.43	2.63	21.46	7.82	7.24	2.638	0.6	0.219	46.1	16.8
Enset	263.89	2.53		0	1.39	0.527		0	175.38	66.46
Cotton	11.23	0.11		0		0		0	1.62	14.43
Tobacco	3.99	0.04		0		0		0	1.25	31.33
Fruits	20.6	0.2	0.03	0.146	2.68	13.01		0	3.48	16.89
Other	24.03	0.23		0	3.93	16.35		0	7.08	29.46
Subtotal	697.19	6.68	21.51	3.085	22.5	3.227	3.64	0.522	270.22	38.76
ALL CROPS	10435.4	100	440.27	4.219	81.69	0.783	1007.5	9.655	3949.56	37.85
	* Fertilizer includes both chemical and natural fertilizers									
	- Natural fertilizer accounts for 17.5% of the total fertilizers applied to temporary crops									
	- Natural fertilizer accounts for 88.0% of the total fertilizers applied									
	Pulses include: horse beans; field peas; haricot beans; chick peas; lentils; vetch									
	Oilseeds include: neug; linseed; rapeseed; groundnuts; sunflower; sesame; castor seed									
	Other crops include; fenugreek; other spices; potatoes and other vegetables									

Source: CSA

Subsistence farmers heavily rely on traditional tools and implements and local seeds with low genetic potential, which have resulted in low yield. The traditional tillage tool is inefficient in terms of depth, width of operation as well as pulverization of the soil. The traditional plough remained unchanged and requires several passes to prepare land for planting (Mulat, 1999). Apart from its labour-intensive nature and requiring many draught animals, the present technology of land preparation is of little use for turning the subtle and weeds into the soil. It has been repeatedly argued that the food crisis in the country necessitates the importance of promoting technological innovations for increasing food production and minimizing post-harvest losses. The apparent lack of problem solving technical innovations in the agriculture has led to yield stagnation (Getahun, 2003).

3.3.5 *Infrastructural, institutional and other constraints*

The importance of infrastructure, such as roads, in boosting agricultural production and productivity cannot be overemphasized. The transport and communication systems are underdeveloped and the country's road network is one of the least comprehensive, even by African standards, with a density of 17.3 km per 1 000 square km in the 1990s, indicating that a large part of the country's potentially productive areas are inaccessible. Studies show that about three-quarters of Ethiopian farmers live more than a half-day's walk from all-weather roads. Geographical barriers to interregional trade are accentuated by the fact that all major roads converge on Addis Ababa, and agricultural distribution and marketing are predominantly focused on the city. Inadequate road networks increase transport costs and constrain the viability of a grain trade that would otherwise moderate price fluctuations. Transaction costs, such as handling and transport expenses, are high due to the small quantities that farmers bring to market places via small bags carried on the head or on the back of pack animals (Mulat, 1999). An estimated 30 percent of the total grain output is lost through inadequate storage and poor transport facilities (Getahun, 2003). It has been argued that a more efficient marketing system calls for wider and timelier dissemination of market information.

Input markets are extremely inefficient in Ethiopia. For instance, the fertilizer market is dominated by a parastatal and a few companies with connections to local governments. Improved seeds are not available in the open market and the Government, through different agencies like the Ethiopian Seed Enterprises, is in charge of distributing improved seeds to farmers. Delays in input delivery¹³ and lack of coordination of seed supply, fertilizer distribution, credit and output marketing are the major limiting factors for technological adoption, and these retard agricultural production in the peasant sector.

With regard to social development such as education and health indicators, Ethiopia has one of the highest adult and youth illiteracy rates in the world as well as in sub-Saharan African countries. The adult illiteracy rates for males and females were 57 and 68 in 1999/2000, respectively, (MOFED, 2002). The youth illiteracy rates for males and females were 46 and 48, respectively. Emerging evidences show that a quarter of the Ethiopian population live some 6 kms or more and 19.3 kms away from primary secondary schools respectively (MOFED, 2002). The rural-urban divide is enormous in terms of accessibility of educational infrastructure, where the situation is even worse in rural areas. The majority of the Ethiopian population do not have access to adequate health facilities. A recent Welfare Monitoring survey showed that about 62% of the rural population who reported to have been ill do not seek any form of medical treatment. This figure is around 38% in urban areas¹⁴. More importantly, the rate of HIV/AIDS infection is rising and some 7.3 to 10% of the adult population is reportedly HIV positive. The country is losing its prime labor force with serious social and economic implications.

¹³ Recent evidence indicates that 31 percent of farmers who bought DAP complain about late delivery of chemical fertilizers. Regionally disaggregated, more complaints were observed in SNNPR (49 percent) and Oromiya (41 percent) than in Tigray (3 percent) and Amhara (18 percent). These delays can largely be attributed to the long process of organizing and processing bid procurement. Late arrival is believed to have contributed to lower yields, hence lower benefits of fertilizer use (DSA, 2001; Mulat, 2003).

¹⁴ MOFED, Ethiopia: Sustainable Development and Poverty Reduction Program, Addis Ababa, July 2002.

3.3.6 Limited role of civil societies in policy formulation and implementation

Community organizations and institutions are vital in promoting people's participation for provision of services and resources for human development, improving resource allocation and for ensuring effective public service delivery. Grassroots institutions have proved to be the most effective partners in the fight against poverty.

Farmers, women and youth in rural areas have never been able to organize their own independent association to protect their rights and interests. Trade, teachers and student unions as well as business associations in urban came into being and operated under a generally unfavorable political environment where independent associations and organizations outside the tutelage and control of the state were viewed with suspicion. The Military government violently smashed any attempt of the unions to maintain independence. It purged their leaders in the late 1970s and replaced them with those that were zealous supporters of the government and its ideology.¹⁵ It also created national associations such as the Revolutionary Ethiopia Farmers Association (REFA), Revolutionary Ethiopia Youth Association (REYA), and Revolutionary Ethiopia Women's Association (REWA) to serve as an instrument for its policy of control and suppression.

The present government came to power in 1991 with a promise of democratic freedom and multi-party politics. Nonetheless, it has been equally unwilling to tolerate independent unions or associations. According to Dessalegn¹⁶, 'its favored tactic since the early 1990s has been to force a split in trade unions considered hostile to its policies and then give its support in favor of leaders friendly to it. On occasion, independent minded leaders have been harassed, thrown in jail on trumped up charges, or forced to flee the country'.

One of the major reasons for lack of sustained development in Ethiopia is lack of adequate mechanism to articulate the interest of peasants and ensure their active participation in planning and execution of development projects. Independent farmers' unions, interest groups, union of wageworkers and associations/network of craft workers have never been part of the rural life. In the absence of civic organizations to protect their interest, interactions with public officials have placed a large burden on poor people. They are unable to take advantage of new economic opportunities or engage in activities outside their immediate zone of security, i.e. subsistence farming¹⁷.

3.4 Agricultural Strategies and Policies

The effort to develop the rural and agricultural sectors began in the 1960s with the launching of the comprehensive and minimum package agricultural projects in high potential areas using the free market policy framework. A new approach designed to transform the rural areas along the socialist mode of production was introduced in the mid

¹⁵ See for instance, Taketel Abebe. 2000. 'Civil Society: Some Theoretical and Conceptual Issues' in Alemu Mekonnen and Dejene Aredo (eds), op cit.; Dessalegn Rahmato. 2002. 'Civil Society Organizations in Ethiopia' in Bahru Zewde and S. Pausewang (eds), op cit.

¹⁶ Dessalegn Rahmato. 2002. 'Civil Society Organizations in Ethiopia' in Bahru Zewde and S. Pausewang (eds), op cit.

¹⁷ Mulat Demeke. 2001. Off-farm income generation opportunities in Ethiopia: with particular reference to food-insecure woredas, Department of Economics, Addis Ababa University, unpublished report.

1970s. The communist experiment ended in 1991 with the introduction of a new development strategy called Agricultural Development Led Industrialization (ADLI) and announcement of the market liberalization policy. This section examines past strategies and policies with the aim of establishing the implications for the poor performance of the sector.

3.4.1 *The Imperial Regime; Pre-1974*

Until the late 1960s, peasant agriculture was not given due emphasis by policy makers and planners. A bimodal strategy for agricultural development was adopted in the late 1960s, encompassing large-scale mechanized commercial farms and the establishment and development of package projects. Large-scale mechanized commercial farms require extensive areas of land under cultivation and the use of modern agricultural inputs. The inputs include modern technology, machinery and equipment (tractors and combine harvesters), top-dressing airplanes for pesticides, chemical fertilizers, and hired labour, as opposed to small-scale farming systems which use family labour. These farms produced mainly food and fibres that were used as inputs for the industrial sector.

The Government took some fiscal measures to encourage the expansion of these farms. Among the policy measures adopted were tax concessions – low taxes on land use and tax-free import of heavy machinery and equipment. Despite all the encouragement given by Government, the achievement of these farms was less than satisfactory. Commercial farming accounted for 5 percent of total agricultural output and 3 percent of the total area cultivated. Investment in commercial farming accounted for about 13.7 percent and 21.3 percent of the total investment in the agriculture sector during its ‘First-Five-Year’ (1957 to 1961) and ‘Second-Five-Year’ (1963 to 1967) development plans, respectively (Belay, 2003). Although this investment is relatively meagre, it has led to some expansion of commercial farms engaged in the production of cash crops for export and raw materials for domestic industry.

Because of dissatisfaction with the poor performance and continued stagnation of commercial farms and pressure from international donor agencies, the Government started acknowledging the impotence of small farm households and made attempts to modernize them. As a result, the first integrated rural development project, the Chilalo Agricultural Development Unit (CADU), was introduced in one of the high-potential areas of the country, Arssi, south of Addis Ababa, in 1967. The CADU aimed at general socio-economic development, including agronomic research, diffusion of research results, provision of modern farm inputs, marketing and credit facilities, promotion of cooperative societies, price stabilization, and training of local project employees. Based on the experience of CADU,¹⁸ two other comprehensive package projects with similar objectives

¹⁸ CADU managed to increase wheat yield from 13 quintal per hectare in 1967 to 20 quintal in 1974. It also helped farmers to increase milk yield from 300 litres per lactation period, per cow in 1967, to 1 000 litres in 1974. As a result, the per capita income of Arssi, which was Birr 450 per year in 1967, had reached Birr 939 per year in 1974 (double the national average). In addition, marketing facilities were made more easily accessible through the construction of feeder roads (MOE, 2002).

were initiated; the Wolamo Agricultural Development Unit (WADU) in Wolaita, in 1970 and the Ada District Development Project (ADDP) in Debre Zeit, in 1972.

However, the comprehensive package project appeared to be too costly, in terms of both finance and availability of skilled personnel to replicate the projects in other regions of the country. Thus, the then Government adopted another package thought to be compatible with the available resources and less expensive to replicate in different areas of the country. This was the Minimum Package Project (MPP), initiated in 1971. Like the comprehensive package project, the impact of MPP on peasant agriculture was below expectation, mainly due to lack of appropriate agricultural technologies adaptable to the different agro-ecological zones of the country.

Interventions under the Imperial regime focussed on introduction of new technologies and promotion of commercial agriculture in high potential areas. It was generally felt that the major beneficiaries were members of the ruling class and a few elite individuals who owned land and had access to government finance and incentives. A growing gap between the rich and the poor and dictatorial rule by the Emperor triggered protests and opposition to the Government. There was very little attempt to arrest environmental degradation and moisture stress in marginal areas. The only option for farmers in the degraded and drought-prone areas of the north was to settle in the southern, western and Rift Valley areas, through either spontaneous or planned settlement schemes. A relatively small number of peasants are believed to have relocated their residence to more fertile areas. Traditional agriculture in the north increasingly failed to sustain life for the growing population, culminating in the Wollo famine of 1972 to 1974 that led to the overthrow of the 2 000 year old feudal system of rule in 1974.

3.4.2 The socialist/military regime; 1974-1991

The uprising in 1974 that led to the overthrow of the Emperor was accompanied by changes in ideological thinking in favour of socialist principles. It was followed by an overall shift in the economic policies of the country, in which state control of the economy was overextended. The official policy in agriculture became expansion of state and collective farms, all rural lands became public property and private ownership of land was banned following the 1975 land reform. It was declared that land would be distributed to tillers without compensation to former owners (landlords). There were no circumstances that encouraged private sector participation in economic activity. The new policy paradigm was also manifested in other sectors of the economy. The proclamation limited the size of land to a maximum of 10 hectares and transfer of land by any means, be it sale, exchange, lease, etc. was strictly prohibited. The reform made provision for the formation of peasant associations (PAs), the main instrument for implementing the land reform programme. The formation of service and producers' cooperatives was actively encouraged and a villagization programme, designed to bring distant households into small village clusters, was initiated in the mid 1980s to expedite the process of collectivization.

The MPP, launched during the Imperial regime, continued in the Derg regime. The Government, however, favoured state-owned large-scale farms and producer cooperatives and encouraged these by offering low cost fertilizer, interest free loans, and relatively

fertile farmlands. The impact of these measures on the performance of the agriculture sector was disastrous – low production of food grains and high grain prices in urban areas. This forced the Government to establish a parastatal marketing agency known as the Agricultural Marketing Corporation (AMC) with the aim of stabilizing grain prices in the urban areas, at the expense of farmers. AMC purchased grain from farmers at an artificially low price and sold it to urban dwellers at a reduced price. The whole operation was assisted by compulsory grain delivery imposed on farmers. Restrictions on interregional grain movement by private traders and a quota system discouraged farmers from producing more or investing in agriculture.

Because of the poor performance of the agriculture sector and the dissatisfaction of farmers with Government policies and strategies, donors withdrew their support to the MPP. Hence, the minimum package project was phased out in mid 1985 and replaced by the Peasant Agricultural Development Extension Program (PADEP) with the objective of increasing food production, promoting rural employment opportunities, and developing the production of cash crops for export and raw materials for domestic industry. But, because of disagreement between the Government and donors, the implementation of PADEP was terminated. Despite the emphasis of the Government on state and collective farms in terms of providing credit and investment, their performance was less than satisfactory.

The socialist regime failed to tackle the root causes of food insecurity in low-potential areas. A top-down approach in policy formulation and implementation excluded farmers from participation in the development process. Farmer organizations were brought under the direct and complete control of the Government and the ruling party, the Workers Party of Ethiopia, and independent initiative was stifled. Investment in irrigation was very limited, as the entire focus of the Government was on collective and state farms in high-potential areas and early warning system and coordination of relief activities in low-potential areas. The Relief and Rehabilitation Commission (RRC) was given the responsibility of gathering information to identify areas that might suffer widespread food shortages in coming years. At the end of each harvest season, a food supply prospect report was produced, along with an assistance requirement report, for the donor community. RRC also produced a quarterly pastoral area assessment report, covering the vulnerability and food needs of the pastoral areas (Caldwell, 1992). There was no attempt to build the productive capacity of the farmers and, thereby, break the cycle of dependence on food aid. On the contrary, public ownership of land made it very difficult for farmers to invest on such land. Farmers were also observed to reduce their livestock herd sizes in order to meet the selection criteria and make themselves eligible for relief distribution (Debebe, 2001).

Resettlement of farmers from drought-prone areas became a major undertaking in the 1980s, especially after the disastrous 1984 famine. The scheme was meant to relieve the population pressure of the vulnerable areas, promote food security and bring about the environmental rehabilitation of these areas. In the period 1984 to 1986, the military Government resettled some 600 000 people, mostly in the lowlands of western Ethiopia. It is estimated that 33 000 settlers lost their lives due to disease, hunger, and exhaustion, and thousands of families were broken up. Apart from the huge loss of life and financial cost,

losses due to environmental damage, livestock death and loss of property are reported to have been significant (Dessalign, 2004).

3.4.3 Post-1991

Protracted civil war and the consequent deepening crisis in the political and economic situation of the country led to the change in government and the establishment of the Transitional Government of Ethiopia (TGE) in July 1991. The TGE, backed by the World Bank and International Monetary Fund (IMF), adopted the Transitional Economic Policy. This has remained as the official economic document of the country, and has been further strengthened and deepened by the initiation of a series of reform measures, with the objective of revitalizing and reversing the centralized economic system towards a more market-based economy. The adoption of the new economic policy laid the cornerstone for a conducive policy environment in which:

- Producer cooperatives were dissolved;
- Smallholder and private commercial farms were encouraged;
- Public investment in state farms was reduced;
- Input subsidies were removed;
- There was devaluation, and subsequent depreciation of the real exchange rate;
- Both input and output markets were liberalized; and
- Interregional trade movements were abolished.

As part of the economic reform programme, the Government also embarked upon an extensive privatisation programme, with a view to curtailing its role in the production and distribution of goods and services.

The previously mentioned ADLI development strategy, which emphasised the development of peasant agriculture and making the agricultural sector as the driving force of the national economy, was adopted. At the heart of this strategy lies the attainment of food self-sufficiency, increase and diversification of production of raw materials and, by these means, promotion of the linkage between the agricultural and industrial sectors. The main premises of the strategy are that agriculture acts as the springboard for the overall development process on account of its superior growth linkages. It has been widely recognised and accepted that Ethiopia cannot progress without strengthening of agricultural production and productivity. This strategy aims at improving the production and productivity of smallholder agriculture through generation, adoption and diffusion of new farm technologies in the form of improved inputs and farming methods. In order to mobilise small farmers and dissemination of better farming practices, the development strategy has been operationalized via the Participatory Demonstration and Extension Training System (PADETS). The main features of PADETS include sizeable demonstration plots in the farmer's own field, provision of input credit, and market-led inputs and outputs markets.

Since the operationalization of PADETS in the mid 1990s, fertilizer and selected seeds have witnessed widespread and increased rates of adoption in different regions. The quantity of commercial fertilizer used by the peasant sector increased from 107 457 tonnes in 1993 to 297 907 in 2000, although declining to 230 000 in 2002. Moreover, the number

of participating farmers has shown an increasing trend, covering about 40 percent of the farming population. (The number of extension participant farmers rapidly expanded from 32 047 in 1995 to over 4 million in 2001.)

Recognising the complex and intractable nature of poverty, the Government has prepared a Sustainable Development and Poverty Reduction Program (SDPRP). SDPRP calls for the empowerment of local communities and a demand-driven approach to technology generation and dissemination. The Government has also committed itself to the devolution of power to *woredas* (districts) and *kebeles* (villages), facilitating the direct participation of the people in growth and poverty reduction endeavours. Lack of independent, grassroots organizations (e.g. association of producers of dairy products, wheat, maize, or farmers unions) is perhaps the biggest challenge to the realization of the decentralization objective.

In order to address the challenge of assuring food security in Ethiopia, a consultative process has been undertaken to establish a partnership between the Government and development agents. A high-level workshop was organized by the Government on 11 and 12 June 2003 to search for a lasting solution to the issue of chronic food insecurity. The workshop gave rise to the formation of the New Coalition for Food Security. The Coalition established a Technical Group, comprising specialists, representing both Government and development partners, which was given the mandate to draft an action plan for the drastic reduction of food insecurity. The five-year goal is to attain food security for five million chronically food insecure people, while, at the same time, improving and sustaining the overall food security of an additional ten million people.

Although the Coalition signals a major departure from the traditions and practices of the past, it is still a top-down intervention with little or no participation of the leading stakeholders, the farming community. The Federal Food Security Steering Committee (FFSSC) is chaired by the Deputy Prime Minister, and is composed of four Government representatives and four elected donor representatives. It will provide policy and strategic advice to the Government. The Regional Food Security Coordination Offices will continue to be the focal point for the overall coordination of the Regional Food Security Steering Committee. All food security activities at the *woreda* level are discussed in most localities by the Woreda Development Committee. A Woreda Food Security Desk oversees the practical implications of the various elements of the programme, provides guidance to each sector and stakeholders involved in the *woreda*, and coordinates priorities and capacity building efforts in close liaison with the regional level. This is hardly a reflection of inclusive institutions but wider ownership of the programme by stakeholders does not exist.

Both the SDPRP and the New Coalition for Food Security attach significance to the role of resettlement in reducing the pressure on land in drought-prone areas. Intraregional voluntary settlement schemes in sparsely populated and underutilized areas are considered to be among the key instruments to attain food security. The scheme is expected to involve 440 000 heads of household (totalling 2.2 million people when their families are included) in four regions (Amhara, Oromiya, SNNP and Tigray). A preliminary study raises serious doubt about the Government claim of the presence of abundant unoccupied land suitable for cultivation, even in regions with favourable weather and fertile land, such as Oromiya

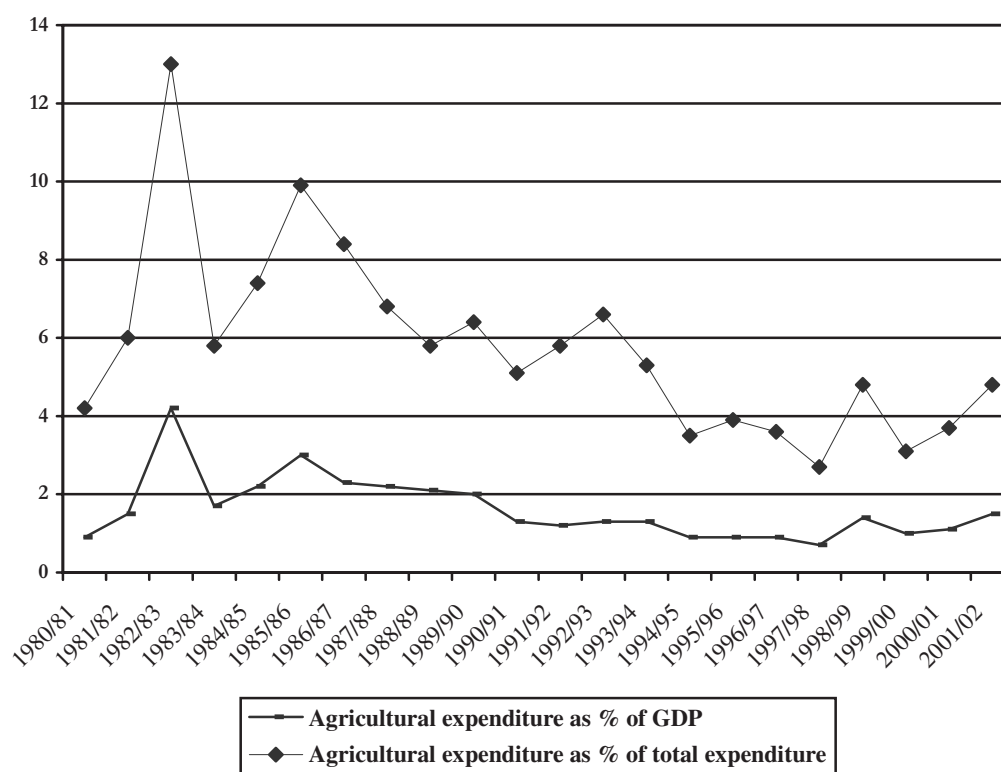
and Southern Nations, Nationalities and Peoples (SNNP) (Alemneh, 2003). It should be noted that governments in Ethiopia resort to resettlement following their failure to develop the non-agricultural sector (to absorb the surplus rural labour) and promote intensification on farms (to increase the absorptive capacity of the land).

The Federal Government has chosen to uphold the land policy of the former socialist government on the ground that private freehold system would lead to sales of land at times of drought or shocks, with subsequent massive migration to urban centers. According to the December 1994 Constitution, ‘... the right to ownership of rural and urban land, as well as of all natural resources is exclusively vested in the state and the peoples of Ethiopia. Land is common property of the nations, nationalities and Peoples of Ethiopia and shall not be subject to sale or to other means of transfer’. Some regions (e.g. Tigray) have recently introduced land titles to provide more security and encourage investment. However, a study in Tigray reported that land certification, although a positive initiative, cannot address issues of insecurity, ownership and transfer of land (Atakilte, 2003). The efficiency cost of tenure insecurity appears to be very high.

3.5 Pattern of Support and Terms of Trade

3.5.1 Budgetary Allocation

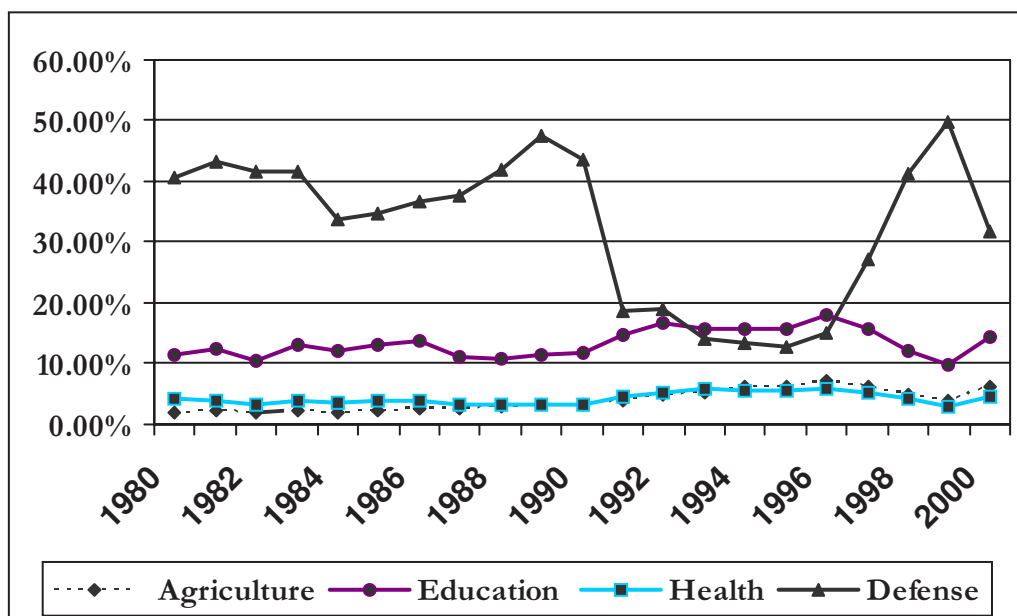
Public expenditure in agriculture is one of the indicators of government’s commitment to the sector. Despite the dominance and significance of agriculture in the overall economy, the level of government resources invested has been very much limited particularly in the 1980s. Government expenditure in agriculture was, on average, 1.6% of GDP during the period spanning 1980-2001 and the trend increased only marginally from 1.3% in 1992 to 1.5% in 2001 (Figure 3.3).

Figure 3.3: Government expenditure in agriculture

The share of agricultural expenditure in the total government expenditure was also very low and depicted a fluctuating trend between 2% (the trough) 13% (the peak) for the period 1980/81-2001/02. The share of agriculture averaged 5% and the figure was only 4% in the 1990s compared to 7% in the 1980s. The level of government expenditure in agriculture has not been commensurate with the sector's contribution to the economy and its development requirements. Since the vast majority of the country's poor people depend on agriculture, the government needs to invest more to alleviate poverty.

Figure 3.4 shows the proportion of recurrent expenditure allocated to agriculture, education, health and defence. With the exception of the brief period between 1991/92 and 1996/97, defence absorbed the largest proportion, often exceeding 30 percent of the recurrent budget. On average, 40 percent of the total recurrent expenditure (including grants) was spent on defence between 1980/81 and 1990/91 to fight rebel movements in different parts of the country. Because of the Ethiopia-Eritrea conflict, military expenditure accounted for about 37 percent of the total recurrent expenditure during the period 1997/98 to 2000/01. Recurrent expenditure on education and training averaged 12 percent during the period 1980/81 to 1990/91, compared to 14.8 percent in the years 1991/92 to 2000/01. The share of agriculture remained low but increased from an average share of 2.5 percent in 1980/81 to 1990/91, to 5.5 percent during the post reform period (1991/92 to 2000/01). Expenditure on health accounted for 3.6 percent of the total recurrent expenditure in 1980/81 to 1990/91, compared to 5.0 percent during the period 1991/92 to 2000/01. The high cost of the civil war and the military conflict in Ethiopia has made it impossible to increase expenditure on pro-poor sectors such as agriculture, education and health.

Figure 3.4: Sectoral comparison of government recurrent expenditure allocation



With regard to capital budget allocation, the relative share of agriculture was very high in the 1980s, although it declined rapidly towards the end of the decade because of the intensifying civil war. In 1982/3, over 40 percent of the total capital expenditure was on agriculture and the sector was the biggest beneficiary of the capital expenditure under the military regime. Nonetheless, it should be noted that nearly all the expenditure was directed towards state and collective farms, which were later disbanded after the overthrow of the Government. Public expenditure to enhance the capital base of small farmers was minimal. The problem was made worse by the very small capital expenditure in health and education (about 3.9 percent and 4.5 percent, respectively) under the former government.

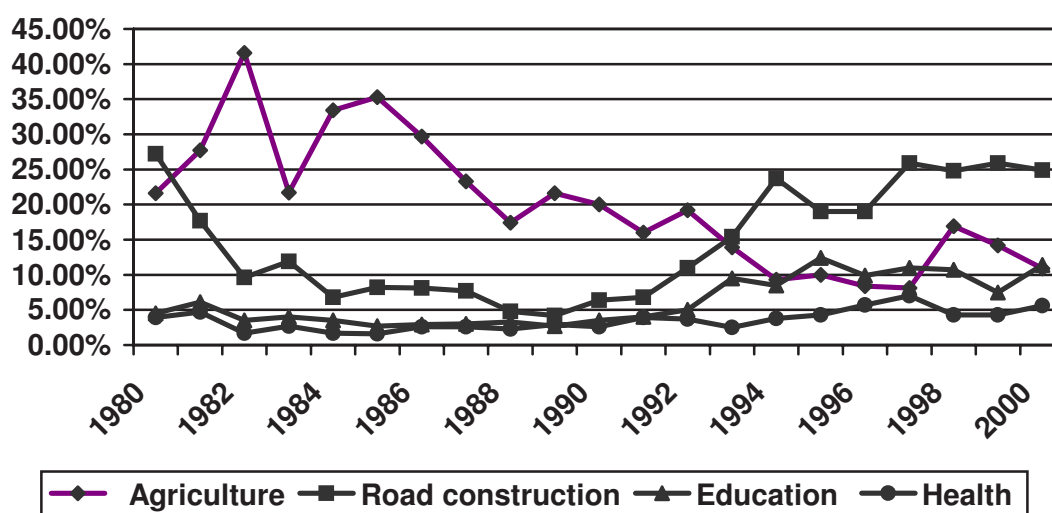
The decline in capital expenditure on agriculture continued even after the end of the war (Figure 11). The share of agriculture fell below 10 percent during the mid 1990s, before recovering slightly in the years 1997/98 and 1998/99. But the recovery was short-lived as the share of agriculture dropped to about 10 percent by the year 2000/01. Capital expenditure in education and health improved slightly during the post-reform period but a downward trend was observed by the end of the 1990s. Road construction has been the major beneficiary of capital expenditure during the post-reform period, increasing its share from about 5 percent in 1998/99 to about 25 percent in 2000/01. Improved access to roads is expected to have a positive impact on rural areas.

Table 3.8: Sectoral structure of capital budget allocation (in %)

	Imperialist and socialist eras												
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Average
Agriculture	21.56	27.66	41.56	21.73	33.37	35.29	29.69	23.28	17.41	21.64	19.97	15.99	25.76
Road construction	27.18	27.18	27.18	27.18	27.18	27.18	27.18	27.18	27.18	27.18	27.18	27.18	27.18
Education	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51
Health	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86
	Transitional Government era										Average		
	1992	1993	1994	1995	1996	1997	1998	1999	2000				
Agriculture	19.24	13.85	9.26	10.04	8.36	8.12	16.94	14.19	10.95		12.33		
Road construction	10.99	15.38	23.75	18.99	19.02	25.88	24.80	25.90	24.88		21.07		
Education	4.95	9.50	8.53	12.40	9.85	10.96	10.66	7.46	11.43		9.53		
Health	3.73	2.54	3.80	4.32	5.71	6.97	4.33	4.34	5.61		4.59		

Source: Own computation from MOFED data

Figure 3.5: Sectoral comparison of government capital expenditure allocation



The share of recurrent expenditure in the total budget is very high in Ethiopia: it averaged 72.8% during the period 1980/81-1991/92, compared to 67.4% in 1992/93-2000/01 (Table 3.9). Despite the slight decline during the post-reform period, recurrent budget, which is largely made up of salary payments, accounts for a sizeable proportion of the total government expenditure. Limited public investment has resulted in inadequate infrastructure in both rural and urban areas, which in turn has discouraged private investment in agriculture, industry and other sectors of the economy.

Table 3.9: Share of recurrent budget in the total government budget (1980/81 to 2000/01)

	Recurrent	Total	Share of Recurrent (%)
1980/81	1 791.2	2 281.52	78.51
1981/82	1 934.60	2 629.76	73.56
1982/83	2 562.40	3 786.15	67.68
1983/84	2 265.00	3 168.99	71.47
1984/85	2 737.50	3 823.38	71.60
1985/86	2 659.4	4 062.23	65.47
1986/87	2 754.00	4 003.07	68.80
1987/88	3 596.15	4 820.80	74.60
1988/89	3 972.63	5 725.92	69.38
1989/90	3 929.10	5 282.99	74.37
1990/91	3 767.36	4 854.42	77.61
1991/92	3 365.21	4 205.39	80.02
1992/93	3 607.83	5 219.39	69.12
1993/94	4 657.81	7 094.01	65.66
1994/95	5 517.94	8 371.95	65.91
1995/96	5 996.23	9 144.82	65.57
1996/97	5 750.40	10 014.88	57.42
1997/98	7 190.52	10 798.85	66.58
1998/99	10 533.06	14 677.22	71.76
1999/00	13 676.49	17 531.59	78.01
2000/01	10 441.24	15 737.27	66.35

Source: MOFED

There are no reliable data showing the pattern of government expenditure within agriculture. Data for the year 2002/03, however, shows that recurrent budget at federal level is shared among various federal institutions but the bulk (over 80%) goes to the Ministry of Agriculture and the Ethiopia Research Organization (Table 3.10). The newly established Ministry of Rural Development, the Cooperative Commission, National Fertilizer Industry Agency and the National Seeds Industry Agency each accounted for 1.5 to 2.9% of the recurrent budget. The Ministry of Rural Development has recently been given the mandate of overseeing nearly all institutions working in the area of rural and agricultural development as well as natural resources. Coffee and Tea Authority, Livestock marketing Authority and National Meteorological Office are also expected to report to the Ministry as well. The Ministry of Water Resources operates on its own has its own budget for the development of water for irrigation and other uses. It has not been possible to get a clear picture of the budgetary allocation in agriculture partly because of the ongoing reorganization of institutions operating in the sector.

Each regional administration allocates its capital budget for agriculture into crop, livestock and fisheries, coffee, agricultural research and other activities. For instance, in 2000, the Oromiya region, allocated 40% of its capital budget for agriculture to crop development followed by livestock and fisheries (23%), coffee development (17%) and agricultural research (9%). Recurrent budget of the region was divided into wages and salaries (70%), pensions (20%) and operation and maintenance activities and materials and supplies (10%) in 2000 FY (Tassew, 2004).

Table 3.10: Breakdown of federal budget, 2002/03 ('000' birr)

Institutions	Amount	Percent
MOA	47 583.8	42.48
National Fertilizer Industry Agency	1 715.8	1.53
Ethiopian Research Organization	43 618.9	38.94
Ethiopia Biodiversity	5 739.4	5.12
Ministry of Rural Development	2 715.4	2.42
Cooperative Commission	3 292.4	2.94
National Seeds Industry Agency	2 736.4	2.44
Environmental Protection Authority	4 608.3	4.11
Total	112 010.4	100.00

Source: Adapted from Tassew, 2004

Overall, federal institutions are involved mainly in policy formulation and account for 65 percent of the country's total budget. Regional offices are responsible for implementing policies and programmes and account for only 35 percent of the total budget (Tassew, 2004). More effective decentralization would entail increased budgetary support to the regions and a reduced bureaucratic structure at the federal level. It is also important to note that the figures for capital budget are not reliable in many cases, as the money is commonly shifted to other uses, especially in the case of emergencies or unforeseen events. Donations, which comprise a good part of the capital budget, are also unreliable. Generally the available budgets are not large enough to have a significant impact on poverty in Ethiopia. Efficient utilization of available budgetary resources is also constrained by limited capacity, inefficient management and corruption in public offices. The Government has introduced expenditure management and control (EMC) and anti-corruption measures as part of its efforts to institute good governance. A Ministry of Capacity Building has been established and a comprehensive National Capacity Building Program has been prepared to improve the human capacity, working systems and organizational structures of government offices. Nonetheless, more attention should be given to public and civil society participation if Government efforts are to bear fruit and become sustainable.

3.5.2 Terms of trade

The extent of farm production and productivity, level of farm income and investment in modern inputs are determined by the pattern of prices of agricultural products relative to prices of non-agricultural products. The role of price is particularly significant in an economy where the production system is market-oriented. Available evidence indicates that the terms of trade between the Ethiopian agriculture, using food prices as a proxy measure, and non-agricultural sectors, represented by prices of DAP fertilizer, clothing and footwear and household equipment, have been biased towards the non-agricultural sector (i.e. against agriculture). For instance, the price index of food items has increased by about 12 percent during the period 1995 to 2000, while the figures for DAP fertilizer and transport and communications are 76.6 percent and 65.2 percent, respectively (Samuel, 2003).

In order to provide incentives for efficient fertilizer use and encourage competitive markets, the National Fertilizer Policy, introduced in 1993, called for gradual elimination

of pan-territorial pricing and subsidies. Accordingly, the pricing system was deregulated in stages: retail price was deregulated as of 31 January 1997 and total fertilizer prices have been completely deregulated since February 1998. Fertilizer subsidies were withdrawn in February 1997. The impact on fertilizer prices was dramatic: DAP rose from Birr 107 per quintal in 1992 to Birr 287 Birr per quintal in 2001.

The fertilizer market has not become more competitive, as envisaged in the Fertilizer Policy and the Structural Adjustment Programme. In other words, the problems faced before liberalization, (e.g. delays in distribution and intervention by government bureaucrats) have continued but none of the benefits associated with liberalization has materialized.

Similar to the input market, the grain market remained inefficient and unfavorable to small producers after the 1991 liberalization that ended the monopoly of the parastatal Agricultural Marketing Corporation. Eleni, Gezahegn and Wolday (2003) note that poor smallholders in Ethiopia face markets that are characterized by large information asymmetry, high transaction costs and high uncertainty. These factors imply thin, volatile and segmented markets, which inhibit smallholders from specializing and becoming high-yield producers and marketers of a large share of total output. Subsistence production has remained the dominant activity, with only 28 percent of total farm output being marketed in 1996. Smallholders function in the subsistence economy, not served by well-functioning input or output markets.

Contrary to expectations that the private sector would efficiently stabilize prices by engaging in temporal and spatial arbitrage, the market constraints enumerated above have led to greater volatility than in pre-reform periods. Continued involvement of the Ethiopian Grain Trading Enterprise (EGTE) (the former AMC), as a buyer of last resort to stabilize prices or control price swings through market mechanisms, has proven largely unsustainable and ineffective. Inefficient output markets have resulted in low and variable prices, thus reducing the profitability of new technologies in agriculture.

The impact of unfavourable input and output markets on farmers is revealed by the declining terms of trade. The extent to which fertilizer prices have changed relative to output prices can be gauged by looking at the ratio of DAP (the most widely used fertilizer in Ethiopia) price, to price of major cereals. A price study in some urban centres located in surplus producing areas indicated that there has been a sharp decline in output price in recent years, particularly in the 2000/01 *meher* season. For instance, the ratio of DAP to teff price increased from 0.55 in 1992, to 1.94 in 2001. In other words, only 0.55 quintal of teff (mixed) was required to buy 1 quintal of DAP in 1992, compared to 1.94 quintal in 2001 (Table 24). The change represents a 13.4 percent increase in the amount of teff required to buy a quintal of DAP. Producers were clearly faced with rising fertilizer prices on the one hand and declining output prices on the other (Development Studies Associates, 2001).

Maize producers have suffered the most as a result of the unfavorable price changes in recent years. In 1992, the cost of one quintal of DAP was 1.23 quintals of maize. In 2001, farmers were forced to sell 8.2 quintals of maize to buy a quintal of DAP, representing a 670 percent increase over 1992 (Table 3.11).

Table 3.11: Ratio of teff and maize price to DAP price (1986-2001)

Year	Average teff price	Average maize price	DAP Price	DAP/Teff	DAP/Maize
1986	70.00	32.00	81.40	1.16	2.54
1987	80.00	32.00	79.75	1.00	2.49
1988	123.00	37.00	81.40	0.66	2.20
1989	104.50	45.50	96.60	0.92	2.12
1990	126.50	45.25	88.80	0.70	1.96
1991	163.67	64.25	91.00	0.56	1.42
1992	196.33	87.25	107.10	0.55	1.23
1993	151.67	65.00	149.77	0.99	2.30
1994	187.00	99.75	143.35	0.77	1.44
1995	201.00	105.33	178.00	0.89	1.69
1996	150.33	61.00	200.00	1.33	3.28
1997	154.67	82.75	248.84	1.61	3.01
1998	184.33	92.25	238.13	1.29	2.54
1999	213.67	120.50	249.82	1.17	2.03
2000	206.00	103.50	282.06	1.37	2.64
2001	148.33	33.75	287.06+	1.94	8.23

Source: Grain prices for selected sites obtained from the Ethiopian Grain Trade Enterprise (EGTE)

Note: The grain prices of 2001 are averages for the period January to July; Fertilizer prices refer to prices observed at the same or nearby locations of grain price.¹⁹

3.6 Private sector development

It is believed that private investment plays a vital role in the development of agriculture. The provision of inputs and credit services to farmers depends greatly on the strength of private dealers, transporters and financial institutions. Equally, farmers need efficient and competitive markets and processing facilities to be adequately rewarded for what they produce.

The Government has been implementing measures aimed at liberalizing the private investment climate and the Investment Code has been revised several times to encourage the private sector. However, the sector is still in its infancy as recovery from the nationalisation and discrimination policy of the previous Government is taking more time than expected. Privatisation of public enterprises, initiated in 1994, is also progressing slowly, owing to bureaucratic hurdles and limited capacity of local investors. Foreign direct investment has been limited to a few sectors (e.g. hotel and construction) and is dominated by one investor.²⁰

Private investment in manufacturing, agriculture, agribusiness and mining is constrained by several factors. Some of the major ones include limited access to land for investment purposes, lack of finance, weak physical infrastructure, policy uncertainties (because of limited participation of the private sector in policy formulation and implementation), lack of networking and joint action within the business community, limited access to external finance, and an uneven playing field caused by the operation of ruling-party-affiliated

¹⁹ See also Development Studies Associates, 2001.

²⁰ Foreign direct investment in Ethiopia was only 0.09 percent of GDP from 1992 to 1998. The Midroc group, a company owned by a Saudi Arabian with an Ethiopian mother, accounts for a large share of whatever investment the country was able to attract.

companies. Public utility companies, such as the Ethiopian Telecommunication Authority and the Ethiopian Light and Power Authority, have no competitors and have remained inefficient and bureaucratic. The Government blames the private sector for showing a tendency towards 'rent-seeking' rather than 'value-addition', while representatives of the private sector (mainly through the Chamber of Commerce) often complain of lack of Government commitment to developing the sector (e.g. companies created by the ruling party are reported to receive preferential treatment) (Easterly, 2002). The need for forging public-private partnerships cannot be overemphasised in the country's effort to ensure food security and alleviate poverty.

CHAPTER 4: ASSESSING THE IMPACT OF FOOD IMPORT/AID DEPENDENCE

This chapter will focus on establishing the theoretical framework that will capture the effects of food aid on the macro-economy and households. It will also attempt to discuss how the effects of food aid dependence on the macro-economy as well as agricultural production at household level.

4.1 Theoretical Framework of Macroeconomic Analysis of Food Aid Impacts

The theoretical framework for the analysis of the macroeconomic effects of food aid dependence is established using the interaction between food supply and demand. It can be argued that total food supply from domestic production depends on the producer price for food grains, lagged food supply from domestic production, and the rainfall, which affects the level of domestic production of food grains. Therefore, the domestic supply equation can, theoretically, be formulated as:

$$QS_t = f_1(PPFG_t, QS_{t-1}, RF_t) \quad (4.1)$$

Where: QS - total supply of food grains from domestic production
 PPFG - producers' price for food grains
 RF - weather index

The supply response of cereals production to a change in producer price is expected to be positive. During the then military regime, the producer price was set by the Government, while currently market forces determine it. An increase in producer price stimulates producers to produce more food grains in the long term. To control technological and institutional factors that may influence current supply of grains, lagged domestic production is included in the model. The other reason for including it is to reflect the structural rigidities of Ethiopian agriculture. The other factor that may explain the movement in domestic supply of food grains is the level of rainfall. It is expected that this variable will have a positive sign, as good monsoon rains may result in a bumper harvest.

On the demand side of the macroeconomy, per capita domestic demand for food grains is assumed to depend on the retail price of food grains, per capita disposable income of consumers, and prices of food grains substitutes. All the explanatory variables in this model are standard variables expected to influence the per capita quantity of food grains demanded. Following standard economic theory, the price of substitutes and per capita consumer income are expected to have a positive relationship, assuming that food grain is a normal good. Similarly, it is expected that retail price for food grains will have a negative sign as an increase in retail price dampens the per capita quantity demanded of food grains. As there is no separate concessionary or 'fair shop' market for distributing food received in the form of food aid, there is no need to separately model demand for food aid imports. Hence the domestic demand equation for food grains can be given as:

$$QD_t = f_2(RPFG_t, YD_t, PS_t) \quad (4.2)$$

Where: QD - per capita domestic demand for food grains
 RPFPG - retail price for food grains
 YD - per capita consumers' disposable income
 PS - price of food grain substitutes

Since a portion of food grain consumers are the producers as well, we can hypothesize that per capita disposable income of consumers partly depends on the domestic supply of food grains. The index of non-agricultural production is included in the model that determines the per capita income of consumers because agricultural products are used as inputs to the non-agricultural sector of the economy, even though the linkage between the agricultural and non-agricultural sectors is weak. It is expected that domestic supply in this model will have a positive sign as an increase in cereal production directly increases the income of a portion of the consumers and indirectly increases the income of non-cereal producers through its income effect. Similarly, the index of non-agricultural production is also expected to have a positive sign. Therefore, theoretically, one can specify an equation for per capita disposable income of consumers as follows:

$$YD_t = f_3(QS_t, QINA_t) \quad (4.3)$$

Where QINA - Index of non-agricultural production

The other component of the demand for food grains is commercial imports, however small it may be in the case of Ethiopia. Theoretically, it can be claimed that imports of food grains depend on total domestic supply of food grains, world price of food grains, availability of foreign exchange, food aid and producer price of food grains, yielding the following equation:

$$QM_t = f_4(QS_t, WP_t, FA_t, PPFG_t, FX_t) \quad (4.4)$$

Where: WP - world price of food grains
 FX - total foreign exchange flows
 FA - food aid

Commercial imports can be assumed to supplement food supplied domestically, as most manufacturing industries are commercially importing food for an input into their production systems. Food aid constitutes the largest part of food imports from the rest the world during any particular year. Commercial imports are expected to decrease as domestic production of food grains and world price of food grains increases, and hence one can postulate that the sign of these two variables in the above model will be negative. Research findings indicate that food aid often displaces commercial imports. If this is the case, and there is full displacement, food aid is not an addition to the local food supplies and does not result in disincentives, since prices should not change. However, in the Ethiopian case, food aid may not be expected to displace commercial imports and this might result in disincentives and also change the market prices, if the volume is large. As a result, the sign of food aid is expected to be indeterminate. The sign of the relationship between producer price and quantity of import demand for food grains is indeterminate *a priori*, for the reason that an increase in producer price would result in a corresponding positive change in both domestic supply and quantity of import demand for food grains. Foreign exchange availability is very important for making commercial import decisions, and consequently, a positive relationship is expected.

Producers' price of food grain may be assumed to depend on lagged quantity of domestic supply of food grains, lagged producers' and retail price of food grains, world price of food grains, food aid and lagged total foreign exchange flows. Lagged producers' price and retail prices of food grains may display a positive effect on current producers' price. On the other hand domestic supply of food grains, world price of food grains and foreign exchange availability tend to dampen the need for price increases, and, thereby, affects producers' price negatively. Food aid provides a stream of revenue to the government that can be used purchase food grains from producers' at a higher price in the surplus producing regions of the country and offset any potential disincentive effects. Hence, the sign of food aid is indeterminate in the following model. Theoretically, this can be formulated as:

$$PPFG_t = f_5(QS_t, WP_t, FA_t, RPPFG_t, PPFG_{t-1}, FX_t) \quad (4.5)$$

To complete the model we need to impose the market clearing condition that the total quantity of food grains demanded equals total quantity supplied which is composed of domestic production of food grains, commercial imports and food aid. The closure of the model can be formulated as an identity given by:

$$QD_t = QS_t + QM_t + FA_t \quad (4.6)$$

4.2 Theoretical Framework for Analysis of Food Aid Impacts at Households Level

Food aid might be claimed to have a disincentive effect on the household level decision to produce food grains, partly because food aid is provided to the recipients through the food-for-work programmes which compete for the labour force that would have been allocated for the domestic production of food grains, and partly because it lowers the producer price of food grains. Household level production of food grains can be assumed to be a function of producer price of food grains, per capita food grains aid, use of modern inputs, participation in the new extension programme, number of livestock and hectareage. This can be formulated as the following equation:

$$QP_i = f_6(PPFG_i, FAP_i, PNEP_i, QF_i, DA_i, A_i) \quad (4.7)$$

Where: QP	-	quantity food grain production
FAP	-	food aid per capita
PNEP	-	participation in the new extension programme
QF	-	quantity of fertilizer used
DA	-	possession of draught animals
A	-	land holding size

An increase in producer price may give an incentive to farmers to produce more food grains, which implies that the producer price may display a positive effect on the level of food grain production. Increase in food aid per capita as food-for-work is expected to dampen the domestic production because it creates competition for labour with the needs of domestic production, as outlined above. Hence the effect of food aid on domestic

production can be hypothesised to be negative. All the remaining variables described as factors that affect quantity of domestic production are expected to have positive signs.

4.3 Macroeconomic Impacts of Food Aid

This analysis uses time series data from 1980 to 2001. Data on domestic production at the macro level was obtained from the Annual Agricultural Survey reports of the Central Statistical Authority. Data on per capita demand for food grains was taken from a paper by Getahun Bikora, entitled 'The Food Security Challenges in Ethiopia'. National accounts statistics are the sole source of the per capita disposable national income and index of non-agricultural production. Retail and producer prices of food grains are variables for which data were obtained from the annual publications of the Central Statistical Authority on prices of commodities. Food aid data were obtained from various publications of the DPPC. Average rainfall data, is collected by and was obtained from the Ethiopian Metrological Services. Foreign exchange availability, which is the major determinant of commercial imports, was taken as the foreign exchange reserve of the nation and obtained from the various publications of the National Bank of Ethiopia. Finally, unavailability of world prices for food grains forced us to use the wheat price in the United States as a proxy.

The system of equations specified in the model that determines the macroeconomic effects of food aid consists of six equations (five stochastic equations and one identity describing the equilibrium condition between the demand and supply for food grains), with six endogenous variables (Q_{St} , Q_{Dt} , Y_{Dt} , Q_{Mt} , $PPFG_t$, Q_{TDt}), and six exogenous variables (RF_t , $QINAt$, WP_t , FAt , $RPFG_t$, FX_t). This system of equations was estimated in the linearized double-log form using three-stage least squares. The log forms were better suited to the data than the linear forms. The resultant series of equations is:

4.1: Results of the Estimation (t-ratios are given in parenthesis)

$$\begin{aligned}
QS_t &= 1.7699 + 0.0705 PPF G_{t-1} + 0.6512 QS_{t-1} + 0.2590 RF_t + e_{1t} \\
&\quad (2.06) \quad (0.22) \quad (5.80) \quad (1.84) \\
R^2 &= 0.55, \quad F - stat = 22.69 \\
QD_t &= 6.0782 - 0.2932 RPF G_t + 0.1534 YD_t + e_{2t} \\
&\quad (16.27) \quad (1.52) \quad (0.85) \\
R^2 &= 0.20, \quad F - stat = 3.66 \\
YD_t &= -0.8112 - 0.0634 QS_t + 1.5456 QINA_t + e_{3t} \\
&\quad (0.71) \quad (0.25) \quad (7.29) \\
R^2 &= 0.85 \quad F - stat = 60.20 \\
QM_t &= -51.2749 + 2.4801 QS_t + 1.4775 WP_t + 4.9974 PPF G_t + 0.3965 FA_t + 0.2270 FX_t + e_{4t} \\
&\quad (2.25) \quad (2.74) \quad (1.68) \quad (1.60) \quad (1.73) \quad (1.84) \\
R^2 &= 0.56 \quad F - stat = 4.61 \\
PPF G_t &= 8.8785 - 0.3456 QS_t - 0.1890 WP_t + 0.0218 FA_t - 0.0362 RPF G_t - 0.0823 FX_t \\
&\quad (6.73) \quad (2.88) \quad (2.01) \quad (0.69) \quad (0.44) \quad (2.05) \\
&\quad + 0.0870 FX_{t-1} + e_{5t} \\
&\quad (2.23) \\
R^2 &= 0.40 \quad F - stat = 3.89
\end{aligned}$$

All the parameters in the supply model, except the producer price for food grains, have the expected signs with our prior expectations but the overall fit of the model is not as satisfactory as the usual time series models. Following standard economic theory, we normally expect that an increase in producer price will encourage producers to produce more, hence the relationship between producer price and quantity of food grains supply would be positive. However, in our supply model, the relationship between domestic supply of food grains and producer price is against what the theory suggests, which may be attributed to poor quality of data. Finally the supply equation is estimated by replacing current producer price with lagged producer price, due to the fact that domestic supply may respond to producer price positively. The estimated supply equation is reported as the first equation in the series above.

In the demand equation, all coefficients have the expected sign, except that they are statistically insignificant, even at 10 percent level of significance, and the overall fit of the equation is also poor. Lack of data on prices of substitutes forced us to drop this variable from the model. The sign on some of the variables in the commercial imports equation is not consistent with our prior expectation, including those on domestic supply, world price of food grains and food aid in the commercial imports equation. Theoretically, we expect that an increase in domestic supply of food grains or world price of food grains or food aid, will lead to a decrease in demand for commercial imports. However, as can be seen from the estimated import demand equation, the signs on these variables are all positive, indicating a direct relationship between quantity of import demand and the variables claimed to have a negative influence. An attempt has been made to see the relationship between the quantity of import demand and the variables mentioned earlier. This result is consistent with raw data indicating that all the variables have been increasing over time with imports. There was no a priori hypothesis of the sign of producer price in the quantity of import demand.

In the price setting equation, quantity of domestic supply, world price for food grains, food aid and availability of foreign exchange were all expected to have a negative sign, and all these variables have negative coefficients as expected, with the exception of lagged foreign exchange, which has a positive and significant effect on the producer price for food grains. The retail price for food grains was expected to display a positive relationship with the producer price and the sign on this coefficient is as expected, although statistically insignificant. The overall fit of the equation is not as may be expected of a time series model.

The objective of this section is to derive the appropriate multipliers for determining the immediate, cumulative and total impact of food aid on domestic production and trade via domestic producer prices during any particular period, as well as total impact over time. This objective may be fulfilled by analytically deriving the reduced form parameters of the model from the estimated structural parameters. These reduced-form equations (impact multipliers) are presented in Table 4.2.

4.2: Reduced form Coefficients (Impact Multipliers)

Exogenous Variables	Endogenous Variables					
	QS _t	QD _t	YD _t	QM _t	PG _t	QTD _t
QS _{t-1}	0.6357	-0.0062	0.0404	-2.6746	0.2197	-2.0389
FA _t	0.0015	0.0000	0.0001	0.4991	-0.0213	1.5006
WP _t	0.0130	-0.0001	0.0008	2.3673	-0.1845	2.3803
RF _t	0.2528	-0.0025	0.0161	-1.0637	0.0874	-0.8109
QINA _t	0.0000	-0.2371	1.5456	0.0000	0.0000	0.0000
RPPFG _t	-0.0025	-0.2932	-0.0002	-0.1704	0.0353	-0.1729
FX _t	0.0057	-0.0001	0.0004	0.6145	-0.0803	0.6201
FX _{t-1}	-0.0060	0.0001	-0.0004	-0.4096	0.0849	-0.4156

Assuming that there are no other shocks to the system, the initial impact of a given percentage increase of food aid in a single period can be seen under the variable row, FA_t in Table 25, above. For example, a 10 percent increase in food aid is associated with a net increase of 0.015 percent in domestic grains supply (QS_t), 0.001 percent increase in per capita disposable income of households, 4.991 percent increase in imported food grains (QM_t), 15.006 percent increase in total demand (QTD_t) and almost no change in per capita demand for food grains (QD_t), and a 0.213 percent decrease in producer price for food grains (PPFG_t).

The finding that a 10 percent increase in food aid is associated with a 0.231 percent decrease in producer price for food grains is consistent with the hypothesis that food aid dampens producer price. A huge increase in quantity of total demand for food grains associated with food aid may reflect the fact that it is only in the initial period that food aid does not displace either domestic production or commercial imports of food grains. However, a decrease in producer price associated with an increase in food aid may have a disincentive effect on the sector of food grain producers that, sooner or later, affects agricultural production negatively.

Interim and total multipliers of the model can be derived from $D^t = A^{t-1}(AB)$ and $(I-A)^{-1}$, respectively, where D^t stands for the net effect of changes in exogenous variables on endogenous variables t periods later. A is the coefficient matrix of the lagged endogenous variables, and B is the coefficient matrix of the current exogenous variables of the model. The interim (delay) and the total (cumulative), effects as time approaches infinity, are presented in Table 26. The interim multipliers during each of the successive time periods indicate that food aid affects domestic grain production, per capita disposable income, and producer prices of food grains positively, and per capita demand for food grains, imports of food grains and quantity of total demand for food grains negatively, with the effects declining over time.

Increasing food aid, for example by 10 percent, leads to an increase of 0.01 percent in domestic food grains supply, 0.001 percent increase in per capita demand for food grains, and a 0.0033 percent increase in the producer price for food grains in the first period after the initial shock. Similarly, a 10 percent increase in food aid will lead to a decline of 0.0001 percent in per capita demand for food grains, 0.04 percent decline in commercial imports and a 0.0306 percent decline in quantity of total demand for food grains. Most of the interim effects approach zero after the tenth year with the exception of commercial imports and quantity of total demand for food grains.

The long-term cumulative multipliers, which describe the total effect of a sustained level of food aid increase on the endogenous variables of the model, are shown in the last row of Table 26. Using a convergence criterion of five decimal places, total multipliers are reached by the twelfth year for domestic supply for food grains, by the second year for per capita demand for food grains, by the sixth year for per capita disposable income, by the fifteenth year for commercial imports and quantity of total demand for food grains, and by the tenth year for producer prices for food grains. These multipliers suggest that a sustained 10 percent increase in food would result in increased food grains supply of about 0.04 percent, a per capita income increase of 0.0026 percent, commercial imports growth of about 4.8812 percent and increase in quantity of total demand for food grains of 14.9223 percent, while per capita demand and producer prices for food grains would decline by 0.0004 percent and 2.038 percent, respectively,

The response of commercial imports (QM_t) and producers' price for food grains ($PPFG_t$) to food aid imports reveals expected but interesting insights. As shown already, commercial imports of food grains display immediate and significant positive response to increase in food aid (Table 4.2); but in the interim (delayed) multipliers, it exhibits a negative response, while its over all total response for food aid changes is positive and significant (Table 4.3). This suggests that food aid does not displace commercial imports immediately (first year) since all the relevant economic actors may need some time to adjust to a given food aid infusion into the economy. However, as time passes and receipts of food aid are expected by the government, commercial imports of food may be substituted by food aid. In the long-run, both domestic supply and commercial imports of food grains would be stimulated as food aid effects are felt throughout the economy. As indicated in the cumulative interim multipliers, food aid also dampens the quantity of total demand for food grains in the long-run but has a positive impact in the immediate period as indicated in the impact multipliers (Table 4.3).

4.3: Interim, Cumulative and total Multiplier Effects of Food Aid

Period	Supply (QS _t)	Per Capita Demand (QD _t)	Per capita income (YD _t)	Import (QM _t)	Producers' Price (PG _t)	Total Demand (QTD _t)
<i>Interim</i>						
1	0.00095	-0.00001	0.00006	-0.00401	0.00033	-0.00306
2	0.00061	-0.00001	0.00004	-0.00255	0.00021	-0.00194
3	0.00039	0.00000	0.00002	-0.00162	0.00013	-0.00124
4	0.00025		0.00002	-0.00103	0.00008	-0.00079
5	0.00016		0.00001	-0.00066	0.00005	-0.00050
6	0.00010		0.00001	-0.00042	0.00003	-0.00032
7	0.00006		0.00000	-0.00026	0.00002	-0.00020
8	0.00004			-0.00017	0.00001	-0.00013
9	0.00003			-0.00011	0.00001	-0.00008
10	0.00002			-0.00007	0.00001	-0.00005
11	0.00001			-0.00004	0.00000	-0.00003
12	0.00001			-0.00003		-0.00002
13	0.00000			-0.00002		-0.00001
14				-0.00001		-0.00001
15				-0.00001		-0.00001
16				0.00000		0.00000
Cumulative						
1	0.00095	-0.00001	0.00006	-0.00401	0.00033	-0.00306
2	0.00156	-0.00002	0.00010	-0.00656	0.00054	-0.00500
3	0.00195	-0.00002	0.00012	-0.00819	0.00067	-0.00624
4	0.00219		0.00014	-0.00922	0.00076	-0.00703
5	0.00235		0.00015	-0.00987	0.00081	-0.00753
6	0.00245		0.00016	-0.01029	0.00085	-0.00784
7	0.00251		0.00016	-0.01055	0.00087	-0.00804
8	0.00255			-0.01072	0.00088	-0.00817
9	0.00257			-0.01083	0.00089	-0.00825
10	0.00259			-0.01090	0.00090	-0.00831
11	0.00260			-0.01094	0.00090	-0.00834
12	0.00261			-0.01097		-0.00836
13	0.00261			-0.01098		-0.00837
14				-0.01100		-0.00838
15				-0.01100		-0.00839
16				-0.01101		-0.00839
Total	0.00412	-0.00004	0.00026	0.48812	-0.02038	1.49223

4.4 The Impact of Food Aid at Household Level

The source of data for the estimation and analysis of the effect of food aid at household level is the fifth round Ethiopian Rural Households Survey data for the year 1999/2000. These data are cross-sectional, representing 1 469 agricultural households, of which data on 771 households is valid for the estimation of the model econometrically. The theoretically specified model that displays the relationship between production of food grains and its determinants is estimated in a liberalized double-log form, and given as below. The t-ratios, given in parentheses, were all based on robust standard errors as the model exhibited a problem of heteroscedasticity, which is a common phenomenon in cross-section data analysis.

$$QP_i = 5.4041 + 0.1038 PPF G_i - 0.00002 FAP_i + 0.1504 PNEP_i + 0.3510 QF_i + 0.0814 PL_i \\ + 0.3134 A_i - 0.0806 SA_i + 0.0732 ACR_i + e_i$$

(22.36) (1.88) (0.92) (1.90) (7.61) (1.88)
(4.47) (2.13) (1.00)

$$R^2 = 0.27 \quad F(8,762) = 29.63$$

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(4.47) (2.13) (1.00)

$$R^2 = 0.27 \quad F(8,762) = 29.63$$

In this estimated model, the variable PL denotes households' possession of livestock, which replaces the variable draft animals (DA_i) in the original specification. Two further new variables have been introduced to the original specification of the model, namely the square of the size of landholding, and access to credits in the form of dummy variable, taking a value of 1 if the household has taken credit and 0 otherwise.

The signs of all explanatory variables are as expected, although some of the estimated parameters are statistically insignificant. The positive sign on producer price indicates that an increase in producer price will lead to an increase in the level of food grains output, which is consistent with standard economic theory. The sign on food aid per capita is negative, as expected, however, its coefficient is statistically insignificant. Both participation in the new extension programme and possession of livestock have signs as expected and they are significant, at 10 percent level. The negative sign on square size of landholding indicates that output increases at a decreasing rate with an increase in size of landholding. Given the above estimated relationship between the level of food grains output and food aid per capita, there is no strong evidence that food aid has a disincentive effect on food grains output.

It should be noted that not all households received food aid during the survey period (1999/2000) and only 30 percent received food aid in some drought-prone woredas in Amhara, Oromiya, SNNP and Tigray regions. To account for the effects of food aid on these specific localities, it was necessary to truncate the sample and the model was re-estimated, based on a sample of 324 households. Similar to the results of the above model, the effect of food aid on household production of food grains is clearly negative and is

statistically significant. This supports the argument that food aid has a strong disincentive effect on farm production and a dampening effect on producer prices as a result of high food supply in the local markets. Hence, it can be regarded as one of the causes of continual dependency on food aid. Since most food aid in the country has been delivered via food-for-work programmes, such as the EGS, diversion of labour from farm production to such activities entails loss of farm output, i.e. EGS competes for the scarce labour available to farm households.

Even worse, given weak local markets, is the continued inflow of food aid during good harvest years. This leads to a further downward pressure on prices in domestic markets and discourages farmers from using modern inputs and producing more grain for the next crop season. In the drought-prone areas, such as the northern parts of the country, increased inflow of food aid has already created dependency syndrome, where people are entirely reliant on food aid from year to year, and this will undermine the effort to achieve sustainable food security in the country. This is consistent with the emerging evidence that increased reliance on food aid has a negative effect both at national and household level. The re-estimated model is as given below.

$$\begin{aligned}
 QP_i = & \underset{(9.05)}{5.437} + \underset{(1.32)}{0.1248} PPF G_i - \underset{(2.75)}{0.5071} FAP_i + \underset{(2.67)}{0.3337} QF_i + \underset{(1.09)}{0.1078} PL_i \\
 & + \underset{(2.52)}{0.3675} A_i - \underset{(1.21)}{0.0251} SA_i + \underset{(2.34)}{0.3533} ACR_i + e_i \\
 R^2 = & 0.18 \quad F(7,315) = 12.79
 \end{aligned}$$

4.5 The Costs and Related Implications of Food Aid

Although food aid is inevitable given low domestic food production, the cost of food aid appears to be substantial in terms of administration and transport costs for the Ethiopian government. It has been documented that government spends (in the form of operation cost and support) on average US\$ 312.5 million per year on food aid and this represents 5.1% of GDP and 17.4% of total government expenditure during the period covering 1994-2002 (Table 4.4). This indicates that food aid has drained limited budgetary resources of the country.

4.4: Cost of food aid (in million US\$)

Year	Total expenditure on food aid ('000' US\$)	Expenditure on food aid as % of GDP	Expenditure on food aid as % of total government expenditure
1994	369.00	6.81	27.54
1995	281.70	4.69	19.47
1996	137.80	2.16	8.94
1997	176.60	2.70	10.82
1998	253.70	3.93	12.58
1999	369.00	5.79	17.49
2000	656.20	10.52	34.45
2001	303.80	5.05	14.63
2002	264.90	4.00	10.99

Source: Tassew, 2004

Food aid has also been costly to donors. Many donor agencies do not like to see an increasing amount of food aid being shipped to the same country on a continuous basis. A review of the history of US Government emergency assistance, for instance, shows that (excluding 1973-1982) there has been only three years since 1965 that disaster assistance has not been provided to Ethiopia: 1966, 1967 and 1996.²¹ The US Government gave US\$ 500 million worth food aid in 2002/03. Food that is provided with the goal of building the capacity of the beneficiaries and the country to become self-sufficient is bound to perpetuate itself. The costs of importing and distributing food aid (to both donors and the Ethiopian government) could exceed the cost of growing equivalent amount of food domestically. Some of the resources devoted to food aid could be reallocated to prevent emergency situations and create the basis for sustainable increase in food production.

It is in response to appeals by the Government and/ or the United Nations that donors start to pledge their donations. A lot of valuable time is often wasted between the appeal and actual arrival of the aid. Because of the delays victims have to survive on meagre diet or sell valuable assets, leading to depletion of productive capita. The appeal is normally proceeded by reports that are compiled at woreda (district level) (based on reports from peasant associations) and then submitted to office at zone level which reviews the report and submits its own consolidated report to the regional offices. The appeal by DPPC is based on reports submitted by the different regions. In some cases, food aid may arrive after the crisis is over or harvest, depressing local food prices.

It is also alleged that DPPC has rather helped to institutionalize food aid, instead of helping the country get out of the food aid cycle it finds itself in. Indeed, not a single year has passed, in its 27 years of existence, when the Commission has not made an appeal for emergency food aid (Lautze, et al, 2003). The contribution of DPPC in preventing famine and other disasters is not very evident.

Another major criticism against the effectiveness of food aid is directed at the manner in which relief is distributed. As already indicated, different districts apply different criteria: some give it to all households for the sake of social cohesion and generalized need, hence no one actually receiving sufficient quantities to have the intended effect, while others attempt to target the poorest of the poor using asset ownership as the major criterion. In all cases, the amount of food aid received by most families (on a per capita basis) falls short of the minimum requirement and international standards because of supply shortages and inappropriate targeting. Until the current year (2004), the accepted practice has been to set relief distributions at 1300 kcals (12.5 kg), instead of the 2100 kcals recommended by the international community. General rations are also reduced at household level since families are often obliged to share with relatives and neighbours. Households with meagre assets are thus forced to sell these last assets to make up the differences. There are concerns that households with food gaps have to sell livestock to meet food needs or choose to do so with the expectation that they may be targeted for relief assistance,²² reinforcing the dependency syndrome.

²¹ Food aid was not provided between 1973 and 1982 and in 1966- 1967 mainly because of political tensions between the two governments.

²² Steering Committee for the Evaluation of the Joint Government and Humanitarian Partners Response to the 2002-03 Emergency in Ethiopia, Evaluation of the Response to the 2002-03 Emergency in Ethiopia, October 2004.

A study by Clay et al (1999) found that there were large errors of inclusion and exclusion in the selection of districts as well as households. The primary beneficiaries were found to be the relatively most well-off and the poorest, with the middle two groups were excluded. The former group appears to be using its status and resources to influence food aid distribution. It has also been observed that livestock holdings are considered as the only criterion in many areas and a significant number of households sell livestock to qualify for relief distribution (Lautze, et al, 2003). Nutritional levels are not expected to improve, especially in drought prone areas, under such conditions.

Large and medium scale edible oil enterprises were reported to exploit not more than 20% of their production potential. This is mainly because of the edible oil which is imported in the form of food aid. One NGO was reported to be selling edible oil, which it received from USAID in the form of development assistance, at 21% below the market price²³.

Food aid has also affected the operation of the private traders. Traders have little incentive in buying and storing grain for sales later during the year since they have no idea as to when and how much food aid is arriving. The uncertainty to traders is likely to undermine long-term investment in marketing activities. Price uncertainty is also a major deterrent to investment in agricultural technology by surplus producing farmers.

²³ Befekadu Degefe, Berhanu Nega and Getahun Tafesse, Second Annual Report on the Ethiopian Economy, Vol II 2000/2001, Ethiopian Economic Association, 2000/01.

CHAPTER 5: PATHWAYS TOWARDS SUSTAINABLE AGRICULTURAL DEVELOPMENT AND FOOD SECURITY

5.1 Opportunities for Agricultural Development and Food Security

The prospect of development in Ethiopia is not totally bleak and gloomy. There are many untapped potentials and options to bring about sustainable development in the country. The country is endowed with rich natural resources and a large pool of labour force.

5.1.1 Natural Resources

The natural resources that could contribute to the realization of sustainable food security are discussed below:

- Land and climate Ethiopia is endowed with abundant resources, which are suitable for agricultural production. About 66 percent of the total area (1 133 380 sq km) is said to be suitable for agricultural production and less than 22 percent of the potential arable land is estimated to be under cultivation for the production of either annual or perennial crops (MEDaC, 1999). The Ethiopian highlands represent about 36 percent of the total land area, and host more than 85 percent of the human population and 70 percent of the livestock population. The lowlands (below 1 500 metres) account for about 64 percent of the land area.

Ethiopian soils are reported to be fertile, but are undergoing severe leaching of nutrients caused by continuous cultivation and erosion. Red soils, the most productive soils in the country, are found throughout the highlands. The nutrients in these soils accumulate in the upper horizons, where they are readily available for plant growth and, as a result, they have high inherent fertility. The only drawback of such soils is the lack of phosphorous, particularly in older soils. The soils of the erosion-prone central and northern highlands have low nitrogen content and relatively high phosphorous content, as do soils in the south and southwestern areas. A high level of agricultural productivity can be achieved in less degraded areas, provided measures are taken to compensate for deficient nutrients, and management practices are improved to protect against erosion (Alemneh, 2003).

The climate of Ethiopia varies, mainly according to elevation. The lowland areas have an average annual temperature of over 27 °C and receive less than 450 mm of rainfall annually. Most of the highland plateaus lie between 1 500 and 2 300 metres above sea level (mid-highland) and have an average temperature of about 25 °C with an annual rainfall ranging from 500 to 1 500 mm. Above 2 300 m is a temperate zone, with an average temperature of about 16 °C and an annual rainfall between 900 and 1 500 mm. The main rain season occurs between mid-June and September, followed by a dry season that may be interrupted in February or March by a short rain season.

The diversity of soil, climate, and elevation allows production of a wide range of agricultural commodities. The agriculture sector spans diverse agro-ecological zones with corresponding diversity in crop production. There are, for instance, 18 major agro-ecological zones with different physical and biological potentials. Nearly all types of tropical and temperate crops can be grown in the highland areas (with an altitude of 1 500). The climate is ideal for various kinds of horticultural crops. Coffee and tea are grown in the moist mid-highland areas. With irrigation, lowland areas can be used to grow important industrial crops, such as cotton and sugar cane. The potential for growing citrus fruits is also very high. Lowland pastures could be improved and used for commercial livestock production.

- Water resources Ethiopia has substantial water resources, although its distribution and occurrences through time and space are erratic. The surface water potential amounts to over 110 billion cubic metres per annum. There are 12 major river basins, with the Abay (Blue Nile) Basin alone accounting for about 53 percent of the total annual runoff. Ethiopia, known as the ‘water tower’ of northeastern Africa, is faced with the fact that all its major rivers, except Awash, leave the country and flow into neighboring countries. About 90 percent of the annual runoff goes to the rivers that flow into the Sudan, Egypt, Somalia and Kenya (Admasu, 2003).

It is estimated that less than 1 percent of the surface water is used for irrigation. The potential irrigable land is about 3.6 million hectares but only 4.6 percent has been developed. No effort has been made to tap into the country’s underground water resources, which are estimated at 2.6 billion cubic metres. Irrigation received minimal attention in the country’s development policy despite the chronic problem of drought. Water harvesting, in the form of micro-ponds, has been made the focus of the recent food security programme but the amount of water collected is believed to be too small to have a significant impact. The country’s huge potential in small, medium and large-scale irrigation projects should be tapped.

- Genetic resources Ethiopia is importantly placed by virtue of its richness and diversity of indigenous flora and fauna. The number of flora species is estimated at over 6 000. Ethiopia is the primary gene centre for several of the world’s important crops, including Arabica coffee, teff, ensete noug, and the Ethiopian rape. Ethiopia is also the main centre for sorghum, finger millet, fieldpea, chickpea, perennial cotton and sesame. The unique landscape and climate regimes have made the country a veritable island in the eastern Sahel. Most major plant communities occurring north of the equator in Africa are found in Ethiopia. The natural vegetation is widely used for food, fuel, construction, fodder, fibre, medicine, etc. However, the disappearance of the genetic pool and the diversity of known plants and species have been accelerating in past decades and a concerted effort is required to protect against this erosion of diversity at farm and community level (Alemneh, 2003). It is possible to identify crop or any other plant species of economic value that would perform very well under marginal and moisture-stress conditions provided appropriate research is conducted.

- Livestock resources Ethiopia has one of the largest livestock populations in Africa. Animals are a primary part of the mixed subsistence farming system, providing inputs (draught, transport and manure) to the cropping system and generating consumables and saleable products (meat, milk, manure, eggs, hides and skins). A high degree of crop–livestock integration and production is made possible by the availability of suitable grazing free of trypanosomiasis and other major animal diseases. The lowlands are generally low-rainfall zones where there is considerable risk to crop production caused by drought, and so pastoral-based livestock production dominates. Pastoralists raise mainly sheep and goats with some cattle and/or camels. Sheep farming is predominant in the highland areas, at an altitude of over 3 000 metres. Cattle thrive in the 1 500 to 3 000 metre range. However, farmers and pastoralists in Ethiopia rely on unimproved pasture for forage and, even more frequently, on crop by-products (Caldwell, 1992). Food insecure districts would benefit greatly from a comprehensive package aimed at improving the feed, veterinary and marketing services of the livestock sector.

5.1.2 Human resources

The total labour force has increased from 14.7 million in 1984 to 26.5 million in 1994, and labour force participation rate increased from 0.35 in 1984 to 0.50 in 1994 (Table 27). Both urban and rural labour force participation rates increased between the two census periods. Accordingly, the urban labour force increased by an annual average of 6.4 percent between 1984 and 1994, compared to an average urban population growth of 2.3 percent per annum. On the other hand, the rural labour force, increased by 6.0 percent per annum over the same period.

The country's labour force is believed to be hardworking and productive, if given the opportunity. This is clearly demonstrated in the past architectural wonders of the Axum obelisks, the rock-hewn churches of Lalibella and the Castle of Emperor Fasiledes at Gondar. Indeed, many observers over the past half century have identified Ethiopia, one of the world's oldest civilizations, as a land of great potential. The World Bank's first country report on Ethiopia in 1950 cited its "industrious and intelligent" people and expressed the belief that "the possibilities for the country's further economic growth are significant" (Easterly, 2002). More recently, Ethiopians working in America, Europe, the Middle East and many parts of Africa have proved their potential to compete with the labour of other countries. They can easily mix with people of a different culture and establish themselves as productive workers, and prominent professionals and businesspeople. The achievements of the Ethiopian diaspora around the world have been acknowledged by observers (Easterly, 2002). Given the opportunity and the right institutional environment, Ethiopians can perform very well in any line of activity.

5.1: Urban and rural labour forces

Census year	Total population ('000')			Participation rate			Labour force ('000')		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1984	4 869.3	37 747.6	42 616.9	0 308	0 352	0 346	1 499.9	13 292.6	14 742.5
1994	7 323.2	46 154.1	53 477.3	0 380	0 517	0 496	2 757.3	23 745.8	26 503.1

Source: CSA, 1984 and 1994

5.2 Support Measures Required to Tap the Potentials of the Country

It has been shown that food aid affects both the macroeconomy and household food production negatively. Its impact at the macro level includes an increase in total domestic food grain imports (hence widening the trade deficit), and a positive effect on total demand for grains in the country. A continuous inflow of food aid has a dampening effect on producer prices and negatively affects domestic production. A similar effect has been observed at household level, i.e. food aid negatively affects farm production. A World Bank study (1998) also found that aid amounting to 1 percent of national income contributed 0.5 percent to growth with good policies, nothing in countries with mediocre policies, and -0.3 percent in countries with bad policies. Aid can reduce growth because aid and natural resource rents share a key attribute, the potential for weakening the accountability of governments to their citizens under unfavourable institutional frameworks.

Ethiopia has been receiving a substantial amount of aid (including food aid) and yet there is no evidence to show that it has made a real difference. Capital formation and technological dissemination in rural areas leave much to be desired. Little or no attempt is made to tap the water resources of the country. Supply-side interventions are rarely matched by efforts to address demand constraints. Undoubtedly, the country needs to reform its institutions to design and implement programmes aimed at tapping its potential, transforming agriculture and breaking the cycle of famine and poverty. This section is intended to highlight actions that need to be taken in the area of institutions, water, technology development and dissemination, and market expansion.

5.2.1 Institutional reform

An institutional environment is the set of fundamental political, social and legal rules that establish the basis for production, exchange and distribution. The role of the state is to set and enforce formal rules and regulations to mediate the behaviour of economic agents and humans, and respond to the long-term threats and opportunities facing the nation. The institutions of the country must be able to protect productive resources and allow full participation of the public.

Protective institutions encompass the rules and regulations that define and support control and access rights over land and use of other assets central to human well-being. Institutions that restrain arbitrary and free access to assets are essential for assets to thrive. Restraint is necessary for forests, fishing lakes and grazing fields to yield sustained benefits when population density, changes in technology or preferences, and other developments increase the demand on their use. A special subset of protective institutions

is private property rights, entailing well-delimited rights of use and decision-making for an owner and typically including rights to sell or lease an asset. The state must have the capacity to enforce property rights (police or judges) and provide the assurance that the Government itself respects those rights (World Bank, 2003).

In Ethiopia, severe degradation and asset depletion in rural areas indicate that protective institutions have yet to be developed. The failure to invest in soil conservation, land improvement and afforestation is attributed to institutional deficiencies. In particular, lack of tenure security, together with the frequent redistribution of land by Government authorities, has exacerbated the problems of diminishing farm size and environmental degradation. According to the 2001 Rural Development Policies, Strategies and Tactics, public ownership of land is necessary in order to initiate land redistribution, as deemed necessary by the Government. However, this would mean that tenure insecurity would continue to deprive farmers of the necessary incentive to invest in land. Farm size diminishes as land is inherited by several children or redistributed by officials.²⁴ At the same time, yield levels have not increased in most cases, because of declining soil fertility and lack of technological breakthroughs, as well as limited effort to use surplus labour to intensify production. There is neither consolidation nor intensification, owing to a land policy that does not encourage investment to improve land productivity. A well-defined full ownership right of arable land policy is needed in order to instill a sense of security and release local potentials to take care of the land.

Government commitment is also needed to develop protective institutions. Respect for the rule of law and efficient judiciary representation in rural areas are vital for asset creation. The security of property rights is closely associated with the rule of law.

Informal institutions need to be strengthened to complement formal institutions. Protective informal norms, values and sanctions are as important as formal institutions, like legislation and the police, to ensure capital accumulation. It is important to build upon indigenous village and community organizations.

When institutions are sufficiently inclusive to listen to and support many people, a broader range of assets can thrive. A society in which the majority has no voice can lose because the potential creativity and productivity residing in the majority of the people is ignored or only partially valued. Suppressing the productivity of the public would also translate into inefficient use of physical assets. In other words, loss of the contributions from human creativity and physical assets implies that a society cannot benefit from its human and capital resources, the two most important sources of growth and development (World Bank, 2003).

More inclusive institutions deepen the support for the provision of communal and natural assets (roads, water, fish or forests), so that their quality and quantity can be raised. The different governments in Ethiopia have not succeeded in providing the right institutional infrastructure to foster long-term investment. The tradition of a non-inclusive government,

²⁴ Land redistribution was carried out in Yetmen and most other parts of the Amhara region in 1996. Households whose members had some association (eg. served as a member of a committee) with the imperial or the military government lost all their land in excess of 1 ha to landless members of the community.

motivated by ‘control’, not participation, must change. Institutional reform is necessary in Ethiopia to ensure participation and to empower the farming community.

The imperial as well the socialist institutions have made individuals feel that others are responsible for their life. The paternalistic attitude is still very strong in various actions and programmes of the Government, despite the move towards decentralization and democratization. Farmers, women and youth in rural areas have never been able to organize their own independent associations to protect their rights and interests. Independent farmers’ unions, interest groups, unions of waged workers and associations or networks of craft workers have never been part of rural life in Ethiopia. As a consequence, the public in particular the rural population, seems to have lost motivation, initiative and creativity.

In the absence of civic organizations to protect their interests, interactions with public officials have placed a large burden on poor people. They are unable to take advantage of new economic opportunities or engage in activities outside their immediate zone of security, i.e. subsistence farming.²⁵ It should be stressed that countries which have experienced rapid improvement in their economy and standard of living owe much of their success to favourable institutional infrastructure.

5.2.2 Supply-side interventions

A significant rise in agricultural labour productivity and poverty alleviation would only come about as a result of widespread adoption of scientific agricultural techniques, including improved seeds and chemical fertilizers, and use of irrigation. We now know such success as the ‘green revolution’. A phenomenal growth of yields was recorded in parts of India, Pakistan, Thailand, parts of South and Central America and the Philippines in the late 1960s and 1970s. India changed from a major recipient of food aid to an exporter of rice by the end of the 1970s. Government investment in irrigation, in addition to intensive plant breeding and investment in roads and other infrastructure, contributed to the success. In the Ethiopian context, the necessary interventions would be:

- Investment in irrigation;
- Arresting soil degradation;
- Strengthening agricultural research;
- Improving the supply of farm inputs, services and equipment; and
- Exercising caution with respect to resettlement schemes.

According to the FAO, while only 20 percent of the world’s farmland is irrigated, it produces 40 percent of our food supply. Yields obtained on irrigated plots are more than double the highest yields from rainfed agriculture. However, irrigated agriculture has not expanded as fast it should in the past because of two main considerations. The first is cost: irrigation has been described as ‘one of the most subsidized activities in the world’, and some studies have cast doubt on the economic returns on investment in large-scale irrigation schemes. The environmental costs of conventional irrigation are also high. High-intensity schemes are often blamed for water logging and increased soil salinity, which

²⁵ Mulat Demeke. 2001. *ibid.*

now affects 30 percent of irrigated land. Stalinization is reducing the existing area under irrigation by up to 2 percent a year. To increase irrigation's contribution to food production, FAO argues, what is needed is improved efficiency in the use of irrigation water. High costs and negative rates of return have been primarily the result of design and technical flaws, management failure and political difficulties. Failure of responsible agencies to respond in time to field level problems, excessive centralization of management (with the corollary that control is taken away from farmers), poor training and skills levels, uncontrolled overhead costs, etc, are some of the other reasons for the poor performance of many large-scale irrigation systems.²⁶

Investment in irrigation in Ethiopia should be accompanied by attention to water conservation, soil conservation, soil conditioning and soil productivity. Crops to be grown under irrigation should be carefully selected to maximize the return from investment in irrigation. Most cereals may not be as profitable as industrial crops (cotton, sugar cane, etc.), horticultural crops (fruits and vegetables) or floricultural crops. Ethiopia has a comparative advantage (weather and proximity to major markets such as Europe and the Middle East) in a number of high-value horticultural crops. Fishing activities in the irrigation dams and ponds could also provide additional income and food for the population.

Environmental degradation and ecosystem stress will intensify in many parts of the country because of population pressure, poverty and absence of land-use planning and control. Attempts to undertake conservation and afforestation through food-for-work programmes have not reversed the rapid depletion of the country's natural resources. In addition to collective or community level efforts, individual farmers should be encouraged (e.g. through incentives and more clearly defined land rights) and supported (e.g. through credit) to invest in micro-dams, water runoff catchments, terracing, afforestation, etc. Free grazing of livestock should be replaced with controlled and zero grazing as a matter of urgency in the highlands, especially in severely degraded areas. The development of alternative house building materials and alternative fuel sources should be given priority. The use of animal dung as fuel should be discouraged and wheelbarrows and animal drawn carts should be promoted to assist the application of manure and organic matter as organic fertilizer.

As indicated above, the low level of technology utilization is one of the major factors behind the country's poor performance in food grain production. Use of local seeds with low genetic potential has resulted in low yield. Although the total research budget²⁷ (in nominal terms) appears to have increased over time, the share of agricultural research is less than 1 percent of the agricultural GDP, well below the recommendation that at least 2 percent of agricultural GDP has to be invested in research (ISNAR, 1988). Budgetary expenditure on technology development is inadequate, especially when viewed against the diversity of agricultural production in the country. Lack of adequate resources is another major factor constraining broad-based technical change in agriculture. It has also become increasingly difficult to retain senior researchers, as wages and working conditions

²⁶ FAO we site. 2003, Agriculture Section, Magazine, Spotlight: improving irrigation technology (available at www.fao.org).

²⁷ Currently, the budget for the national agricultural research system comes from three sources: the federal Government, the regional states and external sources.

(including schools for children) in the research centres are unattractive, compared with those for jobs in the major cities or opportunities abroad. Since private research is non-existent in Ethiopia, largely owing to the absence of a strong commercial agriculture sector, individuals resigning from research often join a non-research profession (Mulat *et al*, 2003). The fact that research is financed mainly through grants and donations²⁸ has also meant that it is very difficult to ensure long-term continuity in research activities. Research agenda tend to change with the interest and preference of the donors.

Agricultural research should be geared towards bringing about broad-based technical change. Research on soil fertility management must be stepped up to reverse the decline in soil fertility arising from the breakdown in traditional soil fertility restoration techniques, such as fallowing and crop rotation, especially in densely populated areas. In view of the massive problems of nutrient leaching and land degradation, both organic and inorganic supply of nutrients must be expanded (Eicher and Byerle, 1997). Research on irrigation agronomy and high-value crops should be given adequate attention. Location specific agronomic research on land preparation, crop rotation, level of fertilization, and control of weeds, insects and diseases could have a substantial impact on land and labour productivity.

Input markets are not at all well developed in Ethiopia. Fertilizer and improved seeds are distributed largely through Government's direct and indirect involvement, rather than through free markets. Rural credit is limited to short-term input credit, administered by regional and local bodies. There are no organized markets for improved farm implements and transportation equipment. Mechanisation services are unavailable, except in a few isolated cases. Policies should be designed to involve the private sector and develop a more sustainable system of input distribution and marketing.

Spontaneous migration to more productive areas has always been the tradition in Ethiopia. Households used to constantly search for more fertile land and settle in new areas in order to practice extensive agriculture (with a long fallow period), instead of making the costly adjustment (in terms of additional labour effort and investment) for transition to intensive farming in the original settlement sites. Government-sponsored resettlement schemes have been receiving special attention since the disastrous 1984/85 drought. However, the schemes have rarely been successful. Apart from the acute infrastructural constraints and various health hazards to humans and livestock in most resettlement areas, human activity in the country's most fragile ecosystem has exacerbated the problem of environmental degradation. In particular, the same cultivation practices that led to ecological disaster in the old settlement areas (highlands) are being applied in destination areas (lowlands). It is evident that governments in Ethiopia resort to resettlement when they fail to bring about sustainable intensification of agriculture (to increase the absorptive capacity of the land). Resettlement also reflects the failure of successive policies and strategies in Ethiopia to bring about structural transformation of the economy and increase the employment share of the non-agricultural sector.

²⁸ About 52 percent and 79 percent of the total fund was allocated from Agricultural Research and Training Project (ARTP) in 2001 and 2002 respectively. ARTP is financed by the loan obtained from the World Bank for training and capacity building.

5.2.3 Demand-side interventions

As has already been discussed, the dominance of agriculture in the economy and total employment has constrained the domestic market. This is more clearly reflected in the collapse of grain prices that follows a small increase in production. The small urban areas are inhabited by informal sector operators with low levels of income or low purchasing power.

Cities are resource centers and powerhouses of development. The process of agglomeration and specialization in urban areas removes demand bottlenecks for both urban and rural areas. Larger and expanding urban centres create better opportunities for agriculture and small enterprises to grow, innovate and expand. Urbanization is also associated with lower population growth, modern attitudes, etc. Rural growth and diversification require a substantial input from urban development (Douglas, 1998).

The domestic agricultural market is also poorly developed in Ethiopia, partly owing to lack of specialization based on the comparative advantages of each agro-ecological zone. Farmers in every part of the country are advised to produce food crops for home consumption, with no change to age-old traditional practices. Such production systems, along with the low share of the non-agricultural population and inadequate transport and communication network between the different regions (discussed above), have limited the scope of the grain trade in the country.

While high-potential areas are encouraged to intensify and commercialize food crop production, using external inputs under rainfed conditions, low-potential areas may need to concentrate on root crops, fruits and vegetables, high-value pulses and oilseeds, tree growing, livestock husbandry, beekeeping and fishery, using irrigation as well as rains (depending on the specific circumstances of each location). It should be noted that rehabilitation of some areas – very sloping and heavily degraded ones – through enclosure and strict land-use planning could be the only option. Areas with good access to large urban markets and export outlets (eg. Addis Ababa Airport) would have competitive and comparative advantage in high-value horticultural crops, while lowland areas specialize in fruits and industrial crops.

Specialization based on agro-ecological potential cannot be effective unless markets are sufficiently developed to ensure efficient trade between different areas. For instance, trucks transporting grain from surplus to food-deficit areas could carry livestock and livestock products back to surplus areas on their return leg. At the same time, trade in inputs and consumer goods should also expand to facilitate commercialization of the rural areas. As a major participant in processing and marketing activities, the promotion of the private sector should be at the centre of the effort to expand the domestic market.

It is also important to take advantage of the external market environment. Despite some progress in the second half of the 1990s, Ethiopia's export bundle remains relatively small and concentrated, in terms of both products and markets. Mulat *et al.* (2003) have shown that the various reform measures undertaken throughout the 1990s failed to bring about diversification in the external trade sector. Ethiopia's exports remained excessively

dependent on a few primary products, like coffee, hides and skins, oilseeds and pulses. In terms of product bundle, the top six export products (coffee, chat, ovine leather products, gold, sesame seeds and raw sugar, in descending order) represented 90 percent of the export bundle in 1995 and 86 percent in 2000. Coffee exports accounted for 66 percent in 1995/96, 53 percent in 1999/00 and 39 percent in 2000/01.

Production and supply constraints related to limited production capacity constitute the major impediments to the expansion of export trade. Lack of product diversification is another impediment. Underdeveloped infrastructure facilities and lack of timely and accurate market information have also adversely affected the performance of the export sector.

In 1997, Ethiopia took several initiatives to promote its international trade, and it became an observer at the World Trade Organization (WTO), but without applying for future membership. Ethiopia's major trading partners, such as the EU, United States and Japan are members of the WTO. Therefore, if Ethiopia continues to stay out of the system, this will have a negative long-term effect as practically all domestic and foreign trade will eventually depend on the international standards and policies. Failure to meet these criteria may result in international criticism and possibly retaliation, and further marginalisation. More importantly, when preferential access to the EU and other developed countries is phased out, market access will be more difficult for a non-WTO member. Accordingly, Ethiopia cannot be an exception to the process of globalisation and it should learn how to survive in a competitive world as soon as possible (Mulat *et al*, 2003).

At the regional level, Ethiopia is a Member of the Common Market for Eastern and Southern Africa (COMESA). COMESA was established, among other things, to take advantage of large market size and to allow greater social and economic cooperation, with the ultimate objective of creating an economic community. The key mechanism for trade liberalization is the removal of tariff and non-tariff barriers to intra-COMESA trade. In this regard, COMESA has adopted a programme of reduction and eventual elimination of such barriers. However, a few Member States have failed to comply with the commitments they have made. Ethiopia is one of those countries that have failed to comply with the agreement it signed to establish a free trade area (FTA).

COMESA has not been a force for market diversification in Ethiopia. Exports to COMESA Members remained stable during the last half of the 1990s and represented only 10 percent and 13 percent of total exports in 1995 and 2000 respectively, with Djibouti absorbing 90 percent and 85 percent of the export to COMESA in 1995 and 2000 respectively. The other 19 Members of COMESA received only 2 percent of Ethiopia's exports. This is not surprising, given that Ethiopia neither grants nor receives any significant tariff preference from its COMESA partners. Exports to COMESA Members could increase significantly, provided measures are taken to remove tariff and non-tariff barriers. Duty-free access to the markets of COMESA Members would not only provide a significant increase in exports, but would also help in diversifying Ethiopia's export bundle. The anticipated increase in exports of cereals (barley and maize) and meat products to COMESA Members in a preferential trade environment would be of direct benefit to poor producers (surplus producing farmers), who are constrained by thin, fragmented and volatile local markets. Provided that the marketing ability of poor

producers is enhanced through the appropriate balance of policy interventions, infrastructure and institutions discussed above, COMESA may be the much-needed market outlet that helps ease the shortcomings of local markets. Increased trade among COMESA Members, extending well beyond traditional primary and semi-processed products to manufactured goods, producer goods from the mining sector and energy, would increase welfare for all concerned, would enhance wealth creation through specialization and would be a step towards poverty alleviation, socio-economic development and conflict resolution in the region. As such, the Government of Ethiopia (GoE) should take the initiative and make the appropriate *quid pro quo* tariff concessions to strategic regional partners to enhance trade in the region.

5.3 Expansion of non-agricultural employment

Attention to urban centres has remained minimal in the past 30 years. Since the 1976 nationalization of urban land and all extra houses and buildings, residential and commercial buildings have been neglected and undergone very little maintenance. Much of the urban infrastructure is in very bad shape and business is largely limited to informal activities.

Many of the food-insecure districts have 98 percent of their population in rural areas. There are very limited local market opportunities for perishable items such as vegetables, milk, etc. Developing small urban centres should be seen as part of the overall need to change the structure of employment in favour of the non-agricultural sector. It is only through rapidly expanding employment opportunities in the urban areas that the proportion of the agriculture-dependent population is reduced (from its current level of 85 percent, one of the highest in the world).

There are ample opportunities in the manufacturing sector for substituting imports to save foreign exchange and generate employment. Some of the activities with significant potential could be leather products including footwear, labour-intensive garment manufacture; traditional weaving and cloth-making, textile milling (although the mills would need to be salvaged), silver and gold smithing, and manufacture of plastic goods, ceramic products, building materials, etc.

Tourism is perhaps the most promising activity to generate employment in Ethiopia. The country is endowed with spectacular geological and geographic features, including mountains and plains, valleys and desert, and rivers and lakes. Ethiopia has a long history of independence and its own script, unique in Africa. Associated with the long history are the Axum obelisks, the rock-hewn churches of Lalibella, the Castle of Emperor Fasiladas at Gondar, the isolated and secluded churches in different parts of the country, the town of Negash in Tigray – a historical site for the Muslim community. Ethiopia is also the origin of mankind, Luci or Dinknesh. The country is truly a tourist paradise. In addition to its employment potential the tourism industry has the potential to generate considerable foreign exchange.

To date, mining has been of only marginal importance to the Ethiopian economy. However, the potential reserve of gold and other precious metals is reported to be high. Gold reserves are conservatively estimated at 60 to 200 tonnes. Substantial reserves of

coal, iron ore, tantalum, bicarbonate and potassium were also partly prospected in the 1980s, although a number of significant deposits are in inaccessible locations. Limestone, clay and marble are produced in large quantities, and the output of non-metallic minerals has been boosted by the upsurge in construction activity since 1991. Developing the mining potential of the country is believed to have the potential to generate significant employment opportunities.

In general, non-agricultural employment opportunities should be developed in order to ease population pressure in food-insecure areas. No effort was made in the past to avert the build up of population beyond the carrying capacity of the land. Development strategies and policies (e.g. the land policy) should encourage, not systematically discourage, out migration.

5.4 Safety nets for the vulnerable

The number of people and groups who are chronically food-insecure appears to be increasing, in response to climatic shocks, worsening land degradation and the HIV and AIDS pandemic. Most of the poor live in the drought-prone districts. Given the high frequency of drought, vulnerability to climatic shock is cumulative in Ethiopia. Families are often exposed to another shock before they fully recover from an earlier shock, which had resulted in the sale of vital animals and other assets in order to survive. For the extremely poor households, there is no exit from the vicious cycle of poverty and the pursuit of unsustainable livelihoods. A substantial number of people in food-secure districts are also food insecure because of limited access to land, soil degradation and lack or loss of basic assets. Families affected by HIV and AIDS are also prone to selling key productive assets and, thereby, fall into the poverty trap.

Measures necessary to prevent the poor from sliding further into poverty may include:

- Use of food aid delivery and other support systems to assist very poor households to build their asset base and income generation capacity. For instance, food aid could be combined with financial support and/or credit aimed at establishing a sustainable livestock farm (e.g. small ruminants) for female-headed or child-headed households, as well as other households with labour shortages. Similarly, free or subsidised inputs could be provided for a specified period to increase production and eventually enable the family farm to pay for itself.
- Reducing risks in vulnerable areas by introducing new, conservation-based farming systems (including tree crops and livestock), building irrigation infrastructure, encouraging seasonal labour migration, and supporting off-farm activities.
- Supporting families and orphans affected by HIV or AIDS through community-based programmes with long-term commitments. Communities should be assisted to ensure that orphans are getting an education and that their food requirements are met.

5.5 Enhancing investment in agriculture

Reliance on food imports or aid to meet its food requirements has only generated more dependence with little or no change in the poverty conditions of the country. Food aid has not prevented depletion of farm assets, since its arrival is often uncertain and very late. More importantly, the amount delivered to the needy households is often too small to prevent distress sales. The effectiveness of food aid is also limited by the large errors of inclusion and exclusion in the selection of districts as well as households. Food aid has not helped surplus producers; the collapse of grain prices in recent years is partly attributed to continuous supply of food aid, especially in years of good harvest. Food aid is also absorbing a sizeable amount of public resources; the cost of transporting and distributing relief food to affected areas consumed about 17 percent of total government expenditure during the period 1994 to 2002. Ethiopia should also realize that the future of food aid donations is uncertain, since surplus production in major donor nations is likely to decline (hence limiting the imperative for giving food aid), due to reduced support for agriculture as a result of budgetary constraints and the need to comply with WTO commitments.

Improving the production capacity of farmers through increasing public and private investment in agriculture should be at the centre of Government policy in the sector. Public investment is necessary to build physical, natural, human, social and technological capital in agriculture and, thereby, induce private (including farmers') investment. Farmers in Ethiopia will start investing their labour, financial and other resources on irrigation, conservation, technology, etc. provided they are assisted through more public investment, a favourable property rights regime and improved access to credit facilities.

Structural adjustment was introduced to stabilise the economy but cuts in human capital development, agricultural research and extension, infrastructure and irrigation will have detrimental long-term impacts on agricultural production and productivity growth. Care must be taken not to undermine long-term growth. Existing public expenditure patterns should also be closely reviewed to channel resources to agriculture, where the payoff in terms of poverty alleviation and sustainable development is very high. In this regard, the huge expenditure on administering, transporting and distributing imported relief food needs to be shifted to investment activities. A substantial amount of budgetary resources could also be secured (for rural and agricultural development) by concluding a lasting peace agreement with neighbouring countries, thereby reducing the defence budget.

Nevertheless, it should be reiterated that Ethiopia is one of the poorest countries in the world and it cannot be expected to exit from the poverty trap it finds itself in simply by its own effort. National savings rates are too low to mobilise sufficient resources for investment in capital formation. Annual food shipments and various grants have not made an impact on the country's chronic and complex problems. The donor community must show more commitment and support investment aimed at addressing the root causes of the problem, rather than the symptoms. The US alone spent over US\$ 500 million on food aid during the 2002/03 drought. Donors should, instead, step up their development assistance to complement public and private investment in agriculture. According to Jeffery Sachs, the Coordinator of the UN Millennium Project, and his colleagues, only a 'Big Push' through well-targeted infusion of foreign assistance can break Africa's poverty trap (Sachs et al, 2004).

In other words, we argue not for endless flows of increased aid, and not for aid as simple charity, but for increased aid as an exit strategy from the poverty trap. For those who fear that aid increases dependency, our response is that aid that is ambitious enough would actually end Africa's dependency.

CHAPTER 6: SUMMARY AND CONCLUSIONS

The relationship between food aid and agricultural production in food insecure countries has received increased attention in recent years. One of the important issues addressed at the Johannesburg world summit on sustainable development 2002 was the importance and consequences of the food aid. There is a growing concern that food aid that comes from subsidies in donor countries depresses domestic agriculture market in recipient countries. Although food aid is commonly viewed as a humanitarian aid, it presents a mixture of self-interest and altruism. For instance, food aid is known to have originated in the USA as a surplus disposal tool. An attempt to establish high domestic prices for farm products led to the agriculture surpluses, which then required government purchase and then used as food aid.

The main objective of this study was to explore how Ethiopia could disentangle itself from food aid dependency and ensure a sustained growth in agriculture. More specifically, the study assessed the situation of food security, structure of agricultural production, consumption, types of food aid, evolution of agricultural support measures, and opportunities in the agricultural sector. The effects of food aid on the macro-economy and household farm production was examined using econometric models.

The Ethiopian economy is among the most vulnerable economies in Africa and its performance has been less than satisfactory. Regardless of the fluctuations, real GDP has been growing at rate of 2.60% during the period spanning 1960-2002. Growth rate declined to 1.84% under the Military regime, but improved to 4.2% during the post-reform period (1992-2002). In terms of sectoral growth rates, agricultural, industrial, and service GDP grew on average by 1.35%, 3.35%, and 4.70% per annum, respectively, during the period 1960-2002.

Rainfall is the chief determinant of Ethiopia's economic performance. The agricultural sector contributes nearly half of GDP; employs more than 80% of the total population; and accounts for more than 90% of the total export earnings. The dominance of agriculture has not changed over time mainly because of its poor performance in terms of generating surplus that could be invested in other sectors of the economy. Agricultural production, for instance, has been growing by about 2.3% per annum during 1980-2000 while population was growing on average at a rate of 2.9%, leading to a decline in per capita agricultural production by about 0.6% per year.

Notwithstanding the improvement in food grain production in the 1990s, per capita food production has been progressively declining for the last four decades or so. Drought, soil, degradation, policy failures, population pressure, and institutional constraints have been identified as the main causes of the sluggish performance of the agricultural sector. Although efforts have been put in place under different regimes to transform the agricultural sector, it has become almost impossible to address the problem of food production in Ethiopia. Supports provided to the sector under different regimes have not been commensurate with its contribution to the economy and the development of the sector. Atrocious conditions of poverty, lack of the capacity to break out of the vicious circle of low income, low investment and poor growth have weakened the prospects of sustainable development in the country.

The poor performance of agriculture is accompanied by worsening socio-economic situations: more than half of the rural population live in food poverty and food insecure conditions. Domestic food production has failed to meet domestic demand for food and the number of food insecure population has increased over time. Fluctuations in food availability and consumption, caused by crop failure and other factors, have increased the risk of consumption shortfall. Households in marginal areas are food insecure their access to food is variable and unpredictable from one harvest season to the next.

Regression results of the determinants of rural food consumption indicate that there is strong relationship between demographic characteristics and the level of household food consumption. In other words, households with larger family size are more likely to suffer from consumption shortfalls or fall into poverty than those with smaller family size. The results of the study indicate that measures used to reduce the proportion of dependants at household level will help increase food consumption. In addition, it has been documented that reducing fertility will have a beneficial impact on women's health, labor force participation and productivity. The results of the analysis also show that education is important in bringing about sustained growth and increase food consumption at household level. The impact of education in increasing food consumption and reducing food insecurity is significant in rural areas, i.e. households with higher levels of literacy are more likely to earn more income and enjoy increased food consumption than those households with lower levels of literacy. Households with multiple income sources are also better off in terms of food consumption and are less vulnerable to adverse economic and other shocks. Hence, investment in education and creation of alternative employment opportunities are among the key measures necessary to increase food consumption and reduce food insecurity.

Ethiopia remains one of the largest food aid recipient countries in the world. Although food aid is meant to bridge transitory food shortfalls (transitory food insecurity), it has become an institutionalized response to a structural food problem for a long period of time. Not a single year has passed, in its 27 years of existence, when the DPPC has not made an appeal for emergency food aid. The size of food aid has also increased, with significant ups and downs. The highest amount of food aid, accounting for some 27% of the total domestic food production, was received during the severe drought of 1984. About 15 million people (22% of the rural population) required food assistance in 2002/03. The projection of food requirement and food supply shows that food gap is set to widen further unless action is taken. Ethiopia cannot expect such huge food gap to be met through foreign aid or commercial import. It should be noted that the future of food aid is uncertain because of donor fatigue and WTO restrictions on subsidies in developed countries that is bound to reduce surplus and hence food aid. It has also been shown that the cost of handling food aid is very high.

Empirical examinations undertaken have shown that food aid increases the total domestic supply of food grains. However, a sustained increase in food aid has the effect of reducing producers' price for food grain, with a negative effect on domestic production of food grains. An attempt was made to estimate the interim (delay) multipliers during each of the successive time periods and the result indicates that food aid affects domestic grain production, per capita disposable income, and producers' price of food grains positively. However, the effect appears to be negative on per capita demand for food grains, imports of food grains and quantity of total demand for food grains, with the effects diminishing

over time. With regard to the long-run cumulative multipliers, it has been shown that a sustained 10% increase in food aid would entail an increase in the supply of food grains by about 0.04%, per capita income by 0.003%, commercial imports by 4.88% and quantity of total demand for food grains by about 14.92%, while per capita demand and producers' price of food grains would decline by about 0.0004% and 2.04%, respectively. The result shows that a continuous increase in food aid has a disincentive effect on domestic agricultural production, through depressing producers' prices, although the magnitude is not substantial. Food aid also creates high demand for imports, thus exerting a pressure on the demand for foreign exchange earnings which otherwise would have been used for importing other goods. A separate econometric model was also built (To examine the household level effects of food aid,) and the result indicates that the food aid tends to perpetuate dependency at household level.

The central message of this study is that sustained inflow of food aid may have a deleterious effect in the overall economy in the interim and long-run period and the country may not achieve food security unless alternative responses to structural and transitory food deficits are designed. Hence the big question is: what are the alternatives to food aid? This necessitates looking at options for a sustainable agricultural development and food security.

The natural resource potential of the country is undoubtedly considerable, with abundant land resources and diverse agro-ecological conditions. The diversity of soil, climate, and elevation allows production of a wide range of agricultural commodities. Ethiopia has also an important place in its richness and diversity of the flora and fauna and endemic plants. Ethiopia has a substantial amount of water resources. The surface water potential amounts to over 110 billion cubic meters per annum.

The country needs to design and implement programs aimed at tapping its potential, transforming agriculture, breaking the cycle of famine and poverty and thereby reducing dependence on food aid. The task of reversing the fortunes of the country calls for comprehensive and integrated measures. To begin with, the institutional environment must be changed to firmly establish fundamental political, social and legal rules that create the basis for efficient production, exchange and distribution. The institutions of the country must be able to protect productive resources and allow full participation of the public in increasing agricultural production. Government commitment is needed to develop and facilitate the formation of institutions to ensure respect for the rule of law and efficient judiciary in rural areas. Strengthening protective and inclusive institutions is vital for asset creation and protection. This will also trigger independent initiatives by million of farmers. Hence, the land policy should be revisited to remove insecurity and enhance transfer transactions so as to encourage consolidation (so as to reverse the ongoing fragmentation of farm size) and out-migration from densely populated areas. There is a consensus that tenure insecurity is a major factor behind the massive land degradation and desertification. The existing land policy has discouraged investment in land improvement, irrigation and tree planting.

Second, the need for reducing the dependence on rainfall and mitigating volatility in crop production cannot be overemphasized in Ethiopia. It is important to increase yield and stabilize agricultural production via investment in irrigation. Effort should be made to contain costs and reduce environmental hazards of irrigation through improved designs and effective management, close attention to water conservation, soil conservation, soil

conditioning and soil productivity, and careful selection of crops to be grown in order to maximize return. Agricultural research is needed to generate new technologies, introduce new crops and develop productive agronomic practices under irrigation. It should be stressed that Ethiopia has a comparative advantage (weather and proximity to major markets such as Europe and Middle East) in a number of high value horticultural crops.

Third, diversification of the economy away from uncertain agriculture towards more certain and productive non-agricultural sectors would not only make the economy less vulnerable but also remove the demand constraint for agricultural development. Cities are also powerhouses for processing farm products and supplying inputs to rural areas. Larger and expanding urban centers create better opportunities for agriculture and small enterprises to grow, innovate and expand.

Fourth, the domestic market needs to be developed through encouraging specialization based on comparative advantages of each agro-ecological zone. Farmers in different parts of the country must be able to grow different types of crops and raise different kinds of animals. Marginal areas can specialize in root crops, fruits and vegetables, high value pulses and oilseeds, tree growing, livestock husbandry, bee-keeping and fishery using irrigation as well as rains (depending on the specific circumstances of each location) for local as well as export markets. Production for market (domestic or export) in Ethiopia is constrained by high transport cost and lack of information. Transportation and communication networks are extremely inadequate. There is very limited local market opportunity for agricultural products, especially perishable items such as vegetables and milk, in rural areas. Thus, it is important to invest in infrastructure and build capacity of the private sector to foster domestic marketing and trade both within regions and neighbouring countries. Production activities must also be guided by the principle of comparative and competitive advantages to benefit from globalization movements (e.g. WTO) and regionalization (e.g. African Union and COMESA).

Fifth, increased productivity and competitiveness in world market result from education and improved health and nutrition of the population. The future development of the country will critically depend on a flexible, educated and healthy workforce. Since the natural resource base of the country is being depleted and is subject to long-run price declines, the focus should be on training and upgrading the skill of the labour force. Demographic transition to reduce population growth will also require education, especially for women.

Sixth, a significant number of households have lost their valuable assets as a result of recurrent drought, severe land degradation, HIV/AIDS, etc. and are pursuing unsustainable livelihoods. In the absence of a national safety net program, food aid could be as the only supplementary source of income for survival. However, the approach to food aid assistance must change to avoid dependency. Food aid should aim at eliminating the causes of hunger rather than trying to address the symptoms. In this regard, the twin track approach of FAO could be very useful: the approach combines (i) resource mobilization for agricultural and rural development to create opportunities for the poor and hungry to improve their livelihoods, with (ii) measures to meet the immediate food and nutrition needs of the seriously malnourished so that they can take advantage of such opportunities. For instance, food assistance could thus be combined with financial support and credit with the goal of establishing a sustainable livestock farm (e.g. small ruminants) in the case

of poor female- and child-headed households as well as other poor households with labour shortages. Similarly, free or subsidized inputs could be provided for a specified period to time with the aim of increasing production and eventually enabling the family farm pay for itself.

Provided implementation at local level is adequately participatory, the recent move by the Ethiopian government to introduce a new approach known as the Productive Safety Net Program (PSNP) appears to be in the right direction. The main objectives are to provide transfers to food insecure population in away that prevents asset depletion at the household level and creates assets at the community level. The selection of the public works projects will be driven by local planning process, with a focus on addressing land degradation, recurrent drought, low agricultural productivity and population pressure more effectively using food aid.

Finally, measures must be taken to mobilize public, private and donor resource in order to undertake to necessary investment and lay the foundations for sustainable growth and development in agriculture. Budgetary allocations must increase through reducing expenditures on food-aid handling, defence, and other unproductive activities. Investment in agriculture and related areas (indicated above) should receive the highest priority as the payoff in terms of poverty alleviation and sustainable development is certainly the highest. But Ethiopia is one of the poorest countries in the world, and it cannot be expected to exit from the poverty trap it finds itself in on its own solo effort. National saving rates are too low to mobilize sufficient resources for investment in capital formation. Annual food shipment and various grants have not made an impact on the country's chronic and complex problems. The donor community must show more commitment and support investment aimed at addressing the root causes of the problem, rather than the symptoms. Donors should rather step up their development assistance to complement public and private investment in agriculture. A Big Push through well-targeted infusion of foreign assistance can end Africa's poverty trap. The aim should not be 'for endless flows of increased aid, and not for aid as simple charity, but rather for increased aid as an exit strategy from the poverty trap. For those who fear that aid increases dependency, our response is that aid that is ambitious enough would actually end Africa's dependency'.

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POLICY ASSISTANCE WORKING PAPERS

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0/1 F	Bureau Sous-régional de la FAO pour l'Afrique de l'Est et Australe	Sécurité alimentaire et développement agricole en Afrique sub-Saharienne - Dossier pour l'accroissement des soutiens publics <i>Document de Cadrage</i>
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